

**BEFORE THE UNITED STATES DEPARTMENT OF THE INTERIOR,
U.S. GEOLOGICAL SURVEY DATA QUALITY OFFICIAL**

GARFIELD COUNTY, COLORADO)
GRAND COUNTY, COLORADO)
JACKSON COUNTY, COLORADO)
MESA COUNTY, COLORADO)
MOFFAT COUNTY, COLORADO)
RIO BLANCO COUNTY, COLORADO)
CARTER COUNTY, MONTANA)
FALLON COUNTY, MONTANA)
FERGUS COUNTY, MONTANA)
MCCONE COUNTY, MONTANA)
MUSSELSHELL COUNTY, MONTANA)
PHILLIPS COUNTY, MONTANA)
PRAIRIE COUNTY, MONTANA)
RICHLAND COUNTY, MONTANA)
TOOLE COUNTY, MONTANA)
YELLOWSTONE COUNTY, MONTANA)
ELKO COUNTY, NEVADA)
EUREKA COUNTY, NEVADA)
UINTAH COUNTY, UTAH)
WESTERN ENERGY ALLIANCE)
AMERICAN EXPLORATION & MINING)
ASSOCIATION)
COLORADO MINING ASSOCIATION)
COLORADO WOOL GROWERS ASSOCIATION)
INDEPENDENT PETROLEUM ASSOCIATION)
OF AMERICA)
INTERNATIONAL ASSOCIATION OF)
DRILLING CONTRACTORS)
MONTANA ASSOCIATION OF OIL, GAS &)
COAL COUNTIES)
MONTANA PETROLEUM ASSOCIATION)
NEVADA MINING ASSOCIATION)
PETROLEUM ASSOCIATION OF WYOMING)
PUBLIC LANDS COUNCIL)
UTAH MULTIPLE USE COALITION)

**Data Quality Act Challenge
to U.S. Department of the Interior
Dissemination of Information
Presented in the U.S. Geological
Survey Greater Sage-Grouse
Monograph**

March 18, 2015

Petitioners

v.

UNITED STATES GEOLOGICAL SURVEY
U.S. DEPARTMENT OF THE INTERIOR

Agency.

REQUEST FOR CORRECTION OF INFORMATION UNDER THE DATA QUALITY ACT AND APPLICABLE INFORMATION QUALITY GUIDELINES

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I. Introduction

The counties and organizations listed above (the “Petitioners”) hereby submit this Challenge for Correction of Information (“Challenge”) against the U.S. Geological Survey (“USGS”) report entitled “Comprehensive Review of Ecology and Conservation of the Greater Sage Grouse: A Landscape Species and its Habitats (the “Monograph”) pursuant to the Federal Information Quality Act, (44 U.S.C. § 3516) (“Data Quality Act” or “DQA”) and the “Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information disseminated by Federal Agencies” issued by the Office of Management and Budget (67 Fed. Reg. 8452 (Feb. 22, 2002) (“OMB Guidelines”)), as well as the Information Quality Guidelines of the U.S. Department of the Interior (67 Fed. Reg. 50687 (Aug. 5, 2002) (“DOI Guidelines”)) and the USGS Guidelines (“USGS Guidelines”)¹ collectively known as (the “Guidelines”) as well as presidential memoranda and secretarial orders on scientific integrity and transparency as discussed below.

In March of 2010, the U.S. Fish and Wildlife Service (“FWS”) issued a warranted-but-precluded (“WBP”) listing decision on greater sage-grouse (“GRSG”) under the Endangered

¹ USGS, Information Quality Guidelines, http://www.usgs.gov/info_qual/.

Species Act (“ESA”).² FWS cited an alleged inadequacy of existing regulatory mechanisms as a factor in its WBP decision.³ Pursuant to a settlement agreement with activist litigants, FWS agreed to consider listing the species under the ESA by September 30, 2015.⁴

The Monograph is a highly influential report that was prepared by the Cooper Ornithological Society (“COS”) as “Monograph: Studies in Avian Biology”⁵ and relied heavily upon by FWS in its 2010 listing decision. In fact, FWS cited four of the most influential chapters of the Monograph no fewer than 174 times.⁶ Out of 38 authors, over one-third were federal biologists, including 12 from USGS, one from the Bureau of Land Management (“BLM”), and one from FWS.⁷ In total, the Monograph is 25 chapters, with conclusions on wildlife ecology, wildlife science, conservation biology, GRSG biology, and GRSG population dynamics.⁸

While the Monograph was intended to “produce new scientific information about GRSG populations, sagebrush habitats, and relationships among GRSG, sagebrush habitats, and land use,”⁹ it lacks the scientific quality, integrity, objectivity and utility required by the DQA, the

² 75 Fed. Reg. 13910 (Mar. 23, 2010).

³ Dept. of the Interior, Bureau of Land Management, *Northwest Colorado Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement*, p. xxi (August 2013) (“NW CO DEIS”).

⁴ FWS, Press Release: *U.S. Fish and Wildlife Service Seeks Science, Data Related to Greater Sage-Grouse and Efforts to Protect Sagebrush Habitat*, http://www.fws.gov/greatersagegrouse/news_releases/20140811_DataCall_release_FINAL.pdf.

⁵ USGS, Ecology and Conservation of Greater Sage-Grouse: a Landscape Species and Its Habitats, A Release of a Scientific Monograph with Permission of the Authors, the Cooper Ornithological Society, and the University of California Press, (<http://web.archive.org/web/20100527124712/http://sagemap.wr.usgs.gov/monograph.aspx>)

⁶ Center for Environmental Science, Accuracy & Reliability, *Science or Advocacy? Ecology and Conservation of Greater Sage-Grouse: a Landscape Species and its Habitats: An Analysis of the Four Most Influential Chapters of the Monograph*, <https://www.hightail.com/download/UW14OU1VMVh0TWxYd3NUQw> (Feb. 1, 2012) (hereinafter “CESAR”) at 7.

⁷ CESAR at 5.

⁸ Dan Ashe, The Fish and Wildlife Service, <http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/COT/COT-Report-with-Dear-Interested-Reader-Letter.pdf>, at 1-2, (published March 22, 2013).

⁹ USGS, Ecology and Conservation of Greater Sage-Grouse: a Landscape Species and Its Habitats, A Release of a Scientific Monograph with Permission of the Authors, the Cooper Ornithological Society, and the University of California Press, (<http://web.archive.org/web/20100527124712/http://sagemap.wr.usgs.gov/monograph.aspx>)

Guidelines and the additional authority cited herein. Petitioners have reviewed the Monograph and found it to be inaccurate, unreliable, and biased in violation of the DQA and the Guidelines.

The DQA, Section 515 of the Treasury and General Government Appropriations Act of FY 2001 (Public Law 106-554), requires federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by federal agencies on or after October 1, 2002. Agencies are required to review the quality of information before its dissemination and treat information quality as integral to every step.

The Office of Management and Budget (“OMB”) government-wide guidelines impose three core responsibilities on the agencies:

- First, the agencies must embrace a basic standard of “quality” as a performance goal, and agencies must incorporate quality into their information dissemination practices. OMB’s guidelines explain that “quality” encompasses “utility” (usefulness to its intended users), “integrity” (security), and “objectivity.” “Objectivity” focuses on whether the disseminated information is accurate, reliable, and unbiased as a matter of presentation and substance.
- Second, the agencies must develop information quality assurance procedures that are applied before information is disseminated.
- Third, the OMB government-wide guidelines require that each agency develop an administrative mechanism whereby affected parties can request that agencies correct poor quality information that has been or is being disseminated. If one is dissatisfied with the initial agency response to a correction request he or she may file an administrative appeal.

The Monograph qualifies as information disseminated by USGS, or in the alternative, as USGS-sponsored information.¹⁰ FWS relied extensively upon the Monograph in its 2010 WBP decision. In addition, DOI agencies are considering Land Use Plan Amendments based in part

¹⁰ USGS Guidelines III-1; and III-2, http://www.usgs.gov/info_qual/#guidelines (“The USGS provides unbiased, objective scientific information upon which other entities may base judgments. Since its inception in 1879, the USGS has maintained comprehensive internal and external procedures for ensuring the quality, objectivity, utility, and integrity of data, analyses, and scientific conclusions. These Information Quality Guidelines cover all information produced by the USGS in any medium, including data sets, web pages, maps, audiovisual presentations in USGS-published information products, or in publications of outside entities. These guidelines provide an administrative process for persons to seek correction of information maintained and disseminated by the USGS that they believe is in error.”)

upon the Monograph. Finally, unless corrected, FWS will likely rely upon the Monograph when it issues a final listing decision on GRSG.¹¹

As a result, the Monograph is “highly influential” information subject to even higher standards of quality.¹² It is not subject to any exclusion from the DQA nor from the Guidelines.¹³

If recommendations from the Monograph are implemented, they will have enormous social and economic consequences in the West without commensurate benefits to local GRSG populations and habitat. Given FWS’s reliance on the Monograph to date, Petitioners interests are already being harmed by the flaws and inaccuracies in this influential report. For example, in litigation over the listed status of GRSG, Judge Winmill extended deadlines so that FWS could use information from the Monograph. Ultimately, FWS cited the Monograph well over 174 times in its 2010 WBP decision. BLM then published the NTT Report and FWS published its COT Report. Collectively, these documents have formed the basis of Land Use Plan Amendments across the West.

The information disseminated information should be corrected upon consideration of the most recent or thorough information from stakeholders, the public and the scientific community. This Challenge constitutes the most recent and thorough information.

¹¹ FWS, Press Release: *U.S. Fish and Wildlife Service Seeks Science, Data Related to Greater Sage-Grouse and Efforts to Protect Sagebrush Habitat*, http://www.fws.gov/greatersagegrouse/news_releases/20140811_DataCall_release_FINAL.pdf (Aug. 11, 2014) (“The Service agreed, as part of a 2011 court settlement, to make an initial determination on whether to propose the species for listing by September 30, 2015”).

¹² USGS Guidelines III-2, http://www.usgs.gov/info_qual/#guidelines (“USGS data collection and research activities are carried out in a consistent, objective, and replicable manner that has been vetted through a vigorous and open process of peer review to ensure that the best possible results are achieved and that there are no weaknesses or errors in the data or conclusions. USGS scientific information is subject to a high degree of transparency about the data and methods used to facilitate the reproducibility of such information by other qualified scientists.”).

¹³ USGS Guidelines III-1, http://www.usgs.gov/info_qual/#guidelines (“Factors, such as imminent threats to public health or homeland security, statutory or court-ordered requirements, or other circumstances beyond our control, may limit or preclude applicability of these guidelines.”).

II. The Petitioners

The Petitioners have a direct interest in the quality and integrity of agency science and decision making, including how the Monograph affects GRSG and public lands management in the West. The Petitioners engage in ranching, grazing, mining, and energy development on multiple-use federal, state and private lands throughout the West, or are counties that rely on these activities for their economic and social viability. The management restrictions, regulatory measures and closures recommended in the Monograph will have a direct impact on the Petitioners, the economy and the future viability of scores of communities, local governments, small businesses, family farms and ranches, mining enterprises, electricity and oil and natural gas development in the West.

- Counties:
 - Colorado: Garfield County, Grand County, Jackson County, Mesa County, Moffat County, Rio Blanco County
 - Montana: Carter County, Fallon County, Fergus County, McCone County, Musselshell County, Phillips County, Prairie County, Richland County, Toole County, Yellowstone County
 - Nevada: Elko County, Eureka County
 - Utah: Uintah County
- Western Energy Alliance represents more than 450 companies engaged in all aspects of environmentally responsible exploration and production of oil and natural gas across the West. The Alliance represents independents, the majority of which are small businesses with an average of fifteen employees.
- American Exploration & Mining Association is a 120 year old, 2,500 member, non-profit, non-partisan trade association based in Washington. AEMA members reside in 42 states and are actively involved in prospecting, exploring, mining, and reclamation closure activities on federally administered lands, especially in the West. Our diverse membership includes every facet of the mining and represents a true cross-section of the American mining community from small miners and exploration geologists to junior and large companies. Most of our members are individual citizens or small businesses.
- Colorado Mining Association is an industry association, founded in 1876, whose more than 1,000 members include individuals and organizations engaged in the exploration, development and production of coal, metals, agricultural and industrial minerals throughout Colorado, the west and the world. CMA's membership also includes persons

and enterprises providing support, services and supplies to the mining industry.

- Colorado Wool Growers Association was founded in 1926. It is premier legislative, regulatory, and policy management organization for the Colorado sheep industry.
- Independent Petroleum Association of America (IPAA) represents the thousands of independent oil and natural gas producers and service companies across the United States. Independent producers develop 95 percent of domestic oil and gas wells, produce 54 percent of domestic oil and produce 85 percent of domestic natural gas. IPAA members are dedicated to meeting environmental requirements while economically developing and supplying energy resources for consumers.
- The International Association of Drilling Contractors (IADC) is a leading oil and gas trade association and it is considered the authoritative body in the drilling space. Headquartered in Houston, Texas, IADC represents the interest of drilling contractors operating throughout the world including all oil and gas producing areas of the United States.
- Montana Association of Oil, Gas & Coal Counties is a non-profit corporation providing leadership on energy issues and promoting responsible energy development for the future of Montana. There are 34 counties that belong to the Association.
- The Montana Petroleum Association is a voluntary, non-profit trade association, whose members include oil and natural gas producers, gathering and pipeline companies, petroleum refineries and service providers and consultants.
- The Nevada Mining Association (NvMA) is a statewide trade organization formed over 100 years ago to address issues facing the mining industry in Nevada. The association has hundreds of members representing mine operators, the exploration community and vendors.
- The Petroleum Association of Wyoming (PAW) is Wyoming's largest and oldest oil and gas organization dedicated to the betterment of the state's oil and gas industry and public welfare. PAW members, ranging from independent operators to integrated companies, account for approximately ninety percent of the natural gas and eighty percent of the crude oil produced in Wyoming.
- The Public Lands Council (PLC), headquartered in Washington, D.C., represents ranchers who use public lands, manage the natural resources and preserve the unique heritage of the West. PLC is a Colorado nonprofit corporation. PLC represents state and national cattle, sheep and grasslands associations. PLC works to maintain a stable business environment in which livestock producers can conserve the natural resources of the West while producing food and fiber for the nation and the world.
- Utah Multiple Use Coalition: Recognizing Utah is a public lands state, eighteen organizations relying on access for natural resources, grazing, recreation and jobs banded

together for a single united voice. Through prudent application of multiple-use management principles, precious resources such as timber, wildlife, forage, minerals, energy, water and recreation can co-exist with Utah’s unique and sensitive environments. Coalition members include the Utah Farm Bureau, Utah Mining Association, Utah Woolgrowers, Utah Rural Electric Association, and Western Counties Alliance.

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III. The Monograph Violates the Quality, Objectivity, Utility and Integrity Standards of the DQA and its Guidelines

The OMB Guidelines implement § 3504(d)(1) of the Paperwork Reduction Act (PRA). 44 U.S.C. § 3516. Section 3504 (d)(1) requires that “with respect to information dissemination, the [OMB] director shall develop and oversee the implementation of policies, principles, standards, and guidelines to apply to Federal agency dissemination of public information, regardless of the form or format in which such information is disseminated....”¹⁴

Both the DQA and the Guidelines require agencies to “ensure and maximize” the quality, objectivity, utility, and integrity” of information disseminated by federal agencies.¹⁵ “Utility” refers to “the usefulness of the information to its intended users, including the public.”¹⁶ For the reasons discussed herein, the Monograph fails to meet quality, objectivity, utility and integrity standards of the DQA, the Guidelines and the additional authorities cited herein. *See* Exhibit A:

¹⁴ 44 U.S.C. § 3504(d)(1).

¹⁵ DQA §515(a), OMB Guidelines, § 11(2), 67 Fed. Reg. at 8458.

¹⁶ OMB Guidelines V(2). 67 Fed. Reg. at 8459. (emphasis added).

Ecology and Conservation of Greater Sage Grouse *gen.*; *see also* Exhibit B: Wildlife Science International Monograph Review, *gen.*

For the reasons expressed herein, the Monograph does not meet the standards of quality and robustness required. It was hardly as “rigorous scientific and scholarly process[es] as can be achieved.” *See* Exhibit A at 30. The USGS has also failed to meet its charge in OMB Circular A-130, “[A]gencies should inform the public as to the limitations inherent in the information dissemination product (e.g., possibility of errors, degree of reliability, and validity) so that users are fully aware of the quality and integrity of the information.”¹⁷ The Monograph has clearly glossed over limitations and error inherent in the report and the studies cited therein. *See* Exhibits A and B, *gen.*

In this case, the Monograph suffers from fatal flaws, including: 1) significant mischaracterization of previous research; 2) substantial errors and omissions; 3) lack of independence in authorship and peer review; 4) methodological bias; and 5) lack of reproducibility. Many of the aforementioned flaws are directly attributable to: the editors reviewing their own work, peer review comments were ignored, the relied upon data was not made public, and subjective interpretations were employed over objective hypothesis testing. Though the Monograph masquerades as a document of scientific integrity, it contains false information that will continue to fuel unfounded agency action. *See* Exhibit A at 4-13, 17-20, 30-33, and 42.

There was no hypothesis testing whatsoever. Instead, the authors relied on subjective post-hoc interpretation of results. One of the key chapters (Garton et al.) contains mathematical errors that were apparently not identified by peer review and subsequently not corrected.

¹⁷ OMB, Memorandum for Heads of Executive Departments and Establishments (Circular No. A-130) http://www.whitehouse.gov/omb/circulars_a130 (Feb. 8, 1996).

Therefore, the clarity of hypotheses could not be evaluated as required. Research designs were chosen to yield desired outcomes rather than objectively test alternative hypotheses, and ranged from the use of invalid assumptions, to arbitrary thresholds for describing population connectivity (i.e. Knick and Hanser), using smoothing to search for patterns in the data that do not have any statistical significance (i.e. Johnson et al.), to using equations that are in error and population persistence thresholds that have been discredited (i.e. Garton et al.).

The data critical to the analyses, particularly lek count and location data used in Knick and Hanser, Garton et al., and Johnson et al., relied upon simulations. Data points excluded from analyses were not available to the public. Further, here is no evidence that any of the raw or final data sets were provided to the peer reviewers. Therefore, the quality of the data and collection procedures could not be evaluated. The limitations of the analyses were inadequate because they were presented qualitatively rather than by quantifying error and uncertainty.

For example, Chapter 17 of the Monograph, titled *Influence of Environmental and Anthropogenic Features on Greater Sage Grouse Populations*,¹⁸ seeks to determine whether specific activities are correlated with population level declines in GRSG, as determined from lek count trend data.¹⁹ The paper seeks to identify quantifiable threats to populations.²⁰ However, the paper exemplifies a “weak approach to statistical inference and a poorly planned data-fishing expedition.”²¹ For instance, there are not enough years of data to support inferences with single variables, much less several variables.²² The lek counts had only four years of data associated

¹⁸ Douglas H. Johnson et al. (2011), Chapter 17 (407-50).

¹⁹ Chapter 17 (2009), Chapter 17 (2011): *Influence of Environmental and Anthropogenic Features on Greater Sage Grouse Populations*. Douglas H. Johnson et al., *Influence of Environmental and Anthropogenic Features on Greater Sage-Grouse Populations, Ecology and Conservation of Greater Sage-Grouse: A Landscape Species and its Habitats*: Chapter 17 407-50 (2011). Peer review by Wildlife Science International, Inc. at 96.

²⁰ *Id.*

²¹ *Id.* at 97.

²² *Id.* (Johnson *supra* at Table 1).

with them. Had this paper undergone a rigorous and independent peer-review, it would have almost certainly been rejected.²³ *See* Exhibit B at 94.

This Challenge asks USGS to correct, retract or supplement information referenced in the Monograph and also seeks to ensure that all information disseminated by USGS meets the quality, objectivity, utility and integrity requirements of the DQA and the Guidelines.

A. The Monograph is Not Transparent

The Monograph fails to meet quality and utility standards of the DQA and the Guidelines. The OMG Guidelines require a high degree of transparency for influential information such as the Monograph. Transparency equates to disclosure of the “data and methods of analysis” such that replication of results could be achieved.²⁴ Peer-review of original and supporting data and results “does not necessarily imply that the results are transparent and replicable.”²⁵ In this case, as discussed in detail below, there are many shortcomings on peer review of the Monograph.

OMB has recognized the benefits of transparency extend beyond the ability to spot errors in government work. Far more important is the ability to assess the extent to which results hinge upon an agency’s choices in analysis.²⁶ “Agency guidelines shall, however, in all cases, require a disclosure of the specific data sources that have been used and the specific quantitative methods and assumptions that have been employed.”²⁷ As discussed below, USGS Guidelines and policies directly contravene this direction.

The Monograph was far from transparent. *See* Exhibit A at 13-16, and 18-19. While USGS’ scientific information purports to be subject to a high degree of transparency regarding

²³ *Id.*

²⁴ OMB Guidelines V(3)(b)(ii).

²⁵ AVAILABLE AT: http://www.whitehouse.gov/omb/fedreg_reproducible

²⁶ AVAILABLE AT: http://www.whitehouse.gov/omb/fedreg_reproducible

²⁷ OMB Guidelines V. (emphasis added).

the data and methods used to facilitate the reproducibility of such information by other qualified scientists, a detailed review of USGS Guidelines and policies suggests the opposite. USGS proves to be the most secretive and least transparent of any DOI agency in clear violation of the DQA and the OMB and DOI Guidelines.

USGS Guidelines require data collected for publication be “documented to describe the methods or techniques used to collect, process, and analyze data; the structure of the output; description of accuracy and precision; standards for metadata; and quality assurance processes.”²⁸ Such is hardly the case here. In fact, USGS expressly refuses to disclose such underlying data and peer review information in its Guidelines and policies in direct conflict with the DQA and the DOI and OMB Guidelines.²⁹ This is particularly egregious when, perhaps in violation of the Federal Advisory Committee Act (“FACA”), draft chapters of the Monograph were provided in advance to FWS with no public notice or review. *See* Exhibit A at 6-8.

