

WYOMING GAME AND FISH DEPARTMENT
CHRONIC WASTING DISEASE MANAGEMENT PLAN
April 22, 2016

EXECUTIVE SUMMARY

- The purpose of this CWD Management Plan (Plan) is to provide flexible and adaptable direction for spread, prevention and management of chronic wasting disease (CWD) in cervids - mule deer, (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), elk (*Cervus elaphus*) and moose (*Alces alces*).
- The Plan will be reviewed and updated as warranted.
- The Plan consists of four components: Disease Management, Applied Research, Public Information and Funding.
- Based upon current research and known epidemiology of CWD in free-ranging cervids, eradication is currently not realistic, but eradication is the desired long-term disease management objective.
- The Wyoming Game and Fish Department (WGFD) will coordinate the management of CWD with other state, federal and tribal agencies.
- The WGFD will conduct surveillance to monitor and estimate spatial distribution and prevalence of CWD, as well as actively cooperate and coordinate CWD research with other state, federal, tribal agencies and entities of higher education, universities and other researchers. WGFD will expand its CWD efforts beyond being the “field control” state.
- The WGFD will provide timely, complete and accurate CWD informational and educational material to the public, via the WGFD website (<http://wgfd.wyo.gov>), other media and social media outlets.
- The WGFD will continue to work cooperatively with the Wyoming Department of Health and other human health organizations to monitor current research on CWD and human health to provide up-to-date-information to the public.

GOALS

The following goals will be addressed through the four components outlined in this Plan.

- Manage deer, elk, moose and their habitats in Wyoming to delay the spread of CWD and reduce the effects of CWD on wildlife health and human enjoyment of wildlife resources.
- Monitor the change in spatial distribution and prevalence of CWD over time.
- Reduce the rate of spread and prevalence of CWD.
- Coordinate CWD management and research with other state, federal and tribal agencies and entities of higher education, universities and other researchers.
- Adapt CWD management in response to surveillance and research findings.
- Provide timely, complete and accurate CWD information to the public.

INTRODUCTION

Chronic wasting disease (CWD) is a transmissible spongiform encephalopathy (TSE) and is a chronic fatal disease of the central nervous system of deer, elk and moose. Other wildlife species do not appear to be susceptible to CWD. TSE disorders are thought to be caused by abnormal proteins called “prions.” Prions are neither bacteria nor viruses. They are proteins devoid of nucleic acid, thus they are not living organisms. Prions have similar amino acid sequences as

normal cellular proteins but in a different conformation. The functional role of the normal cellular proteins is unknown. Prions cause a conformational change in the normal cellular protein and disease is induced when the normal cellular protein is converted into the prion protein, which apparently can no longer serve its normal role. This eventually causes cells of the central nervous system to die. As more and more cells die, the disease can be observed to progress, ultimately ending in death.

In early disease, there may be no observable clinical signs of CWD. As the disease progresses, affected animals may have one or more of the following signs:

1. Emaciation, poor body condition, rough hair coat.
2. Behavioral changes (hyperactive when constrained; reluctance to move; ears droop).
3. Excessive salivation (sometimes).
4. Excessive drinking (or staying close to water source).
5. Lethargy (but will react when approached closely).
6. Death

CWD was first observed in captive mule deer in Colorado in 1967 (Williams and Young, 1980), but was not observed in free-ranging deer and elk in Wyoming until 1986. The disease was rare and of little interest to wildlife managers or the public until another TSE, bovine spongiform encephalopathy (BSE), caused human disease in the United Kingdom (Bruce, 1997). Because BSE is similar to CWD, people became concerned CWD could also affect human health. Initial incursion of CWD is thought to be by animal-to-animal contact, with later phases of transmission driven by animal to environment and vice versa. In this 30-year interim, CWD became firmly established in deer and elk in southeastern Wyoming and has spread into the Bighorn Basin, the east side of the Bighorn Mountains, south-central Wyoming, southern Green River Basin, eastern slope of the Wind River Mountains and northeastern Wyoming. Deer, elk and moose hunt areas in Wyoming where CWD has been found can be seen on the WGFD website:<https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Wildlife-Disease/Chronic-Wasting-Disease/CWD-Reports>