Garton et al. 2011, which is heavily relied upon by BLM and FWS and in other USGS documents, systematically cloaked lek count data as, “only males are counted at leks, and no provision is made for counting females or juveniles. As a result, the male lek count data represent an unknown proportion of total sage grouse.” *See* Exhibit A at 14. These errors are carried forward in other key agency documents like the COT Report. For example, Table 2 in the COT Report (threats) is based entirely on Garton et al. 2011.³⁰

What little background presented to the public is presented in a confusing fashion with only vague references to the assumptions upon which it was based. For all of these reasons, the models and the conclusions based thereon in the information disseminated in the Monograph fail to meet the standards under the DQA, the Guidelines and the additional authorities cited herein.

²⁸ *Id.*

²⁹ USGS Manual 502.3.5.E and 502.5.4.A.

³⁰ COT Report at 16.

For example, for all but a handful of studies, neither the Petitioners nor the public have access to information that is integral to these studies and the models upon which they depend. For example, states within GRSG range collect annual counts on leks. Integral to understanding the science of GRSG is the means upon which to count populations and to predict potential trends. Agency biologists and agency-funded researchers who published in the Monograph have cherry-picked lek count data from the states but did not document which data were included, how this was done, or why other data were excluded, and developed analyses that form the basis of opinions memorialized in the key reports utilized by BLM, FWS and USGS. *See Exhibit A at 14-16, 20, 24, 29-33 and 35.*

Without the underlying data, these reports are neither transparent nor reproducible. Without the state data, it is not possible to reproduce the results of the above-mentioned studies, because each selectively chose data to include and exclude. None of the final data sets used are public.

In the rare instances in which data have been released, there are very serious data quality issues with the lek count data used in many of the cited studies. The quality issues are ignored by authors like Knick et al. 2011, Knick and Hanser 2011, Garton et al. 2011 and other, who summarize these data for use in GIS analyses that appear to be very sophisticated. However, there are significant issues with the majority of the underlying data, especially those before the late 1990s, due to undocumented methods, mixed methods, suspect values, satellite leks, incorrect datums, single counts, biased counts, and unacknowledged uncertainties. *See Exhibit A, gen.*

Not only are the data and computer models relied upon in these studies improperly considered as proprietary by USGS, but the methods used to arrive at the final data are not

described with a level of detail that would allow them to be reproducible, rendering the entirety of the lek count data inoperative. *See* Exhibit A at 14-24. Monograph authors each reached different conclusions on which data to include or exclude from the final data set because of how the lek data were interpreted (i.e. definition of a lek) and reliability of the observations.³¹ This makes it impossible to provide scientific verification of the Monograph's claims.

Accordingly, USGS has insufficiently disclosed data sources and methodology in the information disseminated in the Monograph in violation of the DQA, the Guidelines and the additional authorities cited herein. Federal and state agencies should not hold a monopoly on data that will be integral to land use decisions and the listing decision on GRSG. Nor should this information form the basis of Land Use Plan Amendments without adequate public scrutiny and transparency.

B. The Monograph is Not Reproducible

OMB explained in its February 22, 2002 agency-wide guidelines that the “general standard” for these robustness checks is “that the information is capable of being substantially reproduced, subject to an acceptable degree of imprecision.”³² “For example, a qualified party, operating under the same confidentiality protections as the original analysts, may be asked to use the same data, computer model or statistical methods to replicate the analytic results reported in the original study.”³³ The more important the information disseminated, the more rigorous the standard.³⁴ Since USGS and the research upon which the Monograph is based do not transparently disclose supporting data, the conclusions in the Monograph are not reproducible.

³¹ (Each group employed different methods, including undocumented and subjective methods, for defining what constituted a “lek” and including/excluding lek counts obtained from them).

³² 67 Fed. Reg. 8452, 8457 (Feb. 22, 2002).

³³ OMB, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, http://www.whitehouse.gov/omb/fedreg_reproducible (effective Jan. 3, 2002).

³⁴ OMB Guidelines V10.

See Exhibit A at 6, 8, 15, and 42.

OMB Guidelines provide a higher standard than even peer review applies to influential information, namely a “substantial reproducibility standard.”³⁵ DOI and USGS have adopted, and indeed must adopt, the OMB Guidelines. USGS data collection and research activities are to be “carried out in a consistent, objective, and replicable manner that has been vetted through a vigorous and open process of peer review to ensure that the best possible results are achieved and that there are no weaknesses or errors in the data or conclusions.”³⁶

In appropriate cases, OMB encourages agencies to consider “confirmation” as a standard in assessing the objectivity of original and supporting data.³⁷ “The more important the information, the higher the quality standards to which it should be held, for example in those situations involving ‘influential scientific, financial or statistical information’”....³⁸

As referenced above, the Monograph is highly influential information. In it, 38 federal, state, university and environmentalist authors collaborated to produce and compile scientific information about GRSG populations, sagebrush habitats, and relationships among sage-grouse, sagebrush habitats, and land use.³⁹ The Monograph is controversial and precedent-setting with significant interagency interest from FWS, BLM and USFS.⁴⁰

³⁵ 67 Fed. Reg. 8452, 8457 (Feb. 22, 2002).

³⁶ USGS Guidelines III(2).

³⁷ 67 Fed. Reg. 8452, 8457 (Feb. 22, 2002).

³⁸ OMB Guidelines V(3)(b)(ii).

³⁹ USGS, Ecology and Conservation of Greater Sage-Grouse: A Landscape Species and Its Habitats: *a Release of a Scientific Monograph with Permission of the Authors, the Cooper Ornithological Society, and the University of California Press*, <http://web.archive.org/web/20100527124712/http://sagemap.wr.usgs.gov/monograph.aspx>

⁴⁰ U.S. Office of Management and Budget, *Final Information Quality Bulletin for Peer Review*, at 23 (2004) (hereinafter *OMB Bulletin*) available at <http://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/fy2005/m05-03.pdf>; John C. Freemuth; Forward to the Monograph; *Thoughts on the Role of Science in Making Public Policy*, <http://web.archive.org/web/20100527164855/http://sagemap.wr.usgs.gov/Docs/SAB/Forward.pdf> (“The Greater Sage-Grouse (*Centrocercus urophasianus*) has become a species whose possible listing under the Endangered Species Act (ESA) is fraught with controversy.”).

The Monograph qualifies as a highly influential scientific assessment such that a heightened standard for substantial reproducibility applies.⁴¹ Unfortunately, the Monograph fails to meet the substantially reproducible standard required under the DQA and the Guidelines. *See* Exhibit A at 8, 15, and 42. For example, analyses in the Monograph are incapable of replication because, in many cases, neither the key data used in the analysis nor the algorithms were publicly available. *See* Exhibit A at 8.

USGS has not disclosed the supporting data and models for the public to assess the objectivity of the Monograph. The models relied upon in various chapters are quite complex. However, they are neither transparent nor reproducible. As a result, neither the peer reviewers, journal editors, or the public can independently evaluate the quality and potential biases in the data and studies.

The data have been collected by various individuals in different states, all using different standards and levels of effort, and all of which have changed over time. USGS has not properly curated nor maintained this data in a central repository. Metadata to describe precisely how the data were collected, recorded and summarized along with quality and control assurances are undocumented in violation of the DQA, the Guidelines and USGS policies. Additionally, the raw data and methods that one could potentially use to reproduce the final data sets used in analyses are not available either because they are not released, undocumented, or may no longer exist. Again, this violates the DQA and the Guidelines.

For these reasons, the studies relied upon in the Monograph fail the substantial reproducibility requirement of the DQA and the Guidelines. Accordingly, the information

⁴¹ U.S. Office of Management and Budget, *Final Information Quality Bulletin for Peer Review*, at 23 (2004) (hereinafter *OMB Bulletin*) available at <http://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/fy2005/m05-03.pdf>.

disseminated violates the “objectivity” standard and the “utility” standards therein because they are not useful to the public. *See* Exhibit A, *gen.*

Virtually all of the significant studies relied upon in the Monograph utilize models. *See* Exhibit A at 12.⁴² The Monograph relies extensively upon these models and even models built upon models to evaluate the alleged human footprint on sagebrush habitat and alleged GRSG population responses. *Id.* In contravening the Guidelines, USGS has not demonstrated to OMB that there is no other option than to use the many third-party models disseminated in the Monograph.

While federal agencies often use various models developed by third parties to formulate policies based upon influential scientific information, the DQA, the Guidelines and the additional authorities cited herein require that influential scientific information be reproducible. Such was not the case here.

Garton et al. 2011 is one of the most frequently cited chapters of the Monograph. As discussed below, and in Exhibits A and B, Garton et al. 2011 has been thoroughly discredited. 13 states and provinces collected data using different methods and unequal levels of effort. *See* Exhibit A at 15. Ironing over the inherent limitations of such data, as the Monograph did, “a fundamental problem with this approach is that even if the raw lek-count data were publicly available (which it is not), subjective criteria were used to select the final data sets used in analyses, and therefore the analyses themselves, would not be reproducible.”⁴³ Flawed

⁴² *E.g.* (“Speculative models are substituted for lack of historic data on sagebrush extent and sage grouse distribution, and are the basis of postulated historic habitat in the monograph. Thus, the “results” of this modeling exercise are misleading, as are the subsequent analyses that rely on it. In sum, it is not a scientific assessment relying on best available scientific data, but rather an advocacy document expressing the authors’ preference for sagebrush ecosystem protection.”).

⁴³ *Id.* (emphasis added).

information, married with veiled agency procedures and a lack of reproducibility facially violate the DQA, the Guidelines, OMB Guidelines, and the Freedom of Information Act (“FOIA”).

C. USGS Policy Unlawfully Contradicts the DQA, the Guidelines, OMB’s Peer Review Bulletin and FOIA

It is ironic that USGS, (DOI’s self-proclaimed “science arm”, is the most secretive when it comes to disclosure of scientific data and peer reviews. USGS withholds information related to underlying data and peer reviews as “deliberative and predecisional” and exempt from disclosure under FOIA or the DQA.⁴⁴ The agency’s reasoning is equally as arrogant, as it believes public disclosure could be construed as incomplete, incorrect or taken out-of-context.⁴⁵ Apparently only USGS employees and favored government, academic and non-profit allies can be entrusted with access to such information.⁴⁶ USGS seems to indicate the public will be better-off if they do not know the process of agency decision-making or the science behind it. After all, such transparency, “could cause foreseeable and serious harm to the USGS, the DOI, and the public.”⁴⁷

The USGS Manual provides, “[T]he unpublished data and information that are gathered by USGS employees, volunteers, and contractors working on behalf of the USGS while conducting scientific and engineering investigations must not be publicly released unless the data and information meet the applicable requirements described and referenced in this chapter.”⁴⁸ Geologic, geophysical and biological data from private sources, “must be carefully safeguarded against disclosure.”⁴⁹ Similarly, work USGS performs for other agencies is to be shielded from

⁴⁴ USGS Manual 502.3.5.E and 502.5.4.A.

⁴⁵ *Id.* at 502.3.5.E.

⁴⁶ *Id.* at 502.5.3.C.

⁴⁷ *Id.* at 502.3.5.E.

⁴⁸ *Id.* at 502.5.3.A. (emphasis added).

⁴⁹ *Id.* at 502.5.5.B.

public disclosure.⁵⁰ These policies directly contravene the DQA, the DOI Guidelines, the OMB Peer Review Bulletin and the presidential memos and orders and the DOI Manual and orders addressed herein.

In violation of the authorities cited herein, USGS also directs peer reviewers not to disclose their results or conclusions. “[I]nformation distributed for peer review must carry the following statement requiring nondisclosure prior to the information being approved by USGS for release: ‘This draft manuscript is distributed solely for purposes of scientific peer review. Its content is deliberative and predecisional, so it must not be disclosed or released by reviewers.

USGS purports to have such a rigorous process for scientific integrity that the public is virtually instructed to accept USGS work without question or reproach.⁵¹ However, even brisk reviews of USGS work on GRSG raise serious questions about the integrity of the work, the underlying data behind it, and the peer review process that endorsed it. *See* Exhibits A and B, *gen.* Such secrecy is hardly consistent with the mandate of the DQA, the Guidelines and the presidential and departmental authorities cited herein. Rather, the agencies are directed to be transparent to ensure scientific integrity, objectivity and quality.

D. Conflicts of Interest with the Monograph and Other Key Documents

The Department of the Interior Manual (“DOI Manual”) defines a conflict of interest as “any personal, professional, financial, or other interests that conflict with the actions or judgments of those covered by this policy when conducting scientific and scholarly activities or using scientific and scholarly data and information because those interests may: (1) significantly

⁵⁰ *Id.* at 502.5.5.A.

⁵¹ *Id.* at 502.5.3.B.

impair objectivity; (2) create an unfair competitive advantage for any person or organization; or (3) create the appearance of either.”⁵²

A number of the relevant regulations and guidance stress the importance of independence⁵³ and the need to avoid conflicts of interest.⁵⁴ Among other things, independence means that a peer reviewer may not have been a contributor to the work product leading to the listing of a species and the peer reviewer has not been influenced by funding considerations. The National Academy of Sciences (“NAS”) considers financial interests, access to confidential information, reviewing one’s own work, public statements and positions, and employees of sponsors as problems to be avoided in its conflicts policy.⁵⁵

A small number of GRSG specialist-advocates have had a disproportionate influence on formulating federal policy including their overlapping participation in preparation of the Monograph. More diverse expertise and viewpoints are clearly needed. More importantly, these issues exhibit serious conflicts of interest in contravention to the DQA, the Guidelines and the additional authorities cited herein.

As recently as March 12, 2015, Reese, Beck, Holloran co-signed a letter to individual White House and DOI officials advocating for the most egregious regulatory restrictions in the

⁵² U.S. Department of the Interior Manual, available at: <http://www.doi.gov/pmb/eeo/directives/Departmental-Manual.cfm>; 305 DM 3.

⁵³ Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities 59 Fed. Reg. 34270 (Jul. 1, 1994); OMB Peer Review Bulletin; Memorandum for the Heads of Executive Departments and Agencies. 74 Fed. Reg. 10671 (Mar. 11, 2009), available at: <http://www.gpo.gov/fdsys/pkg/FR-2009-03-11/pdf/E9-5443.pdf> (<http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf>); Performance Work Statement for Scientific, Technical and Advisory Services (http://www.fws.gov/informationquality/peer_review/IDIQ_Performance_Work_Statement_17Nov2011.pdf); Information Quality Guidelines and Peer Review (http://www.fws.gov/informationquality/topics/InformationQualityGuidelinesrevised6_6_12.pdf).

⁵⁴ Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (<http://nationalacademies.org/coi/>); Final Information Quality Bulletin for Peer Review 70 Fed. Reg. 2664 (Jan. 14, 2005); Memorandum for the Heads of Executive Departments and Agencies (<http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf>); Department Manual, Part 305, Chapter 3 (<http://www.fws.gov/science/pdf/DOIScientificIntegrityPolicyManual.pdf>).

⁵⁵ Available at: <http://www.nap.edu/openbook.php?isbn=0309059437&page=9>

NTT Report and virtually threatening an ESA listing if such measures were not adopted. Other signatories included COT member Connelly, NTT member Rinkes and Monograph authors Garton and Braun. This interplay amongst close peers on the Monograph and the NTT and COT Reports cannot be understated.⁵⁶

Dr. Kerry Reese, and Dr. John W. Connelly, an author of the COT Report and editor of the Monograph, published eight papers together, including two papers in 2012 and four papers in 2011. All of these were included in the Monograph. Dr. Reese participated in no fewer than eleven presentations with Connelly, four with Gardner, another COT Report author, and four with Dr. Edward O. Garton. Garton et al. 2011 forms the very basis of the COT Report and is the most frequently cited paper therein. Dr. Reese received a \$255,203 grant from IDFG with Garton in 2011 and over \$1.3 million in sage-grouse funding including \$178,442 from USGS, the funding agency on the Monograph.⁵⁷

Dr. Jeffrey L. Beck has two papers with COT member Connelly. Dr. Beck authored numerous papers with other frequently cited sage-grouse biologists including Naugle, an author of the NTT Report. No financial support is listed in the information received by the Alliance via FOIA, but given that Beck has published 12 papers on the topic, such support could be expected to be significant.

Dr. Matthew J. Holloran is one of the most cited authors in the COT Report. He authored a 2011 Monograph paper with Connelly, and another with Connelly and Knick. Dr. Holloran also authored three papers with Connelly in 2006, 2009, and 2012. Dr. Holloran's Ph.D. dissertation concluded "currently imposed [natural gas] developmental stipulations are inadequate to protect the greater sage-grouse, and that stipulations need to be modified to

⁵⁶ These issues are illustrative. However, it should be noted Petitioners and the public do not have access to the reviewers or the reviewer comments on the Monograph.

⁵⁷ Scientific Peer Review of the Sage-Grouse Conservation Objectives Draft Report, Appendix A.

maintain populations within natural gas fields.”⁵⁸ Note the amount of financial support on six recent grants and contracts on sage-grouse totaled more than \$3.1 million. Funding sources were not listed. This indicates a bias by Dr. Holloran that calls into question his ability to perform an independent peer review. Holloran also coauthored a USGS Science Summary paper with Manier, Wood and Oyler-McCance of the USGS.

Dr. Terry A. Messmer reported no authorship conflicts with COT Report team members; however, he listed financial support for some 18 recent grants and contracts on sage-grouse totaling more than \$2.3 million. Dr. James S. Sedinger was an author with COT and NTT member Shawn Espinosa on a 2011 Monograph chapter and a 2010 paper. Grant and contract support includes \$40,000 on sage-grouse from BLM, and five grants and contracts totaling \$252,939 from FWS.

These are all indicative of serious conflicts of interest.⁵⁹ Moreover, Steve Knick, an editor of the Monograph and author or co-author of nine chapters within it; Dave Naugle from the Natural Resources Conservation Service (“NRCS”), author or co-author of four chapters in the Monograph; David Wood from BLM; Pat Diebert from FWS; and Shawn Espinosa from Nevada’s Department of Wildlife all served on the NTT which developed the NTT Report. Knick, Diebert, Wood, Espinosa and Naugle, among others, were involved in BLM’s last-minute efforts to bolster the science in the NTT Report. Please note the 2010 WBP decision cited the 2009 draft Monograph many, many times. The Monograph was finalized and published in 2011. This accounts for the year cited for Monograph chapters below.

⁵⁸ Holloran 2005.

⁵⁹ Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (<http://nationalacademies.org/coi/>); OMB Peer Review Bulletin; Memorandum for the Heads of Executive Departments and Agencies (<http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf>); Department Manual (“DM”) Part 305, Chapter 3 (<http://www.fws.gov/science/pdf/DOIScientificIntegrityPolicyManual.pdf>).

Garton et al. 2011 (chapter 16) was cited no fewer than 62 times in the 2010 WBP decision and 61 times in the COT Report; Hagen 2011 (chapter 8) was cited 15 times in the 2010 WBP decision and once in the COT and NTT Reports. Knick 2011 (chapter 13) was cited nine times in the 2010 WBP decision, four times in the COT Report and once in the NTT Report; Knick and Hanser 2011 (chapter 18) was cited 38 times in the 2010 WBP decision, eight times in the COT Report and six times in the NTT Report; Naugle et al. 2011 (chapter 21) was cited eight times in the 2010 WBP decision and three times in the NTT Report; and Schroeder et al. 2004 (chapter 23) was cited 18 times in the WBP decision; six times in the COT Report and once in the NTT Report; Walker and Naugle 2011 (chapter 10) was cited 48 times in the WBP decision and once in the NTT Report; and Wisdom et al. 2011 (chapter 19) was cited 41 times in the 2010 WBP decision, 12 times in the COT Report and two times in the NTT Report. Naugle et al. 2011a and Naugle et al. 2011b are cited six times in the NTT Report, and the opinion and bias found in Naugle 2011a seems to have been adopted by the NTT Report without citation of attribution. Naugle served as his own editor for Naugle et al. 2011a. His co-authors on the study included Doherty, Walker, Copeland, Holloran and Tack.

Doherty et al. 2008 was heavily relied upon by the NTT Report, albeit misrepresented or taken out of context 67% of the time. Doherty authored or co-authored three chapters of the Monograph. Naugle and Walker were co-authors on Doherty et al. 2008. Doherty co-authored at least three other papers with Naugle (Doherty et al. 2010a, Doherty et al. 2010b, and Doherty et al. 2011). Doherty and Holloran have been co-authors on at least one other paper.

Walker et al. 2007 was cited nine times in the NTT Report and twice in the COT Report. Walker authored or co-authored three chapters in the Monograph. Walker and Naugle 2011, a chapter in the Monograph, was cited in the NTT Report. Copeland co-authored one chapter in

the Monograph. Holloran 2005 was cited 12 times in the NTT Report, twice in the COT Report and 19 times in the 2010 WBP decision on GRSG. He authored or co-authored two chapters in the Monograph. Tack was cited three times in the NTT Report.

The NTT Report relied heavily on the Monograph. It uses 16 of the Monograph's chapters. Knick et al. 2011 was cited six times by the NTT Report and twice by the COT Report. Connelly was an author and editor of his own work in the Monograph, including specifically the paper by Garton et al. 2011 which he then cites and uses as the basis of the COT Report.

Hanser authored or co-authored seven chapters in the Monograph. Knick and Hanser 2011 (chapter 18 in the Monograph) was cited six times in the NTT Report, eight times in the COT Report and 38 times in the 2010 WBP decision. Knick et al. 2003 was cited once in the NTT Report and 14 times in the COT Report.