Disease management in wildlife is an important responsibility of the WGFD. The purpose of this Plan is to provide flexible and adaptable direction for monitoring and management of CWD in Wyoming. The plan will be reviewed and updated as warranted. The plan consists of four components:

- I. Disease Management
- II. Applied Research
- III. Public Information
- IV. Funding

COMPONENT I. DISEASE MANAGEMENT

Based on current scientific information, eradication of CWD from free ranging cervids is currently not a realistic disease management objective, particularly since the disease has become established in multiple states and Canadian provinces (Government of Alberta, 2008; James, 2008), but eradication remains the ultimate desired outcome. Early mathematical models predicted CWD would drive affected cervid populations to extinction (Gross and Miller, 2001). More recent modeling suggests CWD may have a population level impact in Rocky Mountain National Park elk (Monello, 2013, 2014), in Wyoming white-tailed deer (Edmunds, 2013), and in Wyoming mule deer (DeVivo, pers. Comm.). Other research suggests certain populations may be

able to survive through disease-driven genetic selection and some level of hunting season restrictions (Robinson, 2012; Williams, 2014). Nonetheless, it is anticipated endemic CWD will depress some cervid populations to some unknown level (Miller, 2008; Edmunds 2013; Monello 2014). Even though eradication is not feasible at this time, the WGFD will consider management actions to slow the spread and/or reduce the prevalence of the disease statewide, based on accepted scientific information and wildlife management practices.

Through adoption of this Plan, the WGFD has chosen an adaptive management strategy allowing flexibility to alter disease management activities depending on future research findings, CWD distribution, prevalence, funding, and level of concern (public, WGFD and other governmental agencies). The Disease Management component of this plan addresses nine objectives. Most of these objectives were identified by a panel of 60 wildlife disease experts and categorized relative to their estimated efficacy in endemic CWD areas (Government of Alberta, 2008). The WGFD will use the best scientific information available and will take necessary and reasonable steps to achieve these objectives:

1. Surveillance.

Surveillance allows the WGFD to identify which deer, elk, or moose hunt areas have one or more of these species testing positive for CWD. These hunt areas will comprise the “CWD Endemic Area” within Wyoming.

The WGFD will conduct CWD surveillance as funding permits, and will modify its surveillance based on funding and distribution of CWD within the state. Much of the WGFD’s surveillance emphasis will remain in the “core endemic area” (Deer Hunt Areas 59, 64 - 66 and Elk Hunt Areas 7 and 19), around the 22 state elk feedgrounds and National Elk Refuge (NER), and monitoring along the western frontier of the CWD endemic area. Surveillance is conducted by collecting retropharyngeal lymph nodes, tonsil tissue, or the obex from hunter and vehicle-killed cervids, cervids exhibiting clinical signs consistent with CWD (i.e., targeted surveillance), cervids found dead from unknown causes or those killed by predators.

Hunters, who participate in the WGFD’s CWD surveillance program by providing deer, elk, or moose tissue samples and provide adequate information, can obtain test results through the WGFD's website at:

<https://wgfd.wyo.gov/services/education/cwd/surveillance/frmllookup.aspx>.

If a sample submitted to the WGFD’s CWD surveillance program tests positive and adequate contact information is provided, the hunter will be notified of the positive test result.

Other than the WGFD surveillance program, WGFD will not be responsible for the testing of individual hunter’s deer, elk, or moose. The WGFD will provide information regarding testing by the Wyoming State Veterinary Laboratory for hunters who choose to have their deer, elk or moose tested at their own expense.

The WGFD may donate deer, elk and moose carcasses acquired from the CWD endemic area to individuals after the animal has been tested with no evidence of CWD being found. The recipient must also sign an affidavit of informed consent. While the WGFD may donate meat from cervids testing CWD negative to individuals, it will not donate

meat from animals killed within the CWD endemic area to organizations or entities whose purpose is to redistribute the meat.

To provide for additional surveillance opportunities, WGFD will provide training on recognition of CWD clinical signs and collecting CWD samples for testing to WGFD employees, other state and federal employees, hunters, outfitters, and the general public as needed or requested.