Braun was the technical editor on the Monograph and co-author of two chapters; and is the author, co-author, and editor (in some cases both author and editor) of at least 14 of the studies cited by the NTT Report. Dr. Braun was a paid consultant to the activist groups that petitioned to list GRSG and an active proponent for listing GRSG and Gunnison sage-grouse under the ESA and a self-proclaimed sage-grouse advocate. Braun is quoted in press releases and an op-ed advocating for federal listings.⁶⁰ Furthermore, Braun was the primary witness on GRSG conservation measures for Western Watersheds in litigation against BLM on the Pinedale and Craters of the Moon Land Use Plan Amendments.

Leu and Hanser 2011 was a chapter in the Monograph and was cited three times in the COT Report. Leu co-authored two chapters in the Monograph. Holloran co-authored a USGS

⁶⁰ Press Release, Biodiversity Conservation Alliance, *Sage Grouse Takes Center Stage in Oil and Gas Controversy*, (Feb. 26, 2003); Op-ed Denver Post (Nov. 14, 2014): http://www.denverpost.com/opinion/ci_26937943/overreach-sage-grouse-hardly.

Science Summary paper with Manier, Wood and Oyler-McCance of the USGS and two chapters in the Monograph. Skagen, another USGS employee, and Espinosa were listed as reviewers on the paper. Oyler-McCance has long been a listing advocate for GRSG and Gunnison-sage grouse and was a co-author of two chapters in the Monograph.

E. The Monograph Did Not Undergo Adequate nor Open Peer Review

The Monograph failed to undergo adequate peer review as required by the DQA, the Guidelines and the additional authorities discussed herein. Peer review is a process by which something proposed for research or publication is evaluated by a group of experts in the appropriate field.⁶¹ Peer review is used to ensure work meets appropriate standards,⁶² and ensure and maximize that the quality, objectivity, utility, and integrity of provided information meets the standards of the scientific and technical community.⁶³ Reviewers are not to be selected from among the authors' close colleagues, students, or friends. Here, the four pivotal chapters of the Monograph happen to contain the most flaws. *See* Exhibit A at 1.

The Monograph was compiled of only a limited variety of sources and without adherence to established peer-review standards. *See* Exhibit A at 2, 5.⁶⁴ As discussed above, the Monograph editors appear to have reviewed, edited and approved their own work for publication in violation of the DQA, the Guidelines and the additional authorities cited herein. *See* Exhibit A at 6.

⁶¹ Merriam Webster, an Encyclopedia Britannica Company, “peer review,” <http://www.merriam-webster.com/dictionary/peer%20review> (also: “a process by which scholarly work (such as a paper or a research proposal) is checked by a group of experts in the same field to make sure it meets the necessary standards before it is published or accepted”).

⁶² *Id.*

⁶³ Joshua Bolten, OMB, Memorandum for Heads of Departments and Agencies (M-05-03) http://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf (Dec. 16, 2004).

⁶⁴ Elsevier, Journal of Molecular Biology: Guide for Authors, <http://www.elsevier.com/journals/journal-of-molecular-biology/0022-2836/guide-for-authors>

1. Peer Review Standards

DOI's Information Quality Mission Statement provides, in pertinent part:

“In order to ensure the accuracy and integrity of its published scientific information, DOI follows a robust peer review process wherein the information undergoes internal peer review and is subject to public scrutiny. DOI, its bureaus and offices, and the National Invasive Species Council maintain the highest standards possible for published information to ensure integrity and transparency.”⁶⁵

Peer review of the Monograph was not subject to any public scrutiny whatsoever. And, as discussed above, USGS is the most secretive and least transparent of any DOI agency in direct violation of the DQA, the Guidelines and the additional authorities addressed herein.

The Monograph failed to meet the applicable peer review planning standards.⁶⁶ DOI Guidelines require not only that information be consistent with the Guidelines, but that the agency maintain an administrative record of review proceedings.⁶⁷ For influential information, DOI commits to provide “more rigorous review of the conclusions than the review performed by the originating office.”⁶⁸ USGS has not issued any such records for the Monograph and has certainly provided no evidence of the rigorous review required.

Government-wide guidance to peer review of government science is established in the “*Final Information Quality Bulletin for Peer Review*” issued by the Office of Management and Budget (OMB) of the Executive Office of the President (the “OMB Peer Review Bulletin”).⁶⁹ The OMB Peer Review Bulletin provides detailed guidelines for peer review of influential scientific information and applies more stringent peer review requirements to highly influential scientific assessments. It includes guidance on what information is subject to peer review, the

⁶⁵ Chief Information Officer, DOI Information Quality Mission Statement, <http://www.doi.gov/archive/ocio/iq.html> (emphasis added) (last updated Oct. 21, 2010).

⁶⁶ See Chief Information Officer, Department of the Interior Information Quality Mission Statement: DOI Bulletin for Peer Review, http://www.doi.gov/archive/ocio/iq_1.html.

⁶⁷ DOI Guidelines II.5.

⁶⁸ *Id.*

⁶⁹ *Id.*

selection of appropriate peer reviewers, opportunities for public participation, and related issues. Such is clearly applicable to the Monograph.

According to the OMB Peer Review Bulletin, the peer review shall be solely of scientific and technical matters.⁷⁰ Peer review typically evaluates 1) the clarity of hypotheses, 2) the validity of the research design, 3) the quality of data collection procedures, the robustness of the methods employed, 4) the appropriateness of the methods for the hypotheses being tested, 5) the extent to which the conclusions follow from the analysis, and 6) the strengths and limitations of the overall product.⁷¹

Here, the reviewers are unable to evaluate the quality of data collection procedures when they were not privy to that data. Hypothesis testing was noticeably absent for the Monograph chapters. As a result, the rigorous review required by the DQA, the Guidelines and the OMB Peer Review Bulletin was not completed for the Monograph despite its status as clearly influential scientific information and a highly influential scientific assessment. It was the key document relied upon by FWS in its 2010 WBP decision. Again, FWS cited four influential chapters of the Monograph no fewer than 174 times. *See* Exhibit A at 7. Where USGS disseminates influential scientific information or highly influential scientific assessments, OMB Peer Review Bulletin requirements must be met.⁷² Such was not the case here.

The USGS Manual defines scientific assessments as, “[E]valuation of a body of scientific or technical knowledge which typically synthesizes multiple factual inputs, data, models, assumptions, and/or implies best professional judgment to bridge uncertainties in the available

⁷⁰ NRC, *Applying OMB Peer Review Guidelines*, <http://www.nrc.gov/public-involve/ml051600303.pdf>

⁷¹ *See Id.* at 3.

⁷² USGS Manual 502.3.4.E (emphasis added).

information.”⁷³ The Monograph clearly qualifies as a highly influential scientific assessment. USGS is to provide a peer review agenda for such information.⁷⁴

In violation of the DQA, the OMB Peer Review Bulletin, the Guidelines and the USGS Manual, we find no reference to the Monograph nor to USGS papers relied upon as chapters within it on the USGS Peer Review Agenda.

2. USGS Did Not Meet its Review and Approval Process

Information adopted and disseminated by USGS allegedly, “passes through many quality assurance reviews, including rigorous peer review, prior to approval and release to ensure the reliability, objectivity, and integrity of the information.”⁷⁵ Such was not the case with the Monograph. In reference to its peer review planning process requirements, DOI directs readers to links⁷⁶ to its agencies’ websites. Notably, the USGS peer review link contains absolutely no reference to peer review on the Monograph.⁷⁷ On a related note, we question whether USGS demonstrated in a Paperwork Reduction Act submission to OMB that the proposed collection of information in the Monograph Report was collected, maintained and used consistent with the DQA Guidelines.⁷⁸

Chapter 502.3 of the USGS Manual, “Fundamental Science Practices: Peer Review” was established on December 16, 2011 by the Office of Science Quality and Integrity.⁷⁹ The purpose and scope of Chapter 502.3 of the Manual provides:

“Peer review, as a cornerstone of scientific practice, validates and ensures the quality of published USGS science. This policy updates the Fundamental Science

⁷³ <http://www.usgs.gov/usgs-manual/500/500-25.html>

⁷⁴ USGS Peer Review Agenda. Available at: http://www.usgs.gov/peer_review/ (emphasis added).

⁷⁵ USGS Guidelines III.3.

⁷⁶ It should be noted that the most recent Peer Review Report referenced by DOI in its link for “Information Quality and Peer Review Reports,” was from FY2010.

⁷⁷ http://www.usgs.gov/peer_review/

⁷⁸ DOI Guidelines VI.

⁷⁹ <http://www.usgs.gov/usgs-manual/500/502-3.html>.

Practices (FSP) requirements for peer review of USGS information products and applies to all USGS scientific and technical information, whether published by the USGS or an outside entity.”⁸⁰

These provisions clearly apply to the Monograph. Citing the OMB Guidelines, the OMB Peer Review Bulletin, and DOI’s Guidelines as authority, the Manual adopts a means to “safeguard both excellence and objectivity of science through peer review.”⁸¹ However, the Monograph was compiled of only a limited variety of sources and without adherence to established peer-review standards. *See* Exhibit A at 5. The required safeguards were totally lacking.⁸²

In addition peer reviewers are directed to follow the guidance in the USGS Peer Review Checklist for a framework to summarize their work.⁸³ Here, there are significant issues with peer review on the Monograph. *See* Exhibits A and B, *gen.*

3. Conflicts of Interest in the Monograph and its Peer Review

The OMB Peer Review Bulletin requires reviewers are selected based upon 1) expertise: to ensure that the selective reviewer has the knowledge, experience, and skills necessary to perform the review, 2) balance: to represent a diversity of scientific perspective relevant to the subject, 3) independence: to ensure that the reviewer was not involved in producing the draft document to be revised, 4) conflict of interest: to examine prospective reviewers’ potential financial conflict including significant investments, consulting arrangements, employer affiliations, and grants/contracts.⁸⁴

Unfortunately, the USGS Manual virtually promotes conflicts of interest in peer reviews. Authors of information disseminated by the agency are to suggest or nominate peer reviewers for

⁸⁰ <http://www.usgs.gov/usgs-manual/500/502-3.html>

⁸¹ *Id.*

⁸² *See* USGS Manual 502.3.5.C.

⁸³ USGS Manual 502.3.5.C.

⁸⁴ http://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf

their own work.⁸⁵ This inherently leads to conflicts and a lack of independence in violation of the DQA and its Guidelines, the OMB Peer Review Bulletin and NAS standards. Authors are directed to consult with their supervisors or approving officials regarding the appropriateness of peer reviewer selections.⁸⁶

CESAR exposed these and other issues in its scathing review of the Monograph.⁸⁷ For example, CESAR found the Monograph suffers from: 1) significant mischaracterization of previous research; 2) substantial errors and omissions; 3) lack of independence in authorship and peer review; 4) methodological bias; and 5) lack of reproducibility.⁸⁸ Other issues included: authorship shared with peer reviewers listed in acknowledgements, authorship shared with Monograph editors, grant support from FWS and USGS; significant financial support for GRSG research (Drs. Holloran and Reese listed millions in federal support);⁸⁹ and authorship with other influential GRSG authors.

The OMB Peer Review Bulletin requires agencies to adopt or adapt the National Academy of Sciences policy and procedures depicted in the “*Committee Composition and Balance and Conflicts of Interest*”.⁹⁰ According to this policy, it is essential that the work of committees of the institution used in the development of reports not be compromised by any significant conflict of interest. For this purpose, the term "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it (1) could

⁸⁵ USGS Manual 502.3.6.F.

⁸⁶ *Id.*

⁸⁷ <https://www.hightail.com/download/UW14OU1VMVh0TWxYd3NUQw>.

⁸⁸ *Id.* at 42.

⁸⁹ Reese listed over \$6.3 million in funding and in-kind contributions, but failed to account for precisely how much can be attributable to sage-grouse.

⁹⁰ See *Id.* at 10.

significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.⁹¹ Such is clearly the case here.

Again, USGS' reliance on such a select group of advocates is clearly contrary to the DQA, the Guidelines, the DOI Manual, NAS policy and secretarial orders and presidential direction discussed herein.⁹²

4. Peer Review Failed to Undergo Public Review and Comment

In this case, the USGS failed to produce an administrative record for peer review as required by the DQA and the Guidelines. Further, DOI provides no evidence that it rigorously reviewed the Monograph as required. Neither did the USGS submit peer reviews on the Monograph to the public for review and comment. As referenced above, this information should have already been publicly available.

The OMB Peer Review Bulletin⁹³ established government-wide guidance to improve the peer review of scientific documents, providing specific requirements for “influential scientific information” and “highly influential scientific assessments.” Under these definitions, the reports in question clearly necessitate higher minimum requirements with respect to public transparency. These requirements include; peer review prior to dissemination, by reviewers with expertise, balance, independence, and no conflict of interest. Also, “[t]he agency shall disclose the names of the reviewers and their organizational affiliations in the report.”⁹⁴ Above and beyond these requirements, “an agency conducting a peer review of a highly influential scientific assessment

⁹¹ The National Academies, Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports, http://www.nationalacademies.org/coi/bi-coi_form-0.pdf.

⁹² Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (<http://nationalacademies.org/coi/>); Final Information Quality Bulletin for Peer Review 70 Fed. Reg. 2664 (Jan. 14, 2005); Memorandum for the Heads of Executive Departments and Agencies (<http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf>); Department Manual (“DM”), Part 305, Chapter 3: <http://www.fws.gov/science/pdf/DOIScientificIntegrityPolicyManual.pdf>.

⁹³ 70 Fed. Reg. 2664 (Jan. 14, 2005).

⁹⁴ *Id.* (emphasis added).

must ensure that the peer review process is transparent by making available to the public the written charge to the peer reviewers, the peer reviewers' names, the peer reviewers' report(s), and the agency's response to the peer reviewers' report(s)."⁹⁵ Again, USGS flagrantly violates this direction in its Guidelines and policies. By contrast, if a FWS peer review process is challenged under the DQA, the peer reviewer's name(s), the peer reviewer's report(s), and the agency's response to the peer reviewer's report(s) must be made public.⁹⁶ It should be noted the USGS did not post the Monograph (November of 2009) until months after it was presented to high-level staff at the U.S. Department of the Interior (July of 2009).

5. Persuasive Showing Overcomes the Presumption of Objectivity

As the "sole science agency for the Department of the Interior," USGS commits to maintaining the integrity of information and science employed to make sweeping decisions, as "the USGS employs the best and the brightest experts who bring a range of earth and life science disciplines to bear on problems."⁹⁷

The OMB guidelines state that information will generally be presumed to be objective if data and analytic results have been subjected to formal, independent peer review; however, this presumption is rebuttable "based on a persuasive showing by a petitioner in a particular instance."⁹⁸ The issue is what will be considered a "persuasive showing" that will overcome the presumption of objectivity under the proposed agency guidelines. When technical information is subject to "formal, independent, external peer review, the information may generally be presumed to be of acceptable objectivity."⁹⁹

⁹⁵ *Id.*

⁹⁶ *Id.* at 15.

⁹⁷ USGS, About USGS, <http://www.usgs.gov/aboutusgs/> (last visited Jan. 6, 2015 at 3:05 PM).

⁹⁸ 67 Fed. Reg. 8452, 8454 (Feb. 22, 2002).

⁹⁹ http://www.whitehouse.gov/omb/fedreg_reproducible (effective Jan. 3, 2002).

An example of such a review is the process used by scientific journals.¹⁰⁰ However, even journal peer review does not necessarily equate to quality. As OMB has recognized, there are well-documented examples of flawed science published in respected journals.¹⁰¹ Moreover, Fang et al. 2012, a paper published in the Proceedings of the National Academies, points to a growing problem with a growing number of retractions of published scientific papers because of error, fraud, plagiarism, and other forms of misconduct. Their work recognizes that, even after errors or misconduct have been identified, many papers continue to be cited and actual retraction can take years. Accordingly, the presumption of objectivity and adequate peer review is rebuttable.¹⁰² In this case, information submitted by the Petitioners, including, but not limited to the significant conflicts of interest and failure to adhere to DQA standards overcome such a presumption.

For influential information, DOI committed to a high degree of transparency about data and methods to facilitate reproducibility.¹⁰³ USGS has not met the applicable standards for peer review. Serious conflicts issues abound with regard to the reviewers of the Monograph.

6. The Monograph Failed to Address Reviewer Criticisms

The USGS did not document how it addressed several comments and issues raised by peer reviewers in the Monograph. *See* Exhibit A at 8, and 13.¹⁰⁴ The Monograph certainly failed to address or incorporate significant issues raised by reviewers from the State of Colorado. *See* Exhibit A at 8.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ DOI Guidelines VII.3.b.ii.

¹⁰⁴ (“ In addition to our own independent scientific review, CESAR also considered reviews conducted by scientists commissioned by the State of Colorado whose comments were ignored by the publishers and editors of the monograph. These scientists identified most of the same flaws in the work identified by our staff.”)

Scientists and scholars are required to “place quality and objectivity or scientific and scholarly activities and reports ahead of results or personal gain or allegiance to individuals or organizations.”¹⁰⁵ Scientists and scholars are further required to “welcome constructive criticism of [their] scientific and scholarly activities and ... be responsive to their peer review” and “provide constructive, objective, and professionally valid peer review of the work of others, free from any personal or professional jealousy, competition, non-scientific disagreement, or conflict of interest.”¹⁰⁶ In this case, significant issues raised during the peer review process were either ignored or not adequately addressed in the final Monograph. *See* Exhibit A at 8, and 13.

For example, One reviewer noted that it was questionable how scientific sources were used to establish risks and that there were limited (if any) direct relationships between habitat characteristics and population change.¹⁰⁷ Similarly, citations to Connelly *et al.* 2011a for the proposition that large seasonal and annual movements emphasize the need for large landscapes to support viable populations are suspect.¹⁰⁸ Connelly *et al.* 2011 is fraught with errors of omission and inaccuracies. *See* Exhibit B at 135-137. Connelly *et al.* 2011 is often cited for the proposition that programs for conservation on private lands would need to be implemented in combination with programs affecting effective rehabilitation and restoration on public lands.¹⁰⁹

Garton *et al.* is another example of deeply flawed work that was hotly criticized by reviewers including peer reviews for the *Studies in Avian Biology* journal and independent peer reviews provided after initial acceptance but before the galley proof stage (both provided by the State of Colorado). The failure to fully address and/or incorporate all reviewer comments fails the standards of the DQA, the Guidelines and the OMB Peer Review Bulletin. In addition, it

¹⁰⁵ DOI Guidelines VII.3.7(B)(1).

¹⁰⁶ *Id.* at 3.7(B)(5) – (6).

¹⁰⁷ *Id.* at 7.

¹⁰⁸ *See, e.g.* COT Report at 8-9.

¹⁰⁹ DEIS at 945.

raises serious questions about compliance with the presidential direction, DOI orders on scientific integrity and the USGS' Guidelines and policies. *See* Exhibit B at 59-86, 90, 94, 98, 136, and 139.

F. The Monograph Was Not Based on the Best Available Science

The Monograph failed to meet DQA standards for the best available data. Agencies are directed¹¹⁰ to adopt congressional standards of scientific integrity stemming from the Safe Drinking Water Act (“SDWA”),¹¹¹ for agency action based on science, the SDWA standards must entail:

(i) the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices; and (ii) data collected by accepted methods or best available methods (if the reliability of the method and the nature of the decision justifies use of the data).¹¹²

The Monograph and the studies cited therein fail to meet the best available science standards. *See* Exhibits A, B and C, *gen.* Significant uncertainties are ignored and conjecture and opinion are presented as facts, ie the presence and intensity of threats, and their impacts to GRSG. *Id.*

Executive Order 13562 also requires that regulations “must be based on the best available Science” and that costs of regulation are clearly justified by the benefits¹¹³ In this case, USGS cannot possibly justify the alleged benefits of measures recommended in the Monograph (such as increased federal controls over public and private lands (as discussed below and in the attached) against the dramatic societal costs they would entail. USGS is directed to select approaches that

¹¹⁰ OMB Guidelines V3.b.ii.B.ii.C.

¹¹¹ 42 U.S.C. § 300g-1(b)(3)(A).

¹¹² Available at: http://www.whitehouse.gov/omb/fedreg_reproducible

¹¹³ Federal Register, Vol. 76, No. 14 (January 21, 2011) at 3821. Executive Order 13563: *Improving Regulation and Regulatory Review*, <http://www.gpo.gov/fdsys/pkg/FR-2011-01-21/pdf/2011-1385.pdf>.

impose the least burden on society and to identify alternatives to direct regulation. Here, USGS did not even attempt to do so.

Unfortunately, the Monograph does not qualify as a series of unbiased analyses and comprehensive review of all of the available scientific literature about conservation of the species. Instead, it provides a limited and selective review of the scientific literature and subjective post-hoc interpretations of analytical results. Hypothesis testing was not used in any of the studies. *See Exhibits A and B, gen.* As a result, outdated information and beliefs are perpetuated in the Monograph, and all resulting agency reliance thereon by BLM, USFS and FWS are in violation of the DQA, the Guidelines and this presidential direction to the agencies. *See Exhibit A at 12.*

Opinion and post hoc rationale guided authors of the Monograph, including Knick and Connelly 2009, 2011. *See Exhibit A at 10-11:*

“evidences a belief that natural phenomena are governed by a predetermined purpose as opposed to blind natural laws. For such views to be expressed as a ‘unifying concept’ by the editors and authors of an influential scientific monograph is ‘highly unusual.’”

Put Simply, these are pseudoscientific, teleological beliefs that have no place in a USGS sponsored and authored “scientific” product.

The introduction section of the Monograph opines that other factors associated with habitat loss and fragmentation are summarized by Knick *et al.* (2011) and include conversion of sagebrush for agriculture, the expanding human population in the West and urban development in sagebrush habitats, vegetation treatments to enhance grazing for livestock, and impacts from

wild ungulates and free-roaming equids (horses and burros).¹¹⁴ As noted in Exhibits A and B herein, this study significantly misrepresents works cited therein.