2. Carcass Movement Regulatory Restrictions.

Tissues of CWD-infected carcasses can transmit CWD to uninfected cervids (Miller, 2004). To minimize this potential source of transmission to other areas within and outside of Wyoming, the WGFC Chapter 2 General Hunting Regulation directs the transportation and disposal of harvested cervids taken from within Wyoming. Likewise, the WGFC Chapter 2 General Hunting Regulation controls the importation of harvested cervids/cervid parts taken from any state, province or country within areas designated by the appropriate jurisdictional agency known to have CWD. The Chapter 2 General Hunting Regulation pertaining to CWD is enforced by WGFD law enforcement personnel on a year-round basis. The Chapter 2 General Hunting Regulation can be found on the WGFD website at: https://wgfd.wyo.gov/Regulations/Regulation-PDFs/REGULATIONS_CH2

3. Translocation of cervids within and outside of Wyoming.

Live free-ranging cervids originating within Wyoming will not be moved to other locations for any reason within or outside of Wyoming without prior review, approval, or permitting by the WGFD and/or WGFC.

4. Remove cervids suspected of being affected by CWD.

Removal of cervids exhibiting signs consistent with CWD may reduce the spread and persistence of the disease, as well as contribute to statewide targeted surveillance data and provide research material for WGFD or other researchers. When possible, WGFD personnel will lethally take, collect appropriate biological samples (including whole carcasses for complete necropsy) for disease testing or remove targeted cervids from the field and properly dispose of the carcass in a manner that will minimize CWD transmission and environmental contamination. In addition, the WGFD will continue its public information and education efforts strongly encouraging the public to immediately report sick cervids on a year round basis to aid in CWD monitoring efforts. Research has shown that such targeted surveillance and lethal removal is effective to document presence of CWD as well as removing source of infection.

5. Appropriate WGFD personnel will participate in intra- and interdepartmental and intra- and interstate CWD coordination meetings.

Sharing research and coordination among state, federal, and tribal agencies is important in the management of CWD. The WGFD will coordinate and collaborate with state, federal, tribal agencies and entities of higher education, universities and other researchers on relevant CWD management and research issues as requested or needed. The WGFD encourages other state, federal, tribal agencies and entities of higher education,

universities and other researchers to initiate inter-agency CWD coordination meetings as well.

6. Maintain the Wyoming statutory prohibition of cervid ownership, importation and facilities in Wyoming and the effectiveness of the WGFC’s Chapter 10 regulation.

Wyoming has some of the most stringent laws and regulations pertaining to the private ownership and importation of live cervids in the United States. These laws and regulations were developed to protect Wyoming’s wildlife from disease, genetic, ecological, environmental, and other threats. WGFC Chapter 10 Regulation, “Regulation for Importation, Possession, Confinement, Transportation, Sale and Disposition of Live Wildlife,” addresses CWD in relation to the only privately owned elk facility permitted in Wyoming by statute. Any captive cervid imported into Wyoming must originate from facilities certified to be free of CWD in accordance with federal regulations (9 CFR, parts 55 and 81) and WGFC Chapter 10 regulation. These WGFC and federal restrictions are intended to prevent spread of CWD. There are no other captive, privately owned cervids within Wyoming. Future establishment of captive, commercial native cervid facilities in Wyoming is prohibited by statute.

7. Hunter harvest will continue to be the primary tool for monitoring CWD in cervids.

The flexibility inherent in Wyoming’s hunting regulations allows the WGFC to modify hunting seasons to meet specific management objectives. This flexibility, combined with the long and rich hunting heritage in the State of Wyoming, makes the use of hunter harvest an effective and preferred tool in monitoring CWD in cervids.

8. Herd population management.

Large-scale culling in an attempt to reduce animal populations and minimize animal to animal contact has been attempted in other states and provinces. While such culling has shown it can reduce or maintain prevalence levels, it has proven to be expensive, unpopular, requires continued long-term application, and ultimately is unable to eradicate CWD (State of Wisconsin, 2006; James, 2008; Holsman, 2010; VerCauteren, Kurt, and Scott E. Hygnstrom, 2011; Wasserberg, 2009, 2014; Manjerovic 2014). The WGFD will consider disease transmission/prevalence when developing herd population objectives and other management recommendations. The WGFD will strive to meet herd population objectives by taking in account all factors and influences. Small scale culling may be considered in some circumstances to slow disease spread.