The Monograph habitually mischaracterizes previously conducted research, contains substantial errors and omissions, lacks independence in authorship and peer review, contains methodological bias, and categorically lacks reproducibility. *See* Exhibit A at 42. It is rife with misrepresentation, selective citation of information, misuse of citations and reliance on opinion rather than the scientific method. *See* Exhibits A and B, *gen.*

There are substantial technical and mathematical errors in the Monograph as well as many misleading citations. One of the most egregious examples of this failure was reliance on Garton et al. 2011. This paper contains mathematical errors and built-in methodological bias. *See* Exhibit C: Peer Review and Information Quality Breakdown. Neither the underlying data or computer code were ever made public. And the USGS never documented its responses to independent peer review comments commissioned by the State of Colorado. *Id.*

To the extent the agency believes it cannot disclose certain information in the Monograph, robustness checks are required for ensuring compliance with the DQA because the public will not be afforded any other mechanism for determining objectivity, utility and reproducibility. In fact, the “agencies shall apply especially rigorous robustness checks to analytic results and document what checks were undertaken.”¹¹⁵ DOI Guidelines mirror this requirement, but the Monograph did not undergo rigorous checks.

Unfortunately, the Monograph and many of the studies upon which it relies have significantly flawed assumptions, questionable analytic models and questionable statistical

¹¹⁴ Monograph Introduction at 15: Knick et al., *Greater Sage Grouse and Sagebrush: an Introduction to the Landscape*, <http://web.archive.org/web/20100527171636/http://sagemap.wr.usgs.gov/Docs/SAB/Chapter01.pdf>; *see also* Chapter 15,

<http://web.archive.org/web/20100527165725/http://sagemap.wr.usgs.gov/Docs/SAB/Chapter15.pdf>

¹¹⁵ OMB Guidelines V3.b.ii.B.ii (emphasis added).

procedures. *See* Exhibits A and B, *gen.* As a result, the robustness checks required by the DQA and the Guidelines are missing or inadequate.

While scientific integrity and transparency in agency decision making are clearly enumerated priorities for this administration, the Monograph falls far short of these goals. *See* Exhibit A at 13. For example, the Monograph did not employ the scientific method. Hypothesis testing was not utilized by any of the authors of the 25-chapter Monograph. “Instead, the authors rely on *post hoc* interpretation of results or purely descriptive approaches.” *Id.* A search for the terms ‘hypothesis’ and ‘hypotheses’ indicates they appear only six times in the 25 chapters; and then only to describe the work by other researchers in citations. *Id.* Accordingly, it runs counter to the DOI Manual on Scientific Integrity, the presidential orders discussed above, as well as the DQA and its Guidelines.

The DOI Manual defines the scientific method as, “[A] method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested in a manner specified by documented protocols and procedures.”¹¹⁶ As discussed above, and in the attached exhibits, the Monograph falls short of these requirements. In addition, the Monograph is speculative in terms of effectiveness, based on subjective interpretation of results, does not address the primary cause and effect mechanisms limiting GRSG, and will likely do nothing for the GRSG by promoting passive rather than active management.

For all of the reasons addressed herein, the Monograph fails the transparency and reproducibility standards of the DQA, the Guidelines, and the presidential direction to agencies on scientific integrity and transparency.

¹¹⁶ DOI Manual, 305 DM 3.5(N).

G. The Monograph is Biased and Lacks Objectivity

As discussed in detail in Paragraph IV below, the Monograph suffers from: significant mischaracterization of previous research; substantial errors and omissions; lack of independence in authorship and peer review; methodological bias; and a lack of reproducibility. The Monograph has been characterized as an advocacy document for sagebrush preservation. *See* Exhibit A at 12. Editor Dr. John Connelly's bias is apparent. Connelly signed the *Letter from Biologists to the United States Senate Concerning Science in the Endangered Species Act* ("the Letter") exclusively to bolster the ESA.¹¹⁷ As discussed below, Connelly, Garton, Braun and Reese (all Monograph authors) also recently lobbied the White House directly for greater restrictions on public land use in the name of GRSG conservation.

For all the reasons addressed herein, the Monograph is not presented in an accurate, clear, complete and unbiased manner pursuant to the DQA and applicable Guidelines.¹¹⁸

IV. Specific Issues with Chapters in the Monograph

Generally, the Monograph suffers from: significant mischaracterization of previous research; substantial errors and omissions; lack of independence in authorship and peer review; • methodological bias; and a lack of reproducibility. *See* Exhibit A at 42. Petitioners have not addressed each and every chapter of the Monograph. Rather, Petitioners reference specific issues with specific chapters below:

A. Monograph Chapter 1, *Greater Sage-Grouse and sagebrush: an introduction to the landscape*, (Steven T. Knick and John W. Connelly)

The Monograph's introductory chapter, *Greater sage-grouse and sagebrush: an introduction to the landscape* (Knick and Connelly 2009, 2011) summarizes previous research

¹¹⁷A *Letter from Biologists to the United States Senate Concerning Science in the Endangered Species Act* at 9 (March 2006).

¹¹⁸ *See* OMB Guidelines V(3)(a).

and sets the context for subsequent chapters. *See Exhibit A at 9.* In many cases, Monograph editors Steve Knick and John Connelly appear to have reviewed, edited and approved their own work for publication. *See Exhibit A at 6.* For example, Knick (USGS) authored or co-authored nine chapters of the Monograph's 25 chapters. Connelly (Idaho Game and Fish) authored or co-authored seven chapters of the Monograph.

This chapter has been characterized as, "advocacy document expressing the authors' preference for sagebrush ecosystem protection." *See Exhibit A at 12.* The authors, Knick and Connelly, place significant importance on their own work. Over one-third of the citations in this chapter are papers or reports by Knick or Connelly. *See Exhibit A at 9.*

There were also real issues with peer review of this chapter. The listed reviewers (Naugle, Rotenberry, and Dobkin) were co-authors on other papers in the Monograph (Naugle authored three chapters, including one he co-authored with Knick and Connelly), or co-authors of previous papers with Knick and Connelly. *See Exhibit A at 9.* This peer-review fails to meet DQA, DOI and OMB peer review standards as discussed above.

Aside from the concerns inherently raised by the chapter's authorship and lack of independent peer review, Knick and Connelly repeatedly paint an incomplete view instead of a scientifically and factually accurate presentation. For example, Knick and Connelly present a seemingly extensive list of potential threats to sage grouse, including: 1) the conversion of sage brush to croplands resulting in the reduction, elimination or fragmentation of sagebrush; 2) development of oil and gas resources; 3) exploration and development of wind and geothermal energy; 4) livestock grazing; 5) urbanization and increasing human densities "as people choose to live near wilderness and recreation areas"; 6) new corridors proposed for energy transmission; 7) road installation; 8) increasing outdoor recreation including off highway vehicles and hiking;

and 9) the “human footprint”. *See* Exhibit A at 9-11. But these alleged threats are speculative because the effect size and importance of each of these factors is not quantified. *See* Exhibit B at 8-9. Discussion of potential cause and effect mechanisms is also lacking.

Moreover, this chapter does not address how harvest and predation impact GRSG. This is significant given the high harvest rates cited in Chapter 6 of the Monograph and literature on the significant affects of predation on GRSG as discussed extensively below. *Id.*

Knick and Connelly also recommended an enormous “Sage Grouse Conservation Area” far beyond where the species are currently or were historically found with a 50km buffer around leks and restrictions within the bird’s alleged “historic range” prior to European settlement. *See* Exhibit A at 10.

However, the authors provide no data nor evidence to support their recommendations. Specifically, the authors wrongly allege a loss of half of historic sagebrush habitat with zero supporting data on what constitutes the historic habitat and invalid assumptions that simply inflate their estimates. *See* Exhibit A at 18. The pre-European distributions of GRSG are much more uncertain than Knick suggests. (e.g. Connelly et al. 2004; Schroeder et al. 2004). *See* Exhibit A at 12. This uncertainty stems from: an incomplete historical record; imprecise estimates of sagebrush extent which are impossible to know without actual data; and the historic absence of GRSG from northern Montana, as noted in the absence of sage grouse from the Lewis and Clark expedition record and later records.¹¹⁹

The authors also appear biased against multiple uses of public lands and seem to advocate for stricter regulation, even on private land. For example, Knick bemoans, “wildlife conservation is not the exclusive or dominant objective on any major federal lands... Consequently, conservation objectives often compete with commodity production and non-

¹¹⁹ *Id.*

consumptive uses.” Connelly’s bias in favor of species’ listings under the ESA may also be an issue. For example, Connelly signed the *Letter from Biologists to the United States Senate Concerning Science in the Endangered Species Act* (“the Letter”) exclusively to bolster the ESA.¹²⁰ Authored by biologists acting as ESA advocates, the Letter aimed to convince the U.S. Senate that the ESA is both effective and important, notwithstanding its abysmal record, less than 2%, in actually recovering species.¹²¹

There are similar issues with this chapter in regard to claims about the effects of habitat fragmentation, alleged loss of habitat connectivity, conversion to agriculture, urbanization, infrastructure, invasives, and pinyon-juniper encroachment. *See* Exhibit A at 19-20.

The authors’ proposed 50km buffer increases the area of their proposed “Sage Grouse Management Area” by over 450,000km² without supporting evidence. The authors then translate opinion “into an unsupported policy rationale for federal regulation across eleven states....” As a result, “[S]peculative models are substituted for lack of historic data on sagebrush extent and sage grouse distribution, and are the basis of postulated historic habitat in the monograph.” *See* Exhibit A at 10-12.

B. Monograph Chapter 3: *The Legal Status of Greater Sage Grouse: Organizational Structure of Planning Efforts*, (Stan J. Stiver)

In this case, the author exhibits bias in his praise for litigious environmental groups while ignoring the significant contributions of industries and ranchers to conservation efforts. *See* Exhibit B at 14-15. The author also seems to praise the ESA listing petitions filed on GRSG casting further doubt on his objectivity and independence. Stiver also cites Chapter 6 of the

¹²⁰ *A Letter from Biologists to the United States Senate Concerning Science in the Endangered Species Act* at 9 (March 2006).

¹²¹ Doc. Hastings, 112th Congress, Oversight Hearing on the Endangered Species Act: How Litigation is Costing Jobs and Impeding True Recovery Efforts,” (Dec. 6, 2011), available at: <http://naturalresources.house.gov/calendar/eventsingle.aspx?EventID=270315>

Monograph for the erroneous proposition that predation and harvest are significant to individuals or local groups but not significant to populations. Predation and harvest are discussed extensively below. This bias is not befitting of a supposedly scientific document.

C. Monograph Chapter 4: *Characteristics of Greater Sage-Grouse Habitats: A Landscape Species at Micro- and Macro Scales*, (John W. Connelly et al.)

This paper does not address important issues that would influence the study's conclusions. First, the paper does not address one of the most ubiquitous hazards to GRSG survival: wire fencing. This is a hazard to GRSG because they fly low and fast. Exhibit B at 18. Fences also pose a predation risk from perching raptors.¹²² FWS devoted an extensive discussion to this hazard in its 2008 Interim Status Update¹²³ and Environmental Defense has issued a white paper on the subject.¹²⁴ See Exhibit B at 17-19.

Other obvious yet unmentioned hazards include hunting harvest, which occurs across most of sage grouse habitat; and predation, which only received one mention in the context of nest predation. In contrast, and in evidence of bias, the effects of energy development are mentioned three times. The paper also fails to provide other references that suggest that GRSG have a broader habitat tolerance than just sagebrush.

D. Monograph Chapter 6: *Harvest Management for Greater Sage-Grouse: A Changing Paradigm for Game Bird Management*, (Reese and Connelly)

This chapter provides a summary of the history of GRSG hunting and harvest rates from the states that allow hunting (only Washington State and Canada do not allow GRSG hunting). See Exhibit B at 22-24. If the species is in decline, why are we allowing harvest at all? If there is a desire to maintain harvest for cultural reasons, then why not limit harvest to male sage grouse only, or to populations that are stable? Hunting is a major source of female sage grouse

¹²² *Id.* at ¶4.1.

¹²³ USFWS 2008.

¹²⁴ Environmental Defense 2009.

mortality. This would suggest a need for limiting the hunting of female sage grouse in order to avert population level declines.

While the authors aver there are no studies that indicate population-level impacts from sage grouse hunting, they acknowledge that reliable population data are not available. “Given the uncertainty in abundance estimates for breeding season populations, expecting any state to adequately determine size of any population of Greater Sage-Grouse in fall is not realistic.”

E. Monograph Chapter 8: *Predation on Greater Sage Grouse: Facts, Process, and Effects*, (Hagen)

This chapter was cited 15 times in the WBP decision, once in the NTT Report and once in the COT Report. It summarizes literature and unpublished research about predation. The paper criticized most studies that reported predator management's positive effects and concluded that predator management effectiveness was short term. Not only does Hagen (2009, 2011) appear biased in his presentation of research, but this paper also represents an outdated view of predation on GRSG (and solutions to it). The outdated, but oft-repeated, narrative that predation can only be controlled indirectly through landscape-level management is truly mistaken as discussed at length below. *See* Exhibit B at 29-30.

F. Monograph Chapter 9: *Parasites and Infectious Diseases of the Greater Sage-Grouse*, (Christiansen and Tate)

This chapter is a summary of literature and unpublished information on parasites and infectious disease in Sage Grouse. It paints a simplistic picture of west Nile virus ("WNV") epidemiology and fails to discuss implications of recent literature. The paper improperly characterizes GRSG susceptibility to WNV as “extreme.” Exhibit B at 32-33. Yet the authors do not acknowledge that laboratory-confirmed disease incidence data from the Centers for Disease Control show a decrease in WNV infections, across species, since 2004.

G. The Monograph Chapter 10: *West Nile Virus ecology in sagebrush habitat and impacts on greater sage-grouse populations, (Walker and Naugle)*

This Monograph chapter was cited 48 times in the 2010 listing decision. This chapter fails to acknowledge the situation has changed with WNV both as a result of reduction in occurrence and in terms of the mitigation measures implemented. It presents a biased and outdated view which assumed many die offs were the result of WNV without any testing data at all. Verifiable data from the Center for Disease Control (“CDC”) has shown that this threat is not uniform across the range and the threat has largely subsided since a peak in 2004. *See Exhibit B at 35 and 37-41.*

The papers also suggest, “[I]ncreasing temperatures associated with changing climate may exacerbate WNV risk/or sage-grouse” with no support nor evidence as to predicted rates of alleged temperature increases. As CESAR summarized, “Walker and Naugle’s paper is based on outdated information and, in light of recent changes, overstates the influence of oil and natural gas development in providing mosquito breeding habitat....” This chapter is rife with personal opinion and lacking in data and analysis. *See Exhibit A at 34-35.*

The entire data set used to allegedly determine WNV occurrence is not publicly available. The authors exhibit bias against productive use of public lands such as oil and natural gas and agriculture by exaggerating alleged impacts while ignoring threats to the species such as hunter harvest and predation. In regards to climate change, the authors also exhibit bias in their failure to acknowledge that populations naturally fluctuate as a result of weather patterns and other factors as discussed below. This chapter twice addressed repeated attempts to list GRSG under the ESA without acknowledging these were made by advocacy organizations rather than scientific organizations. *See Exhibit A at 35-37.*

This paper dedicates only ten lines of text to results, and those results are not mentioned in the discussion and recommendations. Paradigms are outdated and do not make use of recent epidemiological research on WNV and mosquito control measures. *See* Exhibit B at 37. The risk of artificial reservoirs such as CBM ponds for WNV were overstated, particularly in light of current regulations for mosquito control at ponds associated with energy development.

While the authors are correct about the need to monitor GRSG populations for WNV mortality, there is a need for more clear-cut criteria for what constitutes WNV mortality in order to prevent misreporting false-positives. The authors are cautious in their view of mosquito control measures, but one author (Walker) previously expressed far more optimistic views in testimony before the Colorado Oil and Gas Conservation Commission.¹²⁵

H. Monograph Chapter 13: *Ecological influence and pathways and land use in sagebrush* (Knick, Hanser, Miller, Pyke, Wisdom, Finn, Rinkes and Henny)

This chapter was cited 58 times in the 2010 listing decision. It discusses and analyzes the effects of nearly every conceivable human activity on GRSG including hypothetical ones which the authors assume have a negative effect. Rather than accurately representing studies cited, the authors substitute their own values to delineate huge hypothetical “effect areas” for each type of human activity. For example, they use a 3km buffer around oil and gas operations when none of the studies cited stand for such a proposition. Exhibit A at 39. Further, the authors fail to include data to support their assertions. Depictions of pre-European sage grouse distribution include large areas of non-habitat and exclude historic sage grouse occupancy that was clearly outside of sagebrush habitat. Citing Schroeder et al. (2004), Knick et al. surrounds this enormous and artificial range with a 50km “buffer” thereby greatly *overestimating* the area

¹²⁵ (Walker “testified in his official capacity as Avian Research at the Colorado Division of Wildlife, before the Oil and Gas Commission of the State of Colorado on DOCKET NO. 0803-RM-02. In that testimony, Walker spoke favorably about how the proposed rule would control mosquitoes that vector West Nile virus at water sources associated with energy development.”).

in which sage grouse have been allegedly negatively affected by human development. *See* Exhibit A at 38-40.

While the authors purportedly allowed public access to their underlying data on the USGS Sagemap site, the CESAR authors were unable to find it there. Accordingly, its results are not repeatable and verifiable. *See* Exhibit A at 40.

The authors are often cited for the mistaken proposition that connectivity is a limiting factor for GRSG. However, they erroneously treat leks which have moved due to disturbance as if they were extirpated. Additionally, the authors re-sampled their data rendering replication untenable. However, the authors failed to acknowledge that this rescaling data (from a 30m resolution originally to a 540m resolution) could be expected to inflate the effects of disturbance. For these reasons, and other substantive issues, it falls far short of the best scientific and commercial data available.

I. Monograph Chapter 14: *Influences of the Human Footprint on Sagebrush Landscape Patterns: Implications for Sage Grouse Conservation*, (Leu and Hanser) ¹²⁶

This Monograph chapter is cited three times in the COT Report for the proposition that fragmentation is the primary cause of population declines and that GRSG avoid anthropogenic disturbances as opposed to natural disturbances. This chapter utilizes a complex spatial analysis to predict impact of the “human footprint” on sagebrush habitat.

The data used in the paper relies upon model inputs, however, the authors do not address any error associated with these borrowed inputs or use statistical methods that address the error variance. In fact, the terms “error,” “uncertainty,” and “confidence interval” are absent from the paper. The authors’ results are deemed supportive of those obtained by other authors in the

¹²⁶Leu, M. and S.E. Hanser Influences of the human footprint on the sagebrush landscape patterns: implications for sage-grouse conservation. Pp. 253-272 in S.T. Knick and J.W. Connelly (eds). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38). University of California Press, Berkeley, CA.

Monograph, however no criteria were provided that would potentially falsify previous conclusions.

The size of the affected areas in the paper was derived from one or a few studies, and improperly applied cross the entire range of the sage grouse. This is a questionable one-size-fits-all approach to quantifying potential disturbance. *See* Exhibit B at 54. Moreover, the measurement techniques concerning the spatial attributes of land intervals were created with fractals, not Euclidean geometry.¹²⁷ Other authors such as Halley et al. 2004 have raised issues as to whether these models accurately represent real-world situations, and the conditions under which its use may be questionable.

The authors also erroneously believe raven control to be ineffective and suggest that all future transmission lines follow existing high impact corridors, an expensive proposition to be based on surmise. Their corvid (e.g. raven, crow, and magpie) and domestic cat and dog predator risk models (regressions of probability of occurrence vs. distance from human habitations) were based on extremely limited data (4, 2, and 3 data points respectively) and with no tests of significance or confidence intervals.

J. Monograph Chapter 16: *Greater Sage-Grouse population dynamics and probability of persistence*, (Garton, Connelly, Hagen, Horne, Moser, and Schroeder)

This Monograph chapter was cited 68 times in the 2010 listing decision and 61 times in the COT Report. Although Garton et al. is the most influential chapter of the Monograph, it is also the most fundamentally flawed, as it contain two egregious mathematical errors that grossly overestimate the risk of extinction, built-in methodological bias, unaccounted for analytical error,

¹²⁷ Euclidean geometry is "plane geometry" based on certain intuitive axioms. See generally Harold E. Wolfe, *Introduction to Non-Euclidean Geometry*. 9 Mill Press (2007). Euclidean geometry is usually used for land surveys. In contrast, non-Euclidean geometry is a small set of axioms that negate the assumed parallel postulate of Euclidean geometry. *See* Michelle Eder, *Views of Euclid's Parallel Postulate in Ancient Greece and in Medieval Islam*, Rutgers University (2000). In other words, Euclidean geometry works on a flat plane and non-Euclidean geometry operates on a curved plane. This fosters different results with the different measurement systems.

and errors of omission. *See* Exhibit B, *gen*; *see also* Exhibit C, *gen*. USGS must retract this chapter for its significant violations of the DQA and the additional authorities cited herein. The significance of several of these papers has changed as the importance of issues has shifted as a result of new research, regulations, and politics.

While many of these issues were pointed out by peer reviewers before final publication, the editors of the Monograph, Garton et al., and USGS chose to ignore them. CESAR, and others, have detailed other significant issues with this work:

“Garton et al. (2009, 2011) and the FWS (2010) downplayed or ignored known issues with the data provided in this paper, errors in formulas used, errors of omission, and bias with their analytical method. These errors were exposed when the Colorado Division of Wildlife, commissioned independent scientists to review its contents. These comments, which were formally submitted to the FWS, were uniformly ignored.”