9. Feedgrounds.

Elk have been fed in northwest Wyoming since the early 1900s. Originally, elk feedgrounds were designed to mitigate loss of winter range, reduce human/elk conflicts and maintain a traditional population of elk. More recently, elk feedgrounds have continued to address those issues as well as facilitating separation of elk and cattle to prevent the potential spread of brucellosis. Supplemental feeding of elk creates complex biological, social, economic and political issues. Wildlife disease adds to this complexity. Recent modeling based on a combination of captive and free-ranging elk data suggested that feedground elk may survive in the face of CWD at significantly reduced numbers

through a combination of genetic selection and elimination of antlerless elk harvest (Williams, 2014). However, extrapolating data from captive situations is difficult at best and it is still unknown what impact CWD could ultimately have on feedground elk populations. Disease transmission can be related to density of animals in a given area as well as the frequency of contact between animals. Artificially concentrating elk on feedgrounds may result in more rapid spread of CWD and contribute to increased persistence of prions in the soil and uptake by vegetation.

The WGFD will continue to prioritize identification, removal and testing of cervids exhibiting signs consistent with CWD on and around elk feedgrounds. Hunter harvest and other CWD surveillance in northwestern Wyoming will be conducted in coordination with the NER and the National Park Service – Grand Teton National Park (GTNP).

The WGFD will work with the NER, GTNP, and United States Forest Service (USFS)-Bridger-Teton National Forest (BTNF) on implementing the Jackson Elk and Bison Management Plan to manage wintering populations and reduce their reliance on supplemental feed.

The WGFD will collaborate with stakeholders to acquire critical winter range habitat and migration corridors for elk in order to protect elk from human disturbance.

The WGFD will work with federal and state land management agencies and non-governmental agencies to develop, fund and implement habitat improvement projects for elk to reduce dependence on feedgrounds.

Based on research that grass plants can bind, retain, uptake and transport prions (Pritzkow, 2015), the WGFD assess potential CWD transmission risks of hay harvested from the CWD endemic area that is fed at state elk feedgrounds. Prior to hay being purchased and transported to elk feedgrounds, the WGFD will look at the spatial and temporal relationships between the location(s) and prevalence rate(s) of CWD positive cervids and hay fields from which hay is used for elk feedgrounds. The WGFD will attempt to only use hay for elk feedgrounds from outside the CWD endemic area. Additionally, the WGFD will communicate with the appropriate land management agency(s) as it pertains to elk feedground hay use and CWD.

Additionally, WGFD will:

- Review WGFC supplemental feeding policy to determine if changes are warranted to address CWD.
- Determine if closures of specific feedgrounds can occur where dispersal of elk will not cause damage/conflict/co-mingling issues with private property, stored crops and domestic livestock or create a need to drastically reduce overall elk herd sizes.
- The WGFD will consider CWD transmission/prevalence/negative impacts when developing herd population objectives, feedground quotas, hunting seasons and other management recommendations. The WGFD will strive to meet herd population objectives/feedground quotas by taking in account all factors and

influences; however, if CWD becomes established on a feedground, populations and hunting opportunity may decrease overtime.

- As funding and testing/field capacity allows, expand and increase the WGFD's CWD surveillance efforts in the Pinedale and Jackson Regions.
- If a single case of CWD is confirmed in a deer, elk or moose in or adjacent to an elk herd unit with feedgrounds, WGFD will intensify surveillance in a timely manner, both in the new positive hunt area(s) and within the elk herd unit with feedgrounds. This will include increased sample collection efforts through hunter harvest, targeted removal and road-kill of deer, elk and moose. The data will be reviewed and management actions will be considered to minimize the spread of CWD for the specific feedground(s) and surrounding areas. WGFD will communicate, consult and coordinate with GTNP, NER and BTNF pertaining to any proposed actions to address CWD being confirmed in or adjacent to an elk herd unit containing feedgrounds.
- If CWD is detected in elk inhabiting feedgrounds, WGFD personnel shall monitor the feedground and surrounding area intensively, lethally remove, sample, test and properly dispose of any elk exhibiting clinical signs of CWD. Large scale culling of elk on a feedground and on native winter range is not an anticipated action to address CWD.
- The WGFD will continue, to the extent possible, to: 1) maximize the feeding area to decrease animal-to-animal contact (low density feeding); 2) decrease days of feeding to promote the dispersion of elk; 3) take additional actions to decrease elk concentration provided such actions are consistent with other necessary wildlife management and feedground practices.
- Properly dispose of carcasses from feedgrounds to limit soil contamination and the spread of CWD; this may include incineration or other acceptable methods of disposal to minimize CWD transmission and environmental contamination.
- As personnel and budget capacity allow, establish a baseline genetic inventory for individual herds in the Jackson and Pinedale Regions. This will allow the WGFD to track if genetic shift is occurring over time toward alleles that have a prolonged incubation period for CWD and increased rates of survival.
- Continue researching and monitoring cervid migration and dispersal routes in and out of the Jackson and Pinedale Regions and how these migrating animals may expand CWD.
- Monitor predatory animal presence and their impacts on feedground elk, including the implementation of proper management actions for gray wolves that are causing unacceptable impacts to elk at any state operated feedground in accordance with W.S. 23-1-304 and WGFC Chapter 21 Gray Wolf Management regulation.

- Consider the potential role of predators and scavengers to remove CWD infected animals and carcasses to reduce CWD transmission (Krumm, 2010; Wild, 2011).

COMPONENT II. APPLIED RESEARCH

CWD management, research, and public information activities are expensive. With federal CWD funding no longer available, the WGFD will continue to request general funds for CWD surveillance and research as part of the WGFD's Veterinary Services program budget. The WGFD is not a primary research agency and does not contain a research branch which limits its abilities to conduct CWD research. Therefore, WGFD will focus research on implementing sustainable CWD "on the ground" management strategies in select areas across the state with the goal of evaluating long-term efficacy of such management strategies to reduce or maintain CWD prevalence and expansion. In addition, the WGFD will collaborate with external entities (multi-state and agency collaboration, institutions of higher education) on CWD research proposals, projects and funding that will facilitate continued expansion of knowledge of CWD. The WGFD will expand its CWD research and management efforts beyond being the "field control" state. The WGFD is committed to a long-term investment in research and "on the ground" management strategy work implementation. The WGFD will continue to monitor published research on CWD and similar diseases to ensure the WGFD has the most current and comprehensive data and scientific information available to make CWD and cervid management decisions.

COMPONENT III. PUBLIC INFORMATION

Chronic wasting disease is of interest to various groups at different levels locally, nationally and internationally. As the public agency charged with managing Wyoming's wildlife populations, the WGFD has an obligation to provide timely, complete, accurate, and unbiased information about CWD to the public. The WGFD's information efforts related to CWD will focus on: where CWD has been found in Wyoming; public health risk as determined by public health departments and public health experts; WGFD efforts to monitor the disease; efforts by WGFD and others to learn more about the disease; potential impacts to deer, elk or moose populations; laws and regulations related to CWD; and how the public can minimize the spread of CWD during the hunting season and throughout the year. The WGFD will provide current CWD information on its website, various media and social media outlets, and public presentations and contacts.

COMPONENT IV. FUNDING

CWD management, research, and public information activities are expensive, and the WGFD's financial status will not allow complete implementation of this plan without additional funding. The WGFD will continue to request general funds for CWD work as part of the WGFD's Veterinary Services program budget and will pursue additional funding sources (e.g. Wyoming Wildlife/Livestock Disease Research Partnership, USDA-APHIS, Wyoming Governor's Big Game License Coalition, Wyoming Wildlife and Natural Resource Trust, University of Wyoming) to implement this plan and research projects. Based on available funding, disease management would be the top priority, followed by public information and education, and research.