See Exhibit A at 13. This chapter was the quantitative basis used to assess the rate of population decline and extinction risk, and it formed the basis of population predictions and priorities in the highly influential COT Report. Since its publication, Dr. Robert Zink empirically tested the isolation of sage grouse populations and several of Garton's predictions. Significantly, Zink 2014 found no genetic evidence of population declines in GRSG.¹²⁸

Zink “compare[d] genetic variability measures with quantitative estimates of population trends to determine whether the effects of population declines can be observed at two geographic scales in the microsatellite and mitochondrial DNA data...” Populations in decline should show reduced genetic diversity. And reduced genetic variability can also pose a risk to population persistence. But for GRSG, “the expected population genetic signatures of differences in population size were not observed.”¹²⁹ Dr. Zink concluded, “[T]here is no clear evidence that the population genetic variability of the greater sage-grouse has been influenced by range reduction

¹²⁸ Zink 2014.

¹²⁹ *Id.*

and fragmentation” and that “there is no evidence of heightened inbreeding in smaller populations.”¹³⁰

In addition, Ramey et al. 2013 detected several errors in the calculations of Garton et al. 2011 that dramatically skew probabilities to estimated declines over time. *See Exhibit C, gen.*¹³¹ Because Ramey et al. 2013 and Zink 2014 constitute the best available science on these topics, USGS should retract or correct the Monograph accordingly.¹³²

There are also many limitations to the use of lek count data which Garton et al. failed to acknowledge. For example, lek count data does not account for the fact that males move between leks. Only males are counted at leks so the proportion of males to the total population is unknown. And the thirteen different states and provinces that collect data may use different methods and unequal levels of effort. Even within a state, counts may vary from year-to-year depending upon conditions. For example, roads may be impassable and leks much more difficult to reach in heavy snow years resulting in fewer counts than in average or dry years.

This sampling bias was pointed out by Colorado reviewers, but ignored by the authors. In sum, determining range-wide populations of sage grouse using lek counts is untenable. As one Colorado reviewer noted, “...fluctuations in the population of males may or may not be indicative of fluctuations in the population as a whole. Further, it is not clear to what extent lek counts even fully represent the population of males.” Another comment was more direct, “[T]he

¹³⁰ *Id.*

¹³¹ Ramey, Wehausen and Brown 2013(open source peer-reviewed manuscript) *Peer Review and Information Quality Breakdown in an Endangered Species Act Decision: the Case of the Greater Sage Grouse.*

¹³² It should be noted that the FWS and USGS convened a closed-door workshop on October 22-23, 2014 in Ft. Collins, Colorado entitled “Expert Elicitation Workshop on the Genetics of Greater-Sage Grouse” (the “Workshop”). The aim of the Workshop was auspiciously to work on “specific technical questions.” The way in which the agencies convened this Workshop also drew sharp rebukes and calls for transparency from eighteen (18) Members of Congress in an October 16, 2014 letter to Interior Secretary Sally Jewell. Petitioners believe the way the Workshop was convened and conducted likely violates FACA, the DQA and its Guidelines as well as presidential memoranda and DOI orders on scientific integrity and transparency. We caution USGS not to adopt or incorporate any alleged findings from this closed-door Workshop.

data set from which this analysis and all other population analyses of sage-grouse are built appears to be deeply flawed, because the sampling scheme is not representative.” *See Exhibit A at 25.*

Connelly et al. (2004), Western Association of Fish and Wildlife Agencies (WAFWA 2008), and Garton et al. (2009, 2011) each tried to conduct a range-wide analyses of male lek count data. But each used different methods, including undocumented and subjective methods, for defining what constituted a “lek” and for including and excluding lek counts. While each study used the same raw data provided by the states, the number of leks selected for analysis differed nearly three-fold (3,419 - 9,789 respectively) between WAFWA 2008 and Garton et al. (2009, 2011).

Moreover, even if the raw lek-count data in this chapter was publicly available, which it is not, subjective criteria were used to select the final data sets used rendering the analysis incapable of repetition. While Connelly et al. (2004) and WAFWA (2008) were unwilling to overstate the significance of their results to infer GRSG population numbers or trends, the Monograph authors did quite the opposite. One Colorado reviewer acknowledged limitations in Colorado lek count data and that none of the authors bothered to contact the state for “clarification or corrections.” As a result, “...we can only assume that the data quality control for the manuscript is suspect or assumptions were made that are erroneous.” *See Exhibit A at 21.*

The authors also started with a very low population estimate for GRSG,¹³³ “then use[d] their analyses to make predictions of past and future population trends in sage grouse, and their probabilities of extinction, thirty and one hundred years into the future (from 2007)” with disingenuous precision. Their conclusions improperly estimated: 1) current population sizes; 2) past population sizes or “reconstructed population estimates” (backwards from 2007 to 1965); 3)

¹³³ 42% lower than recognized by the states and provinces in 2007.

population growth models to the reconstructed population estimates; and 4) future population estimates and trends along with alleged probabilities of population persistence in the years 2037 and 2107. The authors emphasized the precision of their results and downplayed the limitations. Then, the authors overstated the significance of the results. The analysis fails to address the inherent bias which occurs as a result of the data and analysis used. There are questions regarding the mathematical choices the authors make and the unacknowledged propagation of error in their models, that put their extinction predictions on par with guesswork.

In addition, the authors based their faulty persistence prediction on 50/500 “rule of thumb” which has been repeatedly disproved and repudiated. For example, the 50/500 rule of thumb and the absence of empirical data to support it has been criticized by Boyce 1997 and Frankham 2005. There is no basis for its use in reliably predicting the sage grouse population persistence 30 or 100 years into the future.

As one reviewer noted, the population persistence assumptions are particularly egregious, “It is an ambitious, but flawed analysis. Model assumptions are not always made clear and when they are they open doubt about the results and the authors.” *See* Exhibit A at 32. Another stated, “[T]he selection of effective population sizes are inconsistent and arbitrary....”¹³⁴ One summarized, “[T]his is not a valid estimate of the variance of the probability of extinction. It fails to include the parameter uncertainty in the population models.” *See* Exhibit A at 34.

One reviewer understandably expressed “serious misgivings” with the authors’ reconstructed index approach. Another said, “[T]his is a strange assertion. It is not clear how a nonrandom sample would be likely to provide an unbiased estimate of population trend. “They [the reconstructed population estimates] are only ‘remarkably precise’ if one ignores the

¹³⁴ *Id.*

propagation of error in the index construction,” said one reviewer. Confidence intervals, then, were severely lacking in this chapter. *See* Exhibit A at 29-30.

Another reviewer remarked, “[T]he authors note the complications and inaccuracy of lek counts, but then proceed to use the data ignoring the inherent biases and uncertainties” and that significant mathematical errors render the trend analysis “wrong” and the results irreproducible. *See* Exhibit A at 20.

Among this Chapter’s main conclusions are that GRSG do not fit within typical upland game bird demographics. GRSG are relatively unique because populations tend to have low winter mortality, high annual survival, and are migratory. However, the authors do not adequately consider that the intensity of hunting likely contributes to population declines. Moreover, the claim within the paper that GRSG require "vast landscapes" is overstated. While GRSG occupy a large range with "semi-isolated populations interconnected by occasional migration among populations," the seasonal migration distances, often over 20km and home ranges over 600kmn are not remarkable compared to other species.

K. Monograph Chapter 17: *Influences of environmental and anthropogenic features on Greater Sage-Grouse populations, 1997-2007*, (Johnson, Holloran, Connelly, Hanser, Amundson and Knick)

This chapter was cited three times in the NTT Report for the erroneous proposition that lek count trends have been found to be lower near highways and roads. However, the authors do not have enough years of data to support inferences with single or multiple variables. The authors examined different variables using 11 years of lek count data for the response variable in seven different management zones to determine whether specific activities correlated with population level declines in GRSG. Many of the lek counts only had four years of data associated with them resulting in no significant correlations between predictor and response

variables. This lack of data demonstrates Johnson et al. 2011 is not an example of the best scientific data available.

L. Monograph Chapter 18: *Connecting pattern and process in Greater Sage-Grouse populations and sagebrush landscapes*, (Knick and Hanser)

This chapter is cited 38 times in the 2010 WBP decision, six times in the NTT Report and seven times in the COT Report. It perpetuates a myth that GRSG leks, and therefore populations, are isolated by distances greater than 18 km and that this isolation influences lek and population persistence. The 18 km number was not derived from an analysis of actual dispersal data but selected from an arbitrary point on a curve. *See Exhibit B at 97-98.* It was assumed that lek persistence was correlated with population persistence, even though many leks are ephemeral and GRSG are known to move between leks during the breeding season, as well as over much greater distances (up to 300 km).

The authors erroneously assume that all forms of human activity are collectively deleterious to sage grouse, without any data to support such an assertion.

M. Monograph Chapter 19: *Factors associated with extirpation of sage-grouse* (Wisdom, Meinke, Knick and Schroeder)

This chapter was cited 41 times in the 2010 WBP decision, two times in the NTT Report and 12 times in the COT Report. It represents some of the key scientific issues regarding assertions that large areas of unfragmented sagebrush habitat are needed to insure population persistence. In this paper, discriminant analysis on 22 environmental variables was used to model variables that best predict extirpated versus extant sage grouse populations. *See Exhibit B at 100-103.* There are serious statistical issues with the discriminant analysis that are not addressed by the authors.

For example, variables used to provide the best discrimination cannot be assumed to be independent, leading to biased and erroneous interpretation of results. The authors proposed that GRSG populations are at greatest risk in areas of occupied territory that nonetheless possess the characteristics of extirpated areas, as defined by their analysis. However, they do not test such predictions against evidence of population decline. The authors also advance several far-fetched and pseudoscientific explanations regarding the potential electromagnetic field effects of transmission lines and cell towers. Other issues include use of a weak threshold discriminant function analysis classifications.

At least three of the variables found by the authors to provide the best discrimination between occupied and extirpated areas were not independent. For example, the authors did not acknowledge that transmission line towers and cell phone towers have a tendency to be placed on high points, and thus these two variables and the elevation variable are not independent.

Another problem with this chapter is its speculative basis and lack of reproducibility. For example, the authors did not distinguish between different types of electrical transmission lines even though they would be expected to have different effects on GRSG.

N. Chapter 21: *Energy Development and Greater Sage-Grouse*, (Naugle, Doherty, Walker, Holloran and Copeland)

This Monograph chapter is cited eight times in the 2010 WBP decision and three times in the NTT Report for the erroneous narrative that oil and natural gas development is uniformly deleterious to GRSG populations. The authors examined 32 published papers, reports, management plans, and theses regarding biological responses of sage grouse to energy development and then dismissed all but seven studies. This “*critical review*” is not impartial because the authors are also authors on four of the seven pieces of the literature reviewed. *See* Exhibit B at 115. Clearly they were selectively picking which studies fit their narrative. Four of

the seven studies focused on impacts to GRSG in areas of *intensive* energy development and are not necessarily representative of less intensive energy development nor development based on newer environmental regulations or technologies. Studies not written by the authors were reinterpreted.

This chapter discusses 1) the scientific literature documenting biological responses of GRSG to development; 2) quantified changes in landscape features detrimental to GRSG that result from development; 3) the potential for landscape level expansion of energy development within GRSG range; and 4) recommended landscape-scale conservation strategies.

It misrepresents cited studies to conclude that male and female grouse abandon leks due to “noise and human activity associated with energy development.” However, the cited support, Lyon and Anderson (2003), never mentioned abandonment. Instead, Lyon and Anderson (2003) reported that: “[H]ens we captured on disturbed leks demonstrated greater movements from capture lek to nest than hens from undisturbed leks. Hens from disturbed leks nested approximately twice as far from capture leks as did hens from undisturbed leks.”

The chapter briefly mentions mechanisms that may result in some of the avoidance behavior by sage grouse, however the primary focus is on “impacts.” It is therefore lacking in analysis of understanding why GRSG may avoid energy development or whether they have lower survivorship adjacent to it. Understanding these issues is a predicate to mitigating effects. The chapter does not provide the impacts of energy development on GRSG with regard to potential for enhanced mitigation measures to minimize displacement from leks and impacts on nesting and survival. However, the authors state: “[S]everity of impacts and continued leasing...dictate the need to shift from local to landscape conservation.” This premise is not

meaningful because local management is necessary to ensure effective mitigation and can allow local populations to be maintained.

This chapter also advises that federal and state government and industries need to implement solutions at a large scale. They suggest that one approach is to forego development in priority landscapes until new best management practices are implemented but they fail to recognize other studies that demonstrate mining and oil and gas development can coexist with GRSG. In addition, GRSG have been found to recover after development ceased.

O. Monograph Chapter 22: *Energy development and conservation tradeoffs: systematic planning for sage-grouse in their eastern range*, (Doherty, Naugle, Copeland, Pocewicz and Kiesecke)

This chapter combined data on projected oil and natural gas development with potential wind development to produce a new category, “energy development,” for GRSG vulnerability assessment and conservation planning. While projected oil and gas development were based on *actual* well data or lease sales that overlap sage grouse core areas, wind development was based on undeveloped and unleased commercial wind *potential*. See Exhibit B at 123. While the basic approach of mapping areas of key conservation importance and development to avoid conflict was first introduced in the 1960's by McHarg (1969) and widely applied since, there are serious issues with this methodological approach.

An unbiased approach would involve analysis of the two types of development separately, then overlay their projected impacts to sage grouse in a common unit that reflects each development's impact(s) to GRSG. See Exhibit B at 123-129. The authors present an approach that assumes all impacts are created equal, regardless of whether they are from oil and gas, or wind development. This one-size-fits-all approach grossly overestimates loss of

GRSG within areas of potential development. Furthermore, while some impacts from oil and natural gas have been quantified, there are no studies documenting impact of wind energy development to GRSG.

Another issues with this chapter is the 1km² grid size, which is very crude and significantly overestimates the scale of impacts. Data at much finer resolution are readily available and are the scientific standard for habitat analyses.

For example, Garfield County developed its “Greater Sage-Grouse Conservation Plan” based on the best available science and a tailored approach to private and public land management to benefit the species.¹³⁵ In recognition of the County’s unique GRSG habitat characteristics of extreme topographic variation and naturally fragmented suitable habitat patches, Garfield County commissioned an in-depth analysis of its 2,956 square miles, revealing that nearly 70% of Garfield County is not suitable for the GRSG.¹³⁶

A measured approach that makes use of best available information would likewise incorporate current development, physiographic features, and vegetation into an analysis to more accurately portray landscape potential for sage grouse. Failure to incorporate readily available information on essential GRSG habitat elements as well as areas that are permanently unavailable, limits its accuracy and utility of this “risk assessment” and its use for policy decisions.

¹³⁵ Garfield County, Board of County Commissioners, *Greater Sage-Grouse Conservation Plan*, http://www.garfield-county.com/community-development/documents/FINAL-Approved-Grouse-Plan-Amendment%201_11-20-2014.pdf (adopted Mar. 18, 2013) (amended Nov. 17, 2014) (last visited Dec. 29, 2014 at 10:30 AM) (Habitat mapping provided by state and federal agencies were not accurate and did not provide adequate planning information)

¹³⁶ *Id.* at pages 10-17, and 35-37 (the Garfield County plan utilized highly sophisticated and peer reviewed habitat modeling completed in November of 2014 that proved a 67% decrease in potentially suitable habitat from Colorado Parks and Wildlife’s model, indicating that CPW and BLM over-mapped 147,000 acres of private and public land).

As with other papers in the Monograph, the authors did not consider hunting to be a factor controlling GRSG populations. The discussion section of Doherty et. al includes an extensive set of policy recommendations for decision makers that are based less on the results of the study than on a political point of view and self-importance. This detracts from the results of the study and gives the appearance of advocacy dressed-up as science.

V. The Monograph Misrepresents Several Key Issues

USGS must incorporate and rely upon the most recent information in the Monograph. To do otherwise would be inconsistent with the best available science standard under the ESA, the information quality standards of the Data Quality Act and the standards of scientific integrity required by presidential and Interior Department memoranda and additional orders and authority referenced herein.

The Monograph fails to consider major natural factors that affect GRSG populations while exaggerating impacts from human activities such as energy development, grazing and mining, while downplaying threats from predation and hunting.

A. GRSG Populations

There are many errors in the Monograph's approach to GRSG populations. There is no evidence of the purported population declines nor genetic isolation that certain Monograph authors contend. For example, in Utah, the number of leks counted has increased from a low of 125 to 361 currently.¹³⁷ In regards to males counted, the increase is even more dramatic: 1,555 males in 1996 to 5,973 in 2006 (280%).¹³⁸ While current numbers are not quite that high, differences in methodologies and inaccuracies inherent in lek counts must be considered. BLM also acknowledges in its Land Use Plan Amendments that, "GRSG in Colorado have been

¹³⁷ *Id.*

¹³⁸ *Id.*

increasing for about the last 17 years, and breeding populations have not declined for the last 39 years,”¹³⁹ and that sagebrush habitat in Jackson County (which harbors the second largest population in the planning area) is, “largely intact, and there is little threat of fragmentation.”¹⁴⁰ And data from the Nevada Department of Wildlife (“NDOW”) indicates GRSG populations have been increasing over the last three years. According to NDOW, the 2010 fall population estimate increased about 18% compared to the 2009 estimate, and the population has been increasing since 2008.

The Monograph fails to acknowledge that the size of GRSG populations sufficiently negates threats. FWS has estimated the GRSG population to be 535, 542.¹⁴¹ Many species have been delisted or removed from candidate status with far less significant population numbers and ranges. Perhaps never before has FWS considered listing a species so numerous and wide-ranging as GRSG. As noted above, there is ample precedent not to embark on the proposed regulatory restrictions, let alone a federal listing, for GRSG. Such actions are unlikely to benefit the species but would certainly harm the West.

B. GRSG Populations Naturally Fluctuate

The Monograph fails to recognize that populations of any given species naturally fluctuate. This significant error of omission violates quality, objectivity and integrity standards of the DQA, the Guidelines and the additional authority cited herein.

Populations of any given species are known to be extremely dynamic. It is critical to understand the trends in population dynamics and the factors responsible for population variability to properly evaluate and manage species. Understanding natural fluctuations in

¹³⁹ See NW CO GRSG DEIS at 253 citing Figure 3-5.

¹⁴⁰ NW CO GRSG DEIS at 246.

¹⁴¹ 75 Fed. Reg. 13910, 13921 (Mar. 23, 2010).

abundance and the population dynamics of individual and range-wide populations is also essential for the proper status assessment of a species.

Here, the Monograph fails to take into account that populations of species are responsive to such factors as seasonal and long-term fluctuations in regional weather conditions, short-term weather extremes and stochastic events, intra- and inter- species competition for resources, intra- and inter- species behavioral competition, predator-prey relationships, and subtle or severe changes in habitat quality. As discussed herein, climactic patterns associated with the PDO greatly influence GRSG populations in Wyoming.¹⁴² These and other factors may influence a species greatly, and may mask or prevent a correct interpretation of direct and indirect anthropomorphic factors.

GRSG populations characteristically exhibit multi-annual fluctuations in abundance indicating that some mechanism or combination of mechanisms are causative factors.¹⁴³ Factors influencing GRSG abundance may include weather patterns and the composition and abundance of predators that influence nesting success.¹⁴⁴ Nesting success and chick survival is considered to be the most significant parameter affecting population dynamics.¹⁴⁵

Published studies of factors affecting nest success and GRSG chick survival have focused on micro-scale habitat factors such as percent coverage and height of forbs and grasses and availability of arthropods.¹⁴⁶ These studies follow logically from previous research on GRSG brood habitat selection (Sveum et al. 1998, Drut et al. 1994a, Wallestad 1971, Klebenow 1969) and chick diets (Drut et al. 1994b, Johnson and Boyce 1990, Peterson 1970, Klebenow and Gray 1968). Collectively, these studies clearly demonstrate that nesting GRSG typically select

¹⁴² See Ramey, Thorley and Ivey 2014, *infra*.

¹⁴³ USFWS 2013, Fedy and Doherty 2010, Montana GRSG Working Group 2005.

¹⁴⁴ Montana GRSG Working Group 2005.

¹⁴⁵ Schroeder et al. 1999.

¹⁴⁶ Aldridge and Boyce 2007, Dahlgren et al. 2010, Gregg and Crawford 2009.

relatively mesic¹⁴⁷ habitats with abundant forbs and arthropods and that chick survival is highly correlated with these factors. Chick survival has been shown to be an important determinant of population growth rates, and chick survival is increasingly being shown to be affected at the population level relative to large-scale abiotic¹⁴⁸ factors such as regional variation in precipitation and temperature.

Guttery et al. 2013 reported that climatic variables play a primary role in determining GRSG reproductive success and the study demonstrated that temperature and precipitation have significant effects on chick survival. Similarly, Blomberg et al. 2012 found strong correlation between multiple climatic variables and GRSG population dynamics. Annual recruitment of GRSG was higher in years with higher precipitation, based on annual precipitation, annual rainfall, and average winter snow depth. Likewise, GRSG population growth was positively correlated with annual rainfall and mean monthly winter snowpack in the study area. Annual survival of adult male GRSG was negatively affected by high summertime temperatures, i.e., higher survival rates occurred in years with relatively low maximum temperatures. These results are consistent with the hypothesis that water balance in sagebrush systems is important to GRSG populations and led the authors to conclude that the stability of GRSG populations is dependent upon stable annual survival rates and occasional large inputs of new individuals into the population when climatic conditions are favorable for chick and juvenile survival.

Extended periods of below normal precipitation and shorter-term severe drought may reduce the abundance and duration of herbaceous cover at nest sites, and result in a reduction in the quantity and quality of food resources available to hens and chicks, which, if severe, could

¹⁴⁷ Habitat with a moderate or well-balanced supply of moisture.

¹⁴⁸ Non-living chemical and physical parts of the environment that affect living organisms.

jeopardize GRSG survival.¹⁴⁹ Prolonged drought during the 1930's and mid-1980's to early 1990's coincided with declining GRSG populations throughout much of the species' range (Patterson 1952, Fischer 1994, Hanf et al. 1994, Connelly and Braun 1997, Braun 1998). From 1985 through 1995, the entire range of GRSG experienced severe drought as defined by the Palmer Drought Severity Index, with the exceptions of north-central Colorado and southern Nevada (USFWS 2013). Heath et al. 1997 concluded that drought conditions during spring and summer 1994 in Wyoming resulted in impaired productivity and decreased survival of GRSG, most likely because of subsequent decreases in forb production and increased predation resulting from a lack of sufficient cover.