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LITERATURE CITED

- Bruce, M. E., Will, R. G., Ironside, J. W., McConnell, I., Drummond, D., Suttie, A., ... & Cousens, S. (1997). Transmissions to mice indicate that 'new variant' CJD is caused by the BSE agent. *Nature*, 389(6650), 498-501.
- Edmunds, David R. (2013) Chronic Wasting Disease Ecology and Epidemiology of White-tailed Deer in Wyoming (doctoral dissertation). University of Wyoming, Department of Veterinary Sciences, Laramie, WY.
- Government of Alberta, Alberta Sustainable Resource Development. 2008. Chronic Wasting Disease Workshop. Online citation: <http://aep.alberta.ca/fish-wildlife/wildlife-diseases/chronic-wasting-disease/documents/AlbertaChronicWastingDiseaseManagement.pdf>
- Gross, J. E., & Miller, M. W. (2001). Chronic wasting disease in mule deer: disease dynamics and control. *The Journal of wildlife management*, 205-215.
- Holsman, R. H., Petchenik, J., & Cooney, E. E. (2010). CWD after "the fire": Six reasons why hunters resisted Wisconsin's eradication effort. *Human Dimensions of Wildlife*, 15(3), 180-193.
- James, P. C. (2008). Both sides of the fence: A strategic review of chronic wasting disease management costs and benefits.
- Krumm, C. E., Conner, M. M., Hobbs, N. T., Hunter, D. O., & Miller, M. W. (2010). Mountain lions prey selectively on prion-infected mule deer. *Biology letters*, 6(2), 209-211.
- Manjerovic, M. B., Green, M. L., Mateus-Pinilla, N., & Novakofski, J. (2014). The importance of localized culling in stabilizing chronic wasting disease prevalence in white-tailed deer populations. *Preventive veterinary medicine*, 113(1), 139-145.
- Miller, M. W., Williams, E. S., Hobbs, N. T., & Wolfe, L. L. (2004). Environmental sources of prion transmission in mule deer. *Emerg Infect Dis*, 10(6), 1003-1006.
- Miller, M. W., Swanson, H. M., Wolfe, L. L., Quartarone, F. G., Huwer, S. L., Southwick, C. H., & Lukacs, P. M. (2008). Lions and prions and deer demise. *PLoS one*, 3(12), e4019-e4019.
- Monello, R. J., Powers, J. G., Hobbs, N. T., Spraker, T. R., O'Rourke, K. I., & Wild, M. A. (2013). Efficacy of antemortem rectal biopsies to diagnose and estimate prevalence of chronic wasting disease in free-ranging cow elk (*Cervus elaphus nelsoni*). *Journal of wildlife diseases*, 49(2), 270-278.
- Monello, R. J., Powers, J. G., Hobbs, N. T., Spraker, T. R., Watry, M. K., & Wild, M. A. (2014). Survival and population growth of a free-ranging elk population with a long history of exposure to chronic wasting disease. *The Journal of Wildlife Management*, 78(2), 214-223.
- Pritzkow, S., Morales, R., Moda, F., Khan, U., Telling, G. C., Hoover, E., & Soto, C. (2015). Grass Plants Bind, Retain, Uptake, and Transport Infectious Prions. *Cell reports*, 11(8), 1168-1175.

- Robinson, S. J., Samuel, M. D., Johnson, C. J., Adams, M., & McKenzie, D. I. (2012). Emerging prion disease drives host selection in a wildlife population. *Ecological Applications*, 22(3), 1050-1059.
- State of Wisconsin, Joint Legislative Audit Committee, 2006. An Evaluation. Chronic Wasting Disease. Department of Natural Resources. Report 06-13. Online citation available at: <http://www.legis.state.wi.us/LaB/reports/06-13highlights.htm>
- VerCauteren, K., & Hygnstrom, S. E. (2011). Managing white-tailed deer: Midwest North America.
- Wasserberg, G., Osnas, E. E., Rolley, R. E., & Samuel, M. D. (2009). Host culling as an adaptive management tool for chronic wasting disease in white-tailed deer: a modelling study. *Journal of Applied Ecology*, 46(2), 457-466.
- Wild, M. A., Hobbs, N. T., Graham, M. S., & Miller, M. W. (2011). The role of predation in disease control: a comparison of selective and nonselective removal on prion disease dynamics in deer. *Journal of Wildlife Diseases*, 47(1), 78-93.
- Williams, A. L., Kreeger, T. J., & Schumaker, B. A. (2014). Chronic wasting disease model of genetic selection favoring prolonged survival in Rocky Mountain elk (*Cervus elaphus*). *Ecosphere*, 5(5), art60.
- Williams, E. S., & Young, S. (1980). CHRONIC WASTING DISEASE OF CAPTIVE MULE DEER: A SPONGIFORM ENCEPHALOPATHY 1. *Journal of wildlife diseases*, 16(1), 89-98.

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Signed: _____



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