The amount and timing of spring and summer rainfall affects annual plant production and influences population dynamics of GRSG, causing short term fluctuations of less than 10 years in GRSG abundance.¹⁵⁰ Wet springs often result in increased green-up and an increase in the variety of forbs and consequently insects on the sage-steppe, thereby increasing chick survival.¹⁵¹ Wyoming Game and Fish Department 2009 reported increases in GRSG numbers in Wyoming during the late 1990's with some individual leks seeing three-fold increases in the number of males between 1997 and 1999. This increase was synchronous with increased spring precipitation over the period. The return of drought conditions in the early 2000's appears to have led to decreases in chick production and survival, thus resulting in declining populations. Conversely, extreme precipitation during the spring and summer caused widespread flooding in 2011 in southeastern Montana and increased GRSG nest failure and depressed hatch rates.¹⁵²

¹⁴⁹ McCarthy and Kobriger 2005, Connelly et al. 2004, Fischer et al. 1996.

¹⁵⁰ Eustace 2002.

¹⁵¹ McCarthy and Kobriger 2005, Blomberg et al. 2012.

¹⁵² Foster et al. year unknown.

Cold, wet weather or extremely low temperatures during the hatching period can result in loss of chicks and young birds to hypothermia.¹⁵³ Measures of drought, precipitation, and temperature can be correlated to winter snow pack which is known to be a major driver of vegetation dynamics throughout much of the mountainous regions of western North America.¹⁵⁴ Long, cold winters with deep snows that cover sagebrush plants on winter ranges can be a threat to survival because GRSG are totally dependent upon sagebrush as food during winter months.¹⁵⁵

Until recently, there was no evidence that severe winter weather affected GRSG populations unless sagebrush habitat had been greatly reduced; however, such an effect has been reported recently in several studies. Danvir 2002 recorded declines in a GRSG population following deep snow winters of 1985-86 and 1992-93 in Wyoming, hypothesizing that GRSG survival rates declined because the species became more visible and vulnerable to predation, and that there was increased competition with jackrabbits, mule deer, and other grouse for the sagebrush foliage available above the snowpack. Moynahan et al. 2006 found that a severe winter affected survival of GRSG in Montana from 2001 to 2004. Similarly, Anthony and Willis 2009 reported strong evidence that severe weather (i.e., mean daily min. temp, extreme min. temp, snow depth) affected survival of female GRSG in southeastern Oregon.

The effects of both annual and long-term fluctuations in weather patterns on the nest success and survival of GRSG have been well documented. Short-term fluctuations in weather patterns are significant factors contributing to the annual and near future population status, while long-term weather patterns have a greater effect on condition of habitats and play a larger role in determining the long-term trends of the population.¹⁵⁶

¹⁵³ McCarthy and Kobriger 2005, Hannon and Martin 2006.

¹⁵⁴ Walker et al.1993.

¹⁵⁵ McCarthy and Kobriger 2005.

¹⁵⁶ McCarthy and Kobriger 2005.

Recent efforts to develop range-wide conservation and mitigation objectives for the GRSG resulted in several documents proposing specific strategies or actions. Although the counts of male GRSG on leks has been, and continues to be, the primary mechanism for collecting data about the relative abundance and population trends of GRSG, the Monograph does not acknowledge that lek counts provide only a crude, nonrandom, and statistically invalid estimates of population trends.¹⁵⁷

Critical information on natural population fluctuations and the factors that drive them such as weather patterns and survival rates are glaringly omitted in the Monograph. Taking into account natural fluctuations in GRSG population and their primary drivers, using explicit, data-driven population models, i.e., Bayesian hierarchical state-space models, must be included in any objective and statistically rigorous evaluation of the population status.¹⁵⁸ An accurate assessment of GRSG population dynamics and fluctuations are also critical to proper species management and developing effective conservation and mitigation strategies.

By ignoring natural fluctuations due to variations in weather, drought, and other natural conditions, the Monograph lays the groundwork for an improper regulatory threshold that GRSG populations must be stable or increasing in all cases. This fundamental flaw violates the DQA, the Guidelines and the secretarial and presidential orders and memoranda discussed herein.

C. Predation and Predator Control

The Monograph ignores substantive threats to GRSG in favor of pre-conceived notions of human impact in violation of the DQA and the Guidelines. Predation is the most common cause of direct mortalities of the GRSG. GRSG eggs are preyed upon by red foxes (*Vulpes vulpes*), coyotes (*Canis latrans*), American badgers (*Taxidea taxus*), common ravens (*Corvus corax*), and

¹⁵⁷ Walsh et al. 2004; Ramey et al. 2014.

¹⁵⁸ Coates et al. 2014.

black-billed magpies (*Pica hudsonia*). Common predators of juvenile and adult GRSG are golden eagles (*Aquila chrysaetos*), prairie falcons (*Falco mexicanus*), other raptors, coyotes, American badgers, and bobcats (*Lynx rufus*). Younger birds, especially broods, are preyed upon by common ravens, red foxes, northern harriers (*Circus cyaneus*), weasels (*Mustela sp.*), and various species of ground squirrels and snakes.

Of these predators, the common raven is the most abundant and has the greatest impact on the survivorship of the GRSG. Raven populations have increased an estimated 300% in the past 27 years in the United States (Sauer et al. 2008) with reports of 1,500% increases within a 25-year period in some areas of the West.¹⁵⁹ The Monograph virtually ignores this critical fact. While not migratory species, crows and ravens are inexplicably protected under the Migratory Bird Treaty Act (“MBTA”).¹⁶⁰ Nowhere does the Monograph call out that the primary predator of GRSG is protected by the MBTA such that predator control efforts that would benefit GRSG are subject to regulatory red-tape--including FWS approvals.

Mortality due to predation during the first few weeks after hatching was estimated to be 82%.¹⁶¹ In regards to Gunnison sage-grouse, “survival of juveniles to their first breeding season was estimated to be low (10%).”¹⁶² Nothing in the Monograph is presented to quantify the habitat conditions that are purported to increase the significance of predation and nothing to identify the significance those conditions to sage grouse habitat throughout their range.

The common raven is clever and highly adaptable, which allows them to opportunistically exploit food resources provided by human activities. They routinely forage at landfills, in dumpsters, and at livestock operations and they commonly scavenge on carcasses of

¹⁵⁹ Boarman 1993.

¹⁶⁰ 50 C.F.R. § 20.100.

¹⁶¹ Gregg *et al.* 2007.

¹⁶² GUSG Threatened Listing, 79 FR 69192, 69274 (Nov. 20, 2014).

animals killed by vehicle strikes. The explosive increase in raven abundance has resulted in large increases in predation, and has contributed to the severe decline of many species including the desert tortoise (*Gopherus* sp.), marbled murrelet (*Brachyramphus marmoratus*), least tern (*Sternula antillarum*), California condor (*Gymnogyps californianus*), and GRSG.

While many scientific studies have found that GRSG nest predation is related to the amount of herbaceous cover surrounding nest sites and that nesting success is correlated with vegetation structure and composition, suggesting that the quantity and condition of breeding habitat is the most important factor that dictates the productivity of GRSG (Connelly et al. 1994, Braun 1998, Schroeder and Baydack 2001, Coates 2007, Hagen 2011), the Monograph ignores substantial evidence indicating that most GRSG nests are lost to predators such as red foxes, badgers, coyotes, black-billed magpies, and common ravens, even in excellent GRSG habitat.¹⁶³

The negative effects of predation and raven abundance on nest success have been well documented. GRSG nests are subject to varying levels of predation. Predation can be total (all eggs destroyed) or partial (one or more eggs are destroyed). However, in either case, hens abandon the nests.¹⁶⁴ Re-nesting efforts may partially compensate for the loss of nests due to predation (Schroeder 1997) but may not completely offset the losses. Additionally, the presence of high numbers of predators within a GRSG nesting area may negatively affect GRSG productivity without causing direct mortality. Loss of breeding hens and young chicks to predation can influence overall GRSG population numbers, as these two groups contribute most significantly to population productivity.¹⁶⁵

According to Valkama et al. (2005), predation may influence grouse population dynamics by reducing nest success, survival of juveniles especially during the first few weeks after

¹⁶³ See Gregg et al. 1994, Heath et al. 1997, Holloran 1999, Connelly et al. 2004.

¹⁶⁴ Coates 2007.

¹⁶⁵ Baxter et al. 2008.

hatching, and annual survival of breeding age birds. Similarly, others found that nest predation can be a limiting factor for GRSG population sustainability.¹⁶⁶ Moynahan et al. (2007) reported that 54% of nest failures were caused by predation. Gregg et al. (2007) estimated that GRSG mortalities due to predation were as high as 82% during the first few weeks after hatching.

Raven abundance was strongly associated with GRSG nest failure in northeastern Nevada, resulting in negative effects on GRSG reproduction.¹⁶⁷ The study associated increased raven abundance with a reduction in the time spent off the nest by female GRSG, thereby potentially compromising the ability to secure sufficient nutrition to complete the incubation process. Similarly, high corvid abundances attributed to increased GRSG nest and brood failure in western Wyoming (Bui 2009). Coates and Delehanty (2010) found that GRSG nest failure and observed raven predation of GRSG nests were associated with indices of raven abundance. Decreases in daily survival rate (DSR) of GRSG were attributed to increased raven abundance.

Unlike other population limiting factors (e.g., habitat, weather, and drought), predation can realistically be reduced by applying appropriate management measures.¹⁶⁸ Management of some predator populations, especially raven populations occurring in areas where GRSG mortality is high, is needed to ensure that GRSG populations are not depressed by a known and easily mitigated source of mortality.

In 2001, the U.S. Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) Wildlife Services (WS) initiated a systematic raven management program in Nevada to reduce raven numbers in GRSG habitat. The primary method of raven removal was through chicken egg baits treated with DRC-1339 (3-chlorop- toluidine hydrochloride). Coates and Delehanty (2004) observed that GRSG nest success near these raven removal activities was

¹⁶⁶ Nelson 1955, Gregg et al. 1994, Schroeder and Baydack 2001.

¹⁶⁷ Coates 2007.

¹⁶⁸ Cote and Sutherland 1997.

significantly greater (73.6%) than the mean nest success (42.6%) based on 14 studies from 1941 to 1997.¹⁶⁹ They also observed that raven numbers in treated areas declined from a high of 5/km² to low of 0.31/km² over a period of five month.

In 2007, the USDA/APHIS/WS began testing the effects of the removal of common ravens using baits treated with DRC-1339 to livestock depredation in southern Wyoming. This program provided additional information of the potential effects of raven removal on GRSG nest success. It was found that the nest success of GRSG was reduced when ravens were present within 550 meters of a nest. The study also reported that the abundance of ravens can be substantially reduced at a relatively large scale (15-km radius or 706.5 km²) by using DRC-1339; raven densities decreased by 61% at removal sites compared to an increase of 42% at non-removal sites. In areas occupied by ravens, average GRSG nest survival was estimated at 22%; and in areas absent of ravens, nest survival was estimated at 41%. This suggests that areas with high raven populations may contribute to lower GRSG population growth rates (Dinkins 2013). Cote and Sutherland (1997), using meta-analytic techniques, found that predator removal has a large, positive effect on post breeding population size and hatching success for several species of game birds.

Results of these raven removal efforts suggest that well-designed raven management strategies could substantially increase GRSG nest survival rates in areas where raven predation is a substantial contributing factor to nest failure. Long-term solutions to reduce artificially high raven abundances are necessary to address the detrimental effects of raven predation on GRSG and other imperiled species. Reducing raven abundance has been shown to be effective using some lethal means, and reducing numbers may also be possible using other as yet untested lethal and non-lethal means. Effective lethal control might be accomplished by shooting, removal of

¹⁶⁹ Schroeder et al. 1999.

raven nests and eggs, and poisoned baits. Effective non-lethal control might be accomplished by reducing or eliminating nesting structures and/or making subsidized food resources (road-kill, dead livestock, and garbage) unavailable. Despite the research and application of these methods for raven management, the Monograph selectively chose to disregard them.

The negative effects of predation on the nest success of the GRSG have been well documented and should be included in any objective and complete analysis of threats to GRSG. The FWS 2010 WBP decision (USFWS 2010) recognized predation as a primary threat to the GRSG and devoted three pages of discussion to this issue.¹⁷⁰ Despite this, some recent efforts to develop range-wide conservation objectives for the GRSG [and to inform the public of the upcoming 2015 listing decision] failed to recognize and address predation as a primary threat to the species. The Monograph, the NTT Report and the COT Report all fail to recognize predation as the single most important factor affecting the abundance of the GRSG.

These key reports virtually ignored the topic of predation and the major body of scientific literature on raven predation and experimental data on predator management. Substantial and critically important information on these topics is available from a variety of sources including Boarman 1993; Boarman 2003; Boarman et al. 1995; Boarman and Heinrich 1999; Boarman et al. 2006; Bedrosian and Craighead 2010; Bui 2009; Cagney et al. 2010; Christiansen 2011; Coates 2007; Coates and Delehanty. 2004; Coates et al. 2008; Coates and Delehanty 2010; Conover et al. 2010; Cote and Sutherland 1997; DeLong 1995; Gregg et al. 1994; Heinrich et al. 1994; Moynahan et al. 2007; Preston 2005; Ramey, Brown, and Blackgoat 2011; Schroeder and Baydack 2001; Snyder et al. 1986; Sovada et al. 1995; Watters et al. 2002; and Webb et al. 2009.

¹⁷⁰ 75 FR 13910.

Finally, recent work Baxter et al. 2013 shows even bottlenecked GRSG populations can see marked population improvements following predator control efforts.¹⁷¹

The Monograph ignored the body of literature relevant to raven predation on GRSG, including its deleterious effect on survivorship and recruitment, and most importantly, the integrated management strategies that can reduce losses of GRSG. Only two references related to predation on GRSG were cited (Greg et al. 1994 and Hagen 2011) and the word “raven” was mentioned only once, at page 63. The Monograph did not mention predator management that could benefit GRSG within high risk areas and instead, viewed predation as a byproduct of human activities that could be regulated (i.e. land health assessments and emphasizing vegetation cover as a means to measure and mitigate livestock use; or increasing landscape level habitat connectivity). This extremely passive and scientifically untested approach is speculative at best and therefore would not result in a reduction of the short-term or long-term threats caused by high raven abundances.

Even though the Monograph contends that predation impacts are solely related to habitat condition, there is no information to suggest that habitat conditions alone will compensate for excessively high predator populations. The information disseminated concludes that, regardless of habitat conditions, predation does not affect GRSG populations in general. However, the removal of predators was a primary factor in the recovery and delisting of the Aleutian Canada goose in North America.¹⁷² In delisting the Aleutian Canada goose, FWS also recognized the

¹⁷¹ Baxter, R. J., Larsen, R. T. and Flinders, J. T. (2013), Survival of resident and translocated greater sage-grouse in Strawberry Valley, Utah: A 13-year study. *The Journal of Wildlife Management*, 77: 802–811. doi: 10.1002/jwmg.520.

¹⁷² 66 Fed. Reg. 15643 (Mar. 20, 2001); *see also* FWS News Release, March 19, 2001.

removal of predators benefited not only that species, but many other bird species on the islands, including puffins, murrelets, and auklets.¹⁷³

The Monograph provides limited and selective evaluations of threats to GRSG, and ignore the major body of scientific literature that is available on raven predation and experimental predator management. In order to comply with the DQA and the Guidelines, the The USGS needs to address and incorporate this information on the effects of predation and predator control into the Monograph.

D. Hunting

The Monograph gives insufficient attention to hunting as a threat to GRSG. Some 207,430 GRSG were harvested during hunting seasons between 2001 and 2007.¹⁷⁴ As a result, past and potentially ongoing hunting is likely a contributor to declines in GRSG populations or avoidance of human activities in GRSG populations.

The Monograph erroneously concludes harvest from hunting does not significantly affect population trends, yet ignored that 207,430 sage grouse were harvested between 2001 and 2007 alone. *See Exhibit A at 9.* Again, this number does not account for unrecovered wounded birds which can increase mortality rates as much as 50%. *See Exhibit A at 18.* Mortality from hunting and predation could be as high as 10% of the population annually. *See Exhibit A at 10.*

Additionally, new data and research published by Gibson et al. 2011 have refuted the frequently repeated belief that there is a no additive demographic effect of hunting on GRSG populations. Thus, the hunting of some populations will have an effect not only on those

¹⁷³ 66 Fed. Reg. 15643 (Mar. 20, 2001); *see also* Press Release, U.S. Fish and Wildlife Service, An Endangered Species Success Story: Secretary Norton Announces Delisting of Aleutian Canada Goose, (Mar. 19, 2001).

¹⁷⁴ Kerry P. Reese and John W. Connelly, *Harvest Management for Greater Sage-Grouse: A Changing Paradigm for Game Bird Management*, in *Greater Sage-Grouse Ecology and Conservation of a Landscape Species and its Habitats*. Studies in Avian Biology (vol. 38) Table 7.3 p. 106 (Steven T. Knick and John W. Connelly eds., 2011).

populations but also on nearby populations that are not hunted but are genetically and demographically linked by dispersal.¹⁷⁵

The USGS must address and incorporate up-to-date information on threats to GRSG from hunting in the Monograph to comply with the DQA and the Guidelines.

E. Oil and Natural Gas

The Monograph violates Executive Order 13563, which calls for “objectivity of any scientific and technical information and processes used to support [an] agency’s regulatory actions.”¹⁷⁶ It also fails to meet DQA standards for quality and integrity.

The Monograph exhibits serious bias against oil and gas development. USGS describes energy development as one of the greatest threats to GRSG. As one example, Garton et al. 2011 and Knick and Hanser 2011 (Knick and Hanser were cited eight times in the COT Report, six times NTT Report and 38 times in the 2010 WBP decision) claim populations in the Colorado Plateau have a 96% chance of declining below 200 males by 2037 due primarily to threats from oil and gas (referred to as "energy development" in the papers). Such assertions are without basis given the status of GRSG populations today. Garton et al. 2011 and Knick and Hanser 2011 are no longer the best available science. *See Exhibits A and B, gen.*

Key assertions in the Monograph are both biased and in error, especially the frequently repeated, but erroneous assumption, that a temporary decrease in lek counts immediately adjacent to active wells is equivalent to a population decline.

While surface disturbance from oil and gas had local negative effects on male sage grouse lek attendance, it did not result in significant effects at a population level.¹⁷⁷ Data shows

¹⁷⁵ Gibson, R. M., V. C. Bleich, C. W. McCarthy, T. L. Russi. (2011) Recreational hunting can lower population size in greater sage-grouse. Pp. 307-315 in B.K. Sandercock, K. Martin, and G. Segelbacher (eds.). Ecology, Conservation, and Management of Grouse. *Studies in Avian Biology* (vol. 39), University of California Press, Berkeley, CA.

¹⁷⁶ Available at: <http://www.gpo.gov/fdsys/pkg/FR-2011-01-21/pdf/2011-1385.pdf>.

GRSG population increases despite intensive energy development that has occurred in Jonah, Labarge, and Pinedale Anticline within four miles of active leks.¹⁷⁸ In Pinedale, the Pacific Decadal Oscillation (“PDO”) a climate index derived from sea surface temperatures in the North Pacific accounted for 78% of population variations and 67% in Wyoming GRSG working groups.¹⁷⁹ This is highly significant because if the primary climate drivers of GRSG populations are not taken into account, which the Monograph and cited studies do not acknowledge, then management prescriptions recommendations will be based on erroneous information.

Walker et al. 2007 (from the Monograph) has been cited for the mistaken proposition that GRSG populations can be significantly reduced, and in some cases locally extirpated, by non-renewable energy development activities, even when mitigation is implemented.¹⁸⁰ But reliance on Walker et al. 2007 is untenable. *See* Exhibit B at 24 and 134. And there is little overlap between energy development (and potential for development) and GRSG habitat.¹⁸¹

Frequently cited studies in the Monograph regarding energy infrastructure and disturbance on GRSG are outdated. Kirol et al. 2015, Ramey, Brown and Blackgoat 2011, and Applegate and Owens 2014, have demonstrated technological advances and mitigative methodologies help to minimize impacts to GRSG. In addition, many of the studies cited within the Monograph were conducted in heavily developed energy fields which did not utilize today’s technology.

While avoidance might occur due to heavily developed oil and gas fields, the intensive down-hole development of yesteryear at Pinedale (particularly in the Jonah Field) is not

¹⁷⁷ Ramey, Thorley and Ivey 2014.

¹⁷⁸ Ramey, Thurley and Ivey 2014; *See also* Wyoming Game and Fish Department, *Wyoming Sage-Grouse Population Lek Count Data* (2013); Wyoming Oil and Gas Conservation Commission *Well Data*; Disturbance Data from PAPO, JDMIS, and PDMIS databases.

¹⁷⁹ Ramey, Thorley and Ivey 2014.

¹⁸⁰ COT Report at 10.

¹⁸¹ *See* <http://blogs.scientificamerican.com/extinction-countdown/2014/10/17/sage-grouse-oil-drilling/>.

representative of a typical field today. Many of these areas developed prior to widespread use of directional drilling and clustered development. In addition, the Monograph omits numerous scientific papers and reports on oil and gas mitigation measures, mitigation of raven predation, and the fact that GRSG traverse (fly) over or around roads, agricultural areas, and oil and gas development.¹⁸² Accordingly, impacts from oil and gas development today are likely to be much smaller than previously considered.

Moreover, the Monograph Report fails to acknowledge the regulatory mechanisms already inherent to BLM's regulation and management of the onshore oil and natural gas program. No drilling, access, seismic studies or any other surface disturbing work can proceed without regulatory authorization by BLM. This regulatory authorization comes in multiple forms, but the primary are commitments made in project-specific NEPA documents, and Applications for Permit to Drill ("APD").

Companies may not apply for an APD without first completing project-specific environmental analysis under NEPA. When BLM determines that there will be significant impact to GRSG or other resources for that matter, it prepares an Environmental Impact Statement (EIS) that includes mitigation measures for protecting GRSG. BLM and the companies make a firm commitment that the mitigation measures in the EIS will be enforced through Conditions of Approval ("COA") on APDs. As the APD is absolutely required before drilling can occur, this amounts to a regulatory mechanism that should be recognized by FWS. In fact, a study prepared by SWCA Environmental Consultants found that oil and natural gas companies have more stringent standards in place than the agencies acknowledge. From just a sample of 103 NEPA documents for oil and natural gas projects, the study found that companies have implemented

¹⁸² J. Kehmeier, N. Wojcick, J. Millspaugh, C. Hansen, M. Rumble, S. Gamo and G. Miller, Overview of Greater-Sage-Grouse Monitoring Efforts, Chokecherry and Sierra Madre Wind Energy Project, Carbon County, Wyoming (2014).

773 conservation measures for GRS. This equates to an average 6.5 firm, enforceable regulatory commitments through COAs on APDs to protect GRS. ¹⁸³ .

These measures include monitoring existing populations, restricting human activities to protect leks, interim and final reclamation, noxious weed control, dust suppression through application of water or chemical suppressant to roadways, enforcing speed limits, seeding of all disturbed areas that are not used during the well production phase, NSO buffers to protect wetlands, and general noise abatement. ¹⁸⁴ Additionally, oil and natural gas companies have made concerted efforts to reduce human-subsidized GRS predators, and access to wastewater pits to prevent GRS oiling and drowning. ¹⁸⁵

NEPA is indeed a valid regulatory mechanism to protect and conserve GRS, as there is certainty that each COA or conservation measure will be implemented. ¹⁸⁶ The Western Governor's Association has compiled similar useful information on existing conservation efforts. ¹⁸⁷ The State of Colorado audited COAs recommended by Colorado Parks and Wildlife through Colorado Oil and Gas Conservation Commission rules and found a 97% adoption and implementation rate:

“Results show very high correlation between Best Management Practices (BMPs) recommended by SPW for protection of GrSG habitat and voluntary adoption. In other words, CPW met with operators every time a permit for drilling in GrSG habitat was sought. During those consultations, CPW recommended a series of actions designed to minimize or eliminate impacts on habitat. Adoption of those recommendations by an operator is entirely voluntary under the 1200-series

¹⁸³ See *Id.* at page 5; see also List of NEPA Documents Reviewed beginning on page 35.

¹⁸⁴ *Id.* at page 7-8.

¹⁸⁵ *Id.* at page 18; see also 139 (Exxon Mobile: “It will be the responsibility of the operator to effectively preclude migratory bird access to, or contact with, reserve pit contents that possess detrimental properties (i.e., through ingestion or exposure) or have potential to compromise the water-repellent properties of birds’ plumage”).

¹⁸⁶ *Id.* at page 27.

¹⁸⁷ <http://www.westgov.org/>.

regulations, but our analysis suggests that they are adopted 97% of the time. Please see Appendix B for the full report.”¹⁸⁸

As a result, the Monograph is not presented in an accurate, clear, complete and unbiased manner pursuant to OMB Guidelines.¹⁸⁹ It evidences bias and a lack of transparency and reproducibility in contravention to the DQA, the Guidelines and the additional authorities cited herein.

F. Livestock Grazing

The Monograph fails to recognize the best available science on grazing. Instead of focusing on the negative impacts of historic grazing using citations for alleged threats that are decades old, USGS should be evaluating the application of and results of modern proper grazing management.¹⁹⁰ Historic grazing and research reports of specific grazing practices are immaterial to the question of how modern grazing management practices affect GRS habitat.

A 1990 BLM report shows that good condition rangeland increased by 100% and poor condition rangeland decreased by 50% between 1936 and 1989. In the years since, there has been extensive progress in the implementation of proper grazing management on federal, state and private lands. Furthermore, it is more important and useful to consider rangeland trends rather than current condition. Regardless of current ecological status, rangelands that are in an upward ecological trend also have improving GRS habitat.

It is well established that “In the 1960s and 1970s, Idaho had large numbers of sage grouse and extensive livestock grazing. This suggests that healthy sage grouse populations and livestock grazing are compatible. In short, livestock grazing that results in rangeland in good

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<http://cpw.state.co.us/Documents/WildlifeSpecies/SpeciesOfConcern/GreaterSageGrouse/ColoradoSynthesisReportFINAL.pdf>

¹⁸⁹ See OMB Guidelines V(3)(a).

¹⁹⁰ See Launchbaugh 2012; Mosley and Brewer 2006; Briske et al. 2011.

ecological condition also provides acceptable sage grouse nesting, chick rearing and winter habitat.”¹⁹¹

The Wyoming Department of Agriculture has strongly stated livestock grazing has no negative effects on the GRSG.¹⁹² Moreover, according to the USDA National Agricultural Statistics, Wyoming sheep numbers were at or near all-time highs the same year GRSG numbers were at or near all time highs (1969).¹⁹³ Sheep numbers have dropped precipitously over the last several decades in Wyoming and other western states, and hence, predator numbers have increased accordingly.¹⁹⁴ In fact, the Wyoming Department of Agriculture stated, “[H]abitat alteration caused by livestock grazing (mosaic creation), as well as the predator control offered by livestock producers, have improved and benefited [sic] sage grouse.”¹⁹⁵

Besides ignoring these data from the states, which are the most accurate sources, USGS wholly failed to analyze the effectiveness of current livestock grazing and range management frameworks, standards, and guidelines and failed to consider site-specific considerations to provide case-by-case determinations of effective regulatory mechanisms actually needed for a location. Schutlz 2004 (specific herbaceous height and cover values across the range of GRSG are inappropriate). The Monograph failed to consider that livestock grazing benefits GRSG habitat and that regulatory restrictions on grazing could threaten the viability of ranching in the West. This is contrary to the DQA, its Guidelines and the best interests of GRSG.

The Monograph also undercuts the balanced grazing program passed by Congress as the Taylor Grazing Act (“TGA”). Congress intended TGA land be used primarily for grazing. The

¹⁹¹ Idaho Sage Grouse Management Plan (1997).

¹⁹² Letter from Jim Schwartz, Wyoming Department of Agriculture, to Dr. Pat Diebert, U.S. Fish and Wildlife Service (July 30, 2004) (on file with the Wyoming Department of Agriculture).

¹⁹³ <http://www.nass.usda.gov:81/ipedb/report.htm>).

¹⁹⁴ *Id.*

¹⁹⁵ Letter from Jim Scwharz, Wyoming Department of Agriculture, to Dr. Pat Deibert, U.S. Fish and Wildlife Service (July 20, 2004) (on file with Wyoming Department of Agriculture).

Monograph seems to advocate single-use management in direction contravention to existing laws such as the TGA. Accordingly, the Monograph, as implemented through a listing decision or through Land Use Plan Amendments will result in significant economic and social impacts to Petitioners. Federal agency demands for current conservation efforts fail to provide a true holistic approach to managing multiple ownership lands in an economically sustainable manner.

The Monograph did not include input from any affected stakeholders or interdisciplinary experts aside from state and federal scientists and specialists. It ignores regional variances in GRSG needs, and does not present a comprehensive representation of the literature and research surrounding livestock grazing. Subsequent to its publication, Cagney et al. 2010 demonstrated positive attributes of grazing in Wyoming for nesting and early brood rearing habitat.

The Monograph fails to recognize that grazing is a key contributor to GRSG habitat and conservation and omits the many positive impacts of grazing. Grazing is integral to reducing fuels.¹⁹⁶ Without grazing, GRSG habitat would suffer greatly in the West.¹⁹⁷ The many contributions of grazing and ranching, which are largely ignored or understated in the Monograph include:

- Preservation of open space
- Noxious weed and invasive species eradication and containment
- Production of forb growth that is preferred by GRSG to non-grazed areas
- Wildfire prevention and controlled burn efforts
- Development of wildlife watering sources, including placement of bird ladders in troughs
- Predator management.

Even the federal government's Sage Grouse Initiative has recognized the importance of private lands to GRSG conservation.¹⁹⁸ The Monograph must recognize that regulatory burdens

¹⁹⁶ See Davies et al. 2008; Diamond et al. 2009; Messmer and Peterson 2009; Freese et al. 2013; Taylor 2006; and Mosley and Roselle 2006.

¹⁹⁷ See Launchbaugh 2012; Mosley and Brewer 2006; Briske et al. 2011.

¹⁹⁸ Sage Grouse Initiative. 2014. *Private Lands Vital to Conserving Wet Areas for Sage Grouse Summer Habitat*, Science to Solutions Series Number 4. Sage Grouse Initiative. 4pp. <http://www.sagegrouseinitiative.com/>.

such as those advocated in Land Use Plan Amendments, could prove so burdensome that ranching on private lands will become unsustainable. Private lands integral to GRSG conservation, then, would be marketed and sold. When this land is subdivided, GRSG populations would suffer. Accordingly, the very regulatory mechanisms proposed may threaten the productive private and public land relationships that sustain ranching, rural communities and wildlife populations.

G. State, Local and Private Conservation Efforts

The Monograph fails to recognize that states have undertaken significant efforts to conserve GRSG. State conservation plans are preferable alternatives to the misdirected management protocols in the NTT and COT Reports and the Monograph. Federal agencies can rely upon state, regional, and local plans in their consideration of environmental impacts under NEPA.¹⁹⁹

As Utah Governor Gary Herbert has pointed out, state plans better balance future economic activities with robust protections for GRSG, and were developed using a bottom-up process with input from diverse stakeholders, rather than the top-down approach taken by the agencies.²⁰⁰

The Monograph also fails to adequately consider the states' primary authority over wildlife management and their central role in managing GRSG populations and habitat within their borders. For example, Connelly et al. 2011 does not adequately address how individual states or the private sector have contributed to GRSG conservation. For example, the paper only referenced the study of GRSG response to the Conservation Reserve Program in Washington

¹⁹⁹ See, e.g. 40 CFR § 1502.21; *Georgia River Network v. U.S. Army Corps of Engineers*, 334 F. Supp. 2d 1329, 1345 (N.D. Ga. 2003) (agency properly relied upon federal, state and local regulations, including local land use plan); *Sierra Club North Star Chapter v. La Hood*, 693 F. Supp. 2d 958, 990 (D. Minn. 2010) (accepting reliance on local plans in indirect effects analysis).

²⁰⁰ See attached Exhibit A.

State when discussing the efforts of individual states and private sector's conservation efforts. See Exhibit B at 130-131, and 134. A paper that is cited for a proposition involving private land should have a more detailed analysis of individual state and private sector efforts to be considered the best scientific and commercial data available. Connelly at al. 2011 lacked critical hypothesis testing and ignored evidence that GRSG may adapt to a disturbed environment. For example, highly naturally fragmented habitats have GRSG persistence. See Exhibit B at 136-137.

The states are better suited than the federal government to manage GRSG as such action falls within their traditional jurisdiction and professional expertise. Active consultation between the states and federal agencies, as well as local governments and local GRSG working groups, is a more effective approach than the top-down, one-size-fits-all restrictions in the Reports.

Even the federal government's Sage Grouse Initiative has recognized the importance of private lands to GRSG conservation.²⁰¹ Irrigation on private land also provides an important link to GRSG leks which are often located on drier public lands. As *The Progressive Rancher* reported, hundreds or more small homesteads covered large portions of Nevada in the late 1800s to the mid-1900s.²⁰² The homesteads were nearly always located on a spring or stream that the owners used to irrigate meadows. The homesteaders also vigorously shot and trapped predators, such as coyotes, ravens and badgers. As the Reason Foundation summarized, "[T]he result, according to the article, was a higher sage grouse population than exists today and a distinct

²⁰¹ Sage Grouse Initiative. 2014. *Private Lands Vital to Conserving Wet Areas for Sage Grouse Summer Habitat*, Science to Solutions Series Number 4. Sage Grouse Initiative. 4pp. <http://www.sagegrouseinitiative.com/>.

²⁰² *Progressive Rancher*, July/August Edition (last visited Dec. 23, 2014 at 4:24 PM). http://www.progressiverancher.com/Resources/ProgressiveRancher_JulyAug2014.pdf (last visited Dec. 23, 2014 at 4:36 PM).

geography to the grouse's high quality water-dependent habitat: lots of it in small pockets scattered widely across the landscape."²⁰³

Contrary to some assertions, federal regulation of private land is not conducive to continued conservation. Rather, federal regulation has a significant chilling effect on local, state and private conservation efforts. For example, when FWS proposed listing the Gunnison GRSG despite over \$50 million in state investment and 65,000 acres of private lands protected by conservation easements, county officials felt deeply betrayed. Commission Chair Paula Swenson said she was "furiously frustrated" and Commissioner Jonathan Houck, former mayor of the town of Gunnison, said he felt "cut off at the knees."²⁰⁴ Upon listing the Gunnison sage-grouse, Colorado Governor John Hickenlooper, in a significant bipartisan press release with Members of Colorado's Congressional Delegation, stated:

"We are deeply disappointed the U.S. Fish and Wildlife Service chose to ignore the extraordinary efforts over the last two decades by the state, local governments, business leaders and environmentalists to protect the Gunnison sage grouse and its habitat. This sends a discouraging message to communities willing to take significant actions to protect species and complicates our good faith efforts to work with local stakeholders on locally driven approaches. In short, this is a major blow to voluntary conservation efforts and we will do everything we can, including taking the agency to court, to fight this listing and support impacted local governments, landowners and other stakeholders."²⁰⁵

In response to the Gunnison listing decision, the Colorado Cattlemen's Association issued a release titled, "Lawsuit-Inspired Listing Ends 20 Years of Conservation Efforts."²⁰⁶

²⁰³ Brian Seaholes, *Sage Grouse Success is Inextricably Linked to Ranching and Farming in the West According to the Co-author of a Groundbreaking New Study*, <http://reason.org/blog/show/sage-grouse-success-is-inextricably#> (Oct. 9, 2014 at 9:43 AM) (last visited Dec. 23, 2014 at 4:38 PM).

²⁰⁴ Lynn Bartels, The Denver Post, *Gunnison Seeks to Protect Grouse, Residents from Endangerment Listing*, http://www.denverpost.com/news/ci_26539987/gunnison-seeks-protect-grouse-residents-from-endangerment-listing (Sept. 15, 2014) (last visited on Dec. 23, 2014 at 4:40 PM).

²⁰⁵ Official Colorado State Web Portal, *Gov. Hickenlooper, Senators Bennet and Udall and Congressman Topton Issue Statements on Gunnison sage Grouse Listing Decision*, <http://www.colorado.gov/cs/Satellite?c=Page&childpagename=GovHickenlooper%2FCBONLayout&cid=1251658153409&pagename=CBONWrapper> (Nov. 12, 2014) (last visited on Dec. 23, 2014 at 4:43 PM).

²⁰⁶ <http://us8.campaign-archive2.com/?u=8f5fe0c71eb61a94f0da35e3f&id=7432815534>

Similarly, in a letter to Interior Secretary Sally Jewel, the Western Governor’s Association expressed deep disappointment in one-size-fits-all regulatory restrictions proposed for GRSG and that coordination with the states was “treated more as an afterthought.”²⁰⁷

These assertions are backed by sound evidence. According to the NRCS, private conservation efforts declined by 95% when FWS proposed listing the bi-state population of GRSG. Even worse, private landowners understandably manage their lands specifically to avoid the presence of species once they have been listed under the ESA.²⁰⁸

VI. The DQA Applies to the Monograph

The U.S. Department of the Interior (“DOI”) issued its Guidelines to ensure high quality information is generated, used, and disseminated; and to comply with OMB’s charge that each agency adopt DQA Guidelines.²⁰⁹ “The Department’s methods for producing quality information will be made transparent, to the maximum extent practicable, through accurate documentation, use of appropriate internal and external review procedures, consultation with experts and users, and verification of its quality.”²¹⁰ Information released by DOI will be reproducible to the extent possible and influential information shall be produced with “a high degree of transparency about data and methods.”²¹¹ “Analytic results shall generally require sufficient transparency about data and methodology that an independent reanalysis could be undertaken by a qualified member of the public resulting in substantially the same results.”²¹²

²⁰⁷ <http://westgov.org/news/298-news-2014/800-western-governors-concerned-federal-work-with-states-on-sage-grouse-conservation-an-afterthought-see-clear-concise-input>

²⁰⁸ Brian Seasholes of the Reason Foundation has provided an excellent summary of landowner reactions to the perverse disincentives of the ESA: <http://reason.org/blog/show/the-state-of-the-birds-2014-report> (emphasis added).

²⁰⁹ DOI, *Information Quality Guidelines Pursuant to Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001*, <https://www.doi.gov/docs/InformationQualityGuidelines.pdf> (“DOI Guidelines”) at II.

²¹⁰ DOI Guidelines, II.

²¹¹ *Id.*

²¹² *Id.*

The USGS Guidelines apply to all USGS information disseminated to the public on or after October 1, 2002.²¹³ The USGS Guidelines expressly state that the DOI and OMB Guidelines including the standards and definitions therein also apply to the USGS Guidelines.²¹⁴

A. Information Dissemination Product

The OMB Guidelines define “Information Dissemination Product” as “any books, paper, map, machine-readable material, audiovisual production, or other documentary material, regardless of physical form or characteristic, an agency disseminates to the public. This definition includes any electronic document, CD-ROM, or web page.”²¹⁵ Similarly, the USGS Guidelines, “cover all information produced by the USGS in any medium, including data sets, web pages, maps, audiovisual presentations in USGS-published information products, or in publications of outside entities.”²¹⁶

The DQA and the Guidelines clearly apply to the Monograph. The cover page of each Chapter preserves the USGS’ “proprietary” interest in the information contained in each chapter as it’s “publisher.” The Monograph provides:

This manuscript contains unpublished, peer-reviewed, scientific information. It has been accepted for future publication in a special volume of the Cooper Ornithological Society scientific series "Studies in Avian Biology." No waiver of proprietary rights to the information is granted by this release on the part of the Cooper Ornithological Society and its publisher, the USGS, or the author(s) of the manuscript.²¹⁷

The Monograph is not exempt from USGS Guidelines, as each chapter of the Monograph was sponsored by USGS, authored or edited by USGS staff, and distributed on the USGS

²¹³ USGS Guidelines, I.

²¹⁴ *Id.*

²¹⁵ 67 Fed. Reg. 8452, 8460 (Feb. 22, 2002).

²¹⁶ USGS Guidelines, III.

²¹⁷ <http://web.archive.org/web/20100527164855/http://sagemap.wr.usgs.gov/Docs/SAB/Forward.pdf>.

website.²¹⁸ USGS also provided logistical and financial support for the Monograph. *See* Exhibit A at 6. The USGS Guidelines apply to information distributed by outside parties if it was conducted at the direction or sponsorship of USGS.²¹⁹ It should be noted that the COS charges the public \$95 per hardcopy of the Monograph.²²⁰

Here, the OMB and DOI Guidelines apply to the Monograph as it was both sponsored and disseminated by USGS. Moreover, the Monograph has been heavily relied upon by other agencies, including FWS, BLM and the U.S. Forest Service (“USFS”). Accordingly, it meets the definition of “information dissemination product” under the Guidelines.

The intended users of this information include FWS, BLM, the U.S. Forest Service, state and local governments, domestic energy producers, agricultural producers, public land managers, local and state governments and the general public.

OMB Guidelines define “Dissemination” as “agency initiated or sponsored distribution of information to the public.”²²¹ As provided above, the Monograph was disseminated by USGS through publication on its website.²²² No fewer than 12 USGS employees contributed to the Monograph and influential chapters therein. Additionally, USGS and FWS have represented the Monograph as its own and/or as an official position of the agency in such a way that the Guidelines apply.²²³

²¹⁸ USGS, Sagemap Projects, The Monograph Chapters, <http://web.archive.org/web/20100527124712/http://sagemap.wr.usgs.gov/monograph.aspx> (last modified March 5, 2010).

²¹⁹ USGS Guidelines, I.

²²⁰ USGS, Ecology and Conservation of Greater Sage-Grouse: A Landscape Species and Its Habitats: *a Release of a Scientific Monograph with Permission of the Authors, the Cooper Ornithological Society, and the University of California Press*, <http://web.archive.org/web/20100527124712/http://sagemap.wr.usgs.gov/monograph.aspx>

²²¹ 67 Fed. Reg. 8452, 8460 (Feb. 22, 2002).

²²² USGS, Ecology and Conservation of Greater Sage-Grouse: A Landscape Species and Its Habitats: *a Release of a Scientific Monograph with Permission of the Authors, the Cooper Ornithological Society, and the University of California Press*, <http://web.archive.org/web/20100527124712/http://sagemap.wr.usgs.gov/monograph.aspx>

²²³ OMB, Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, http://www.whitehouse.gov/omb/fedreg_reproducible.

B. Third-Party Information

To the extent USGS considers the Monograph third-party information, the DQA and its Guidelines still apply. Third-party information that an agency makes public is also subject to the Data Quality and the Guidelines. Here, USGS has clearly funded and adopted the Monograph.²²⁴

As noted above, the USGS Guidelines expressly state they incorporate OMB and DOI Guidelines. However, the USGS Guidelines conflict with the DQA and the OMB and DOI Guidelines in regards to third-party information. The USGS Guidelines state, where third-party information “is not verifiable, the source will be made transparent to the public, and such information will not be subject to these guidelines.”²²⁵ The USGS Guidelines provide:

“The USGS takes steps to ensure that the quality and transparency of data and information provided by external sources are sufficient for the intended use. Reference to and use of third party data and information is complex and requires extensive collaboration with the scientific and technical community and other external data providers. Third-party data may carry inherent accuracy weaknesses in that the data content often cannot be checked nor their accuracy controlled. In instances where the referenced information is not verifiable, the source will be made transparent to the public, and such information will not be subject to these guidelines.”

USGS Guidelines, III.5. OMB Guidelines provide, “[I]f third-party submissions are to be used and disseminated by Federal agencies, it is the responsibility of the Federal Government, under the Data Quality Act, to make sure that such information meets relevant information quality standards.”²²⁶ The Guidelines state third-party information endorsed, adopted, disseminated or relied upon, must meet the quality, objectivity, utility and integrity standards required by the Data Quality Act and should be subject to DQA correction. The DOI Guidelines expressly apply to non-Departmental parties that develop scientific and technical information on its behalf.²²⁷

²²⁴ The USGS provided logistical and financial support for the Monograph.

²²⁵ USGS Guidelines, III.5 (emphasis added).

²²⁶ OMB § 11 “Information Quality: A Report to Congress” (April 30, 2004).

²²⁷ DOI Guidelines II.4; DOI Guidelines V.

USGS may not re-write the DQA or the OMB or DOI Guidelines. Rather, USGS must revise its Guidelines to accord with the authorities it purports to follow. In regard to the Monograph, USGS has also failed its own transparency standards. The failure to provide underlying data for the numerous models and studies incorporated into the Monograph renders it far from transparent and clearly not reproducible. Moreover, as discussed below, USGS in its Guidelines and in practice steadfastly refuses to disclose underlying data, the identity of peer reviewers, peer reviewer comments and how comments were addressed in the final work product. These overt violations of the DQA, the Guidelines and the additional authorities cited herein must be corrected.

The USGS Guidelines also purportedly address the use of metadata in assuring the quality, utility, objectivity, and transparency of third-party data.²²⁸ It is alleged to be a means by which the agency documents methods and techniques used in studies.²²⁹ While USGS avers that it conforms to established national and international standards for metadata, such as the Federal Geographic Data Committee Geospatial Metadata Standards, Petitioners and the public have no means in which to verify this given the agency's secretive approach.²³⁰

C. If Uncorrected, the Monograph Will Cause Substantial Harm

As discussed in detail herein, reliance on uncertainties, inaccuracies, bias and misrepresentation in the Monograph will influence the listed status of GRSG under the ESA and will effect dramatic changes across millions of acres of public lands. To avoid actual harm to the Petitioners, western states, local governments, private landowners and stakeholders, USGS must timely respond to this DQA challenge and retract statements and conclusions based on uncertainties and correct bias and misrepresentation of the information disseminated.

²²⁸ USGS Guidelines, III.5.

²²⁹ *Id.*

²³⁰ *Id.*

Where, as here, Petitioners have provided “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts,” corrective action must include a retraction of the Monograph and its withdrawal from consideration in any listing decision on GRSG or as support for restrictive alternatives in Land Use Plan Amendments by BLM or USFS.

D. The Monograph is Highly Influential Information

The information disseminated here readily qualifies as influential information. USGS has expressly adopted OMB and DOI Guidelines. As OMB states, “[T]he more important the information, the higher quality standards to which it should be held”²³¹ Ordinary information is distinguished from “influential” information, that is, scientific, financial and statistical information having a clear and substantial impact on important public policies or important private sector decisions. “Influential” information is subject to higher standards of quality and should be reproducible by qualified third parties. The information disseminated in the Monograph is information of extreme importance to the listed status of GRSG, and to states, landowners, user groups and local conservation efforts.

The OMB Guidelines define “influential” requests for correction as those of a substantive nature, which sought “something more than a straightforward webpage or data fix. “Influential” has also been defined to mean “that the agency can reasonably determine that dissemination of the information will have or does have a clear and substantial impact on important public policies or important private sector decisions.”²³²

The information disseminated in the Monograph is information of extreme importance. It qualifies under the Guidelines as substantive notices, policy documents, studies and guidance

²³¹ 67 Fed. Reg. 8452 (Feb. 22, 2002).

²³² 67 Fed. Reg. 8452, 8455 (Feb. 22, 2002).

relied upon by the agency to make decisions that could affect multiple federal and state agencies, local governments, tribes and private individuals in 11 western states and on nearly 60 million acres of public lands. The Monograph was integral to the FWS 2010 WBP decision on GRSG. FWS cited four chapters of the Monograph no fewer than 174 times. *See Exhibit A at 7.*

The Monograph has also influenced BLM and USFS revisions in 98 land use plans (“Land Use Plan Amendments”) across 11 western states.²³³ The conservation measures in the Land Use Plan Amendments were developed by the GRSG National Technical Team (“NTT”) and the FWS Conservation Objectives Team (“COT”) which included many of the same staff and scientists from BLM, FWS and USGS involved in the Monograph.²³⁴

Many of the action alternatives in the 98 Land Use Plan Amendments were based in part on approximately 18 of the 25 chapters of the Monograph and references thereto in the NTT and COT Reports. Accordingly, BLM, FWS and USFS have relied upon and disseminated, flawed information from the Monograph.

An even higher level of scrutiny is applied to such highly influential scientific assessments. Highly influential scientific assessments are those that “the agency or the [OMB Office of Information and Regulatory Affairs] Administrator determines . . . could have a potential impact of more than \$500 million in any one year on either the public or private sector or that . . . is novel, controversial, or precedent-setting, or has significant interagency interest.”²³⁵ Such is clearly the case here.

²³³ BLM, *Federal Agencies Announce Initial Step to Incorporate Greater Sage-Grouse Conservation Measures into Land Management Plans*, <http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/COT/COT-Report-with-Deer-Interested-Reader-Letter.pdf> .

²³⁴ BLM, *A Report on National Greater Sage-Grouse Conservation Measures*, <http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/wildlife.Par.73607.File.dat/GrSG%20Tech%20Team%20Report.pdf>.

²³⁵ OMB, *Final Information Quality Bulletin for Peer Review*, at 23 (2004) (hereinafter *OMB Bulletin*) <http://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/fy2005/m05-03.pdf>.

The impacts of the Land Use Plan Amendment process and of a potential ESA listing will last for potentially decades and will far exceed \$500 million. An independent study has shown that just BLM's Land Use Plan Amendments would have an annual economic impact of between \$840 million and \$5.6 billion.²³⁶ This does not include impacts on National Forests or private and state lands. These are clearly controversial, novel, precedent-setting issues of significant interagency and public interest. Thereby, the fatally flawed Monograph carries great, but undue, influence. For all of these reasons, the Monograph is highly influential information subject to heightened scrutiny under the DQA and the Guidelines.

E. Petitioners are “Affected Person(s)” Qualified to Bring a DQA Challenge

The OMB Guidelines also require each agency to establish administrative mechanisms that allow “affected persons” to seek and obtain the correction of information that does not meet the OMB Guidelines.²³⁷ OMB makes clear that the purpose of the administrative mechanism is to “facilitate public review” of agency compliance with the OMB Guidelines.²³⁸ The OMB Guidelines concluded that “affected persons are people who may benefit or be harmed by the disseminated information. This includes persons who are seeking to address information about themselves as well as persons who use information.”²³⁹ Such a definition provides the public with a right to agency-disseminated information that meets high DQA standards; and with a right to correct any publicly disseminated information that does not meet these standards.

Petitioners are “affected persons” within the meaning of the Guidelines. Petitioners and their members or constituents have a distinct interest in the conservation of GRSG and rely upon

²³⁶ Law Offices of Lowell E. Baier, *Economic Impact of 2013 BLM Sage Grouse Conservation Plan*, March 1, 2014, <http://www.westernenergyalliance.org/sites/default/files/Sage%20Grouse%20Economic%20Report%20-%20Final%20from%20Minuteman%20Press.pdf>

²³⁷ 67 Fed. Reg. at 8452.

²³⁸ *Id.*

²³⁹ 66 Fed. Reg. 49718, 49721 (Sept 28, 2001).

public and private lands within the range of the GRSG for the production of natural resources, agricultural goods and products, for revenues distributed to the states and local governments, for recreation and for wildlife conservation. Petitioners have a reasonable likelihood of suffering actual harm from dissemination of the Monograph unless the USGS resolves this complaint prior to the final agency actions and information products at issue herein.

Petitioners have used and will use the information disseminated to better inform and guide their business decisions. Their members and/or constituents are affected by information regarding GRSG numbers, dispersal, and distribution, as well as alleged threats to the species. Where the species is located, how it disperses, and where it is distributed could have strict regulatory consequences to those that produce agricultural products and natural resources from public lands that could be affected. In addition, the local governments rely upon continued access to public lands for natural resources and recreation and the tax and other revenues they generate. Accordingly, Petitioners could be benefited by, or be harmed by the faulty information at issue.

Petitioners are involved in extensive conservation efforts across the West to conserve GRSG while also preventing unfounded federal regulatory restrictions and a listing under the ESA, which would prove less effective than the state and local efforts underway. These conservation efforts include the collection of data used to manage and study GRSG, and ongoing state, local and private conservation efforts for the GRSG. Petitioners have established their interests in ensuring that their members and constituents as well as the public at large have the opportunity for open and robust debate regarding the information disseminated.

VII. The Monograph Does Not Comply with Other Federal Standards

In addition to the many DQA issues discussed herein, the Monograph also violates

Presidential, DOI and agency standards on scientific integrity.

A. The Monograph Report Does Not Comply with Presidential Direction on Scientific Integrity and Transparency

While scientific integrity and transparency in agency decision making are enumerated priorities for this administration, the Monograph falls far short of these goals. The Monograph also falls short of the President's direction to executive departments and agencies. On March 9, 2009, President Obama issued a Memorandum setting forth principles "for ensuring the highest level of integrity in all aspects of the executive branch's involvement with scientific and technological processes."²⁴⁰ When scientific or technological information is considered in policy decisions, the information is to be subject to well-established scientific processes, including peer review where appropriate. Agencies are directed to appropriately and accurately reflect that information in complying with relevant statutory standards.²⁴¹ Such was not the case here.

President Obama committed to "an unprecedented level of openness in Government" by "work[ing] together to ensure the public trust and establish a system of transparency, public participation, and collaboration."²⁴² President Obama believes that "[o]penness will strengthen our democracy and promote efficiency and effectiveness in Government."²⁴³ In this case, the Monograph has been far from transparent. The USGS failed to disclose virtually any information relative to transparency.

President Obama reaffirmed his commitment to scientific integrity as part of his second term's scientific agenda in 2012.²⁴⁴ More specifically, the president stated that he had "directed

²⁴⁰ 74 Fed. Reg. 10671, 10671 (March 11, 2009).

²⁴¹ *Id.*

²⁴² Barack Obama, *Transparency and Open Government: Memorandum for the Heads of Executive Departments and Agencies*, http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment.

²⁴³ *Id.*

²⁴⁴ See Barack Obama, Science Debate 2012, <http://www.sciencedebate.org/debate12/> at No. 11 (Sept. 4, 2012); see also Dan Cergano, USA Today, Updated: Obama, Romney Tackle Science Debate Questions,

the White House Office of Science and Technology Policy to ensure that our policies reflect what science tells us without distortion or manipulation,” because the President has “insisted that we be open and honest with the American people about the science behind our decisions.”²⁴⁵ Furthermore, “only by ensuring that scientific data is never distorted or concealed to serve a political agenda, making scientific decisions based on facts, not ideology, and including the public in our decision making process will we harness the power of science to achieve our goals – to preserve our environment and protect our national security; to create the jobs of the future, and live longer, healthier lives.”²⁴⁶

B. The Monograph Fails to Comply with DOI Scientific Integrity Standards

The Monograph also runs afoul of DOI standards on scientific integrity. It suffers from a lack of objectivity, clarity, reproducibility and utility. *See* Exhibits A and B, *gen.*

The DOI Manual implemented a secretarial order: Integrity of Scientific and Scholarly Activities (effective Jan. 28, 2011). The DOI Manual defines “scientific and scholarly integrity” to mean, “[t]he condition resulting from adherence to professional values and practices, when conducting and applying the results of science and scholarship, that ensures objectively, clarity, reproducibility, and utility.”²⁴⁷

Former Secretary of the Interior Ken Salazar, in announcing his Departmental order on scientific integrity, noted, “[t]he American people must have confidence that the Department of the Interior is basing its decisions on the best available science and that the scientific process is

<http://content.usatoday.com/communities/sciencefair/post/2012/08/obama-and-romney-to-tackle-science-debate-questions-/1#.VJR9BsAKA> (Sept. 4, 2012).

²⁴⁵ *Id.*

²⁴⁶ *Id.*

²⁴⁷ *Available at:* <http://elips.doi.gov/elips/browse.aspx>.

free of misconduct or improper influence.”²⁴⁸ On December 16, 2014, DOI updated and strengthened the policy to “ensure that all Interior employees and contractors uphold the principles of scientific integrity.”²⁴⁹ The policy is to establish the expectations for how scientific and scholarly information is considered and used:

“Scholarly information considered in Departmental decision making must be robust, of the highest quality, and the result of as rigorous scientific and scholarly processes as can be achieved. Most importantly, it must be trustworthy. This policy helps us to achieve that standard.”²⁵⁰

Adherence to these DOI standards is to ensure, “objectivity, clarity, reproducibility, and utility of scientific and scholarly activities and assessments and helps prevent bias, fabrication, falsification, plagiarism, outside interference, censorship, and inadequate procedural and information security.”²⁵¹

C. The Monograph Violates USGS Scientific Integrity Standards

The USGS Manual Chapter on Scientific Integrity (SM 500.25)²⁵² establishes a code of scientific conduct for USGS employees and volunteers along with a procedure for addressing allegations of scientific misconduct. “Issues related to scientific excellence, objectivity, integrity, and conflict of interest are dealt with in accordance with established DOI and USGS codes of scientific conduct (SM 500.25).”²⁵³

The Manual provides that scientific activities follow “standard protocols and procedures and include any of the physical, biological, or social sciences as well as engineering and

²⁴⁸ Press Release, U.S. Dep’t of the Interior, Salazar Issues Secretarial Order to Ensure Integrity of Scientific Process in Departmental Decision-Making (Sept. 29, 2009), <http://www.doi.gov/news/pressreleases/Salazar-Issues-Secretarial-Order-to-Ensure-Integrity-of-Scientific-Process-in-Departmental-Decision-Making.cfm>.

²⁴⁹ DOI, *Press Release: Interior Department Announces Strengthened Scientific Integrity Policy for Employees and Contractors*,

²⁵⁰ 305 DM 3.4.; I:\Western Energy Alliance\DQA Challenge\Research\Interior Dept. New Policy\Integrity of Scientific and Scholarly Activities.html (emphasis added).

²⁵¹ 305 DM 3.5.

²⁵² <http://www.usgs.gov/usgs-manual/500/500-25.html>

²⁵³ USGS Manual 502.3.5.D.

mathematics that employ the scientific method.”²⁵⁴ It defines the scientific method as, “[A] method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested.”²⁵⁵ Unfortunately, as referenced above, the Monograph chapters described herein, and in the Exhibits, did not adhere to the scientific method. There was no hypothesis testing used by any of the authors in this 25-chapter monograph. *See* Exhibit A at 13.

Co-authorship²⁵⁶ with non-USGS authors does not negate these requirements:

“Where a non-USGS author is the lead and a USGS scientist is a co-author, the USGS scientist must comply with USGS peer review requirements in this chapter or the USGS scientist may not be listed as a co-author. USGS scientists with joint university affiliations are not exempt from complying with USGS peer review requirements.”²⁵⁷

Nor can USGS classify the Monograph chapters in a way to avoid application of these standards. To the extent USGS considers any of these chapters “extended abstracts”²⁵⁸ they certainly contain “new interpretive information” which requires peer review and USGS approval.²⁵⁹

As addressed herein, and in Exhibits A and B, USGS has not complied with its own Scientific Integrity Standards.

D. USGS is Not Meeting its Mission and Vision

The mission of USGS is to, “serve[s] the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural

²⁵⁴ USGS Manual 500.25. E.5.

²⁵⁵ *Id.*

²⁵⁶ In regard to submittals to peer-reviewed journal articles, USGS peer review requirements still apply. There, one review is to be initiated or coordinated by USGS with a reviewer that can be internal or external to USGS and one review is to be initiated or coordinated by the journal under its selection and review criteria. USGS Manual 502.3.4.H.

²⁵⁷ USGS Manual 502.3.4.D.

²⁵⁸ “Extended abstracts typically are multi-page; summarize scientific studies, results, and principal conclusions; and are often included in a larger volume containing other abstracts intended for release as proceedings or refereed journal publications...” USGS Manual 502.3.4.I.

²⁵⁹ *See* USGS Manual 502.3.4.I.

disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.”²⁶⁰ The agency’s vision statement states, “[T]he USGS is a world leader in the natural sciences through its scientific excellence and responsiveness to society’s needs.”²⁶¹ In this case, USGS is not meeting these lofty goals.

The reports incorporated into the Monograph and adopted by USGS are hardly “reliable scientific information” that exhibit “scientific excellence” or “responsiveness to society’s needs.”²⁶² *See* Exhibits A and B, *gen.* In fact, adoption of the Monograph in agency decision-making has, and will, result in tremendous societal and economic costs with little or no quantifiable environmental benefits.

While USGS purports to provide “unbiased, objective, and impartial scientific information upon which our audiences, including resource managers, planners, and other entities, rely,”²⁶³ the Monograph is biased, unreliable and irreproducible. Accordingly, agency reliance, and dissemination of same, fails to meet USGS Fundamental Science Practices (FSP) as reflected in the agency’s mission and vision.²⁶⁴

VIII. Conclusion

The Monograph is a highly influential document, as BLM and USFS are using it to make substantial land use decisions across nearly 60 millions of acres of public lands throughout 11 western states and FWS relied heavily upon it in its 2010 WBP decision and will do so for the upcoming decision. As such, it must adhere to the standards of quality, integrity, objectivity and utility in the DQA as well as administration standards of scientific integrity and transparency.

²⁶⁰ USGS Guidelines II.1.

²⁶¹ USGS Guidelines II.2.

²⁶² USGS Guidelines II.

²⁶³ USGS, Fundamental Science Practices, <http://www.usgs.gov/fsp/> (last modified Jan. 28, 2013).

²⁶⁴ *Id.*

Unfortunately, the Monograph fails to meet these requirements. Much of what it presents as “science” has no basis in scientific design or scientific evidence.

USGS should rely upon data of the highest integrity and accuracy in the Monograph. Unfortunately, the most frequently cited sources contain fundamental flaws including gaps in crucial data, data that are not public, recurrent uncertainties, methodological bias, selective presentation of information, misrepresentation of cited studies and suspect peer reviews. *See* Exhibits A and B, *gen.* Opinions must not be represented as fact nor dictate decisions that are required to be based on scientific data.

The Monograph violates the DQA, the Guidelines as well as the secretarial, presidential and other authorities cited herein. Much of what is presented as “science” has no basis in scientific design or scientific evidence. Notably, the Monograph provides no original data nor quantitative analyses. It fails to provide a comprehensive and unbiased review and perpetuates outdated information and beliefs.

The Monograph is not presented in an accurate, reliable and unbiased manner. It cherry-picked what scientific papers it wished to discuss, presented misleading information, and presented much information out of context and simply ignored large numbers of studies that refute many of its conclusions.

The Monograph does not represent the best available science as required to meet the standards of quality, objectivity and integrity required in the DQA. Rather, the Monograph is comprised of assumptions built upon assumptions. It fails to address the limitations of the underlying data and studies used to reach its conclusions and fails to acknowledge that circumstantial evidence rather than scientific evidence underlies most of the information presented.

The USGS cannot rely on the biased opinions and selective presentation of information to support recommendations that are unsupported by data. As detailed in the text herein and in Exhibits A and B, the Monograph failed to:

- Use sound analytical methods in carrying out scientific analyses and in preparing risk assessments
- Use reasonably reliable and reasonably timely data and information e.g., collected data such as from surveys, compiled information, and/or expert opinion
- Ensure transparency in its dissemination by identifying known sources of error and limitations in the data
- Evaluate data quality and, where practicable, validate the data against other information when using or combining data from different sources
- Ensure transparency of the analysis, to the extent possible, consistent with confidentiality protections, by
 - Presenting a clear explanation of the analysis to the intended audience
 - Providing transparent documentation of data sources, methodology, assumptions, limitations, uncertainty, computations, and constraints
 - Explaining the rationale for using certain data over other data in the analyses
 - Presenting the model or analysis logically so that the conclusions and recommendations are well supported.
- Clearly identify sources of uncertainty affecting data quality
- Clearly state the uncertainty of final quantitative estimates
- Demonstrate that data and data collection systems used are of sufficient quality and precision that uncertainty in the final estimates is appropriately reproducible
- Provide an explanation of the nature of uncertainty in its analysis.

The errors contained in the Monograph are improperly influencing BLM and USFS decision-making on public land management as well as FWS decisions on the listed status of GRSG. Reliance on this biased and faulty information has and will continue to harm the Petitioners and their members. In addition to the damage to the Petitioners, the public, GRSG and the economy will be negatively impacted based upon the errors in the Monograph.

The Petitioners respectfully request USGS retract the Monograph and all reliance thereon in existing and subsequent Land Use Plans Amendments, as well as applicable decisions on listed status of GRSG and/or on permits and authorizations. Alternatively, USGS could, as required by the DQA and the Guidelines, issue an amended Monograph that uses sound analytical methods and the best data available while ensuring transparency and objectivity. Any amended Report should incorporate all reliable information and alternative hypotheses, not just selective supporting information and subjective interpretations of results. It should also identify the limitations of data used rather than stating assumptions as fact. Finally, any amended Report should use and include the best available data as discussed herein.

Respectfully submitted this 18th day of March, 2015.

Holsinger Law, LLC

A handwritten signature in black ink, appearing to read 'K. Holsinger', with a stylized flourish at the end.

Kent Holsinger
Attorney for Petitioners