

CONSTRAINT CLASS / Sub-Class	IMPLICATIONS	ACTIONS	SPECIFIC OBJECTIVES / CONCERNS
COMPREHENSIVE PLANNING & REGULATORY REQUIREMENTS	Failure to meet requirements can lead to court challenges and delays		
Comprehensive Planning	A Comprehensive Plan is essential for Congressional funding	Develop a Comprehensive Plan through a collaborative process involving stakeholders -- i.e., FREES	The objective is a Comprehensive Plan that enjoys widespread support among disparate stakeholders. "The Path Forward ..." document was a good initial effort.
Resource Management Plans (RMPs) (Land Use Plans)/ Environmental Impact Statements (EISs)	RMPs are management blueprints for included land areas. EIS's analyze and identify the impacts of an RMP's actions and alternatives and provide analysis for a large region under which more site specific EAs are prepared for individual actions such as wild horse management plans/removals and fertility control treatments.	Ensure that RMPs and associated EISs identify and include a full complement of contraceptive and sterilization actions as BLM periodically updates its RMPs. Consider management decisions to combine Herd Management Areas and manage them as larger units.	Ensure appropriate staff are available for RMP development to identify a full complement of wild horse management actions.
Herd Area Management Plans/Gather Plans/Fertility & Sterilization Implementation Environmental Assessments (EAs)	EAs are required to analyze site specific effects of implementing Wild Horse Herd Area Management plans, gathers to remove horses/burros and implement and fertility control/sterilization actions. Contraceptive/sterilization measures identified for implementation must have been included in the RMP.	Ensure EAs consider a full range of management including available contraceptive/sterilization actions.	Commit experienced staff specialists to the development of comprehensive quality environmental assessments that are compliant with law, regulations, and RMPs.
Contraceptive agent registration	Agents to be used routinely must be registered with the appropriate agency	Encourage suppliers to seek registration of particular products. Cooperate in field trials of prospective agents.	Increase size of contraception "toolbox"
LEGAL	Court orders and lawsuits can disrupt the operations.		
Court orders	Court orders sometimes set precedents for future management actions and can overrule other considerations.	Effective management to keep populations within AML will reduce the potential for lawsuits. RMPs, EISs and EAs	Develop quality/defensible EISs and EAs to reduce legal challenges that divert resources from field operations and disrupts implementation of plans and wild horse/burro management.
Lawsuits	Legal challenges to planned operations can prevent the orderly execution of plans.	Outreach aimed at gaining buy-in of various stakeholders can reduce the number of lawsuits.	Gaining buy-in from various stakeholders can allow concerns to be addressed so as to not disrupt field operations.
ANIMAL WELFARE	Different capture and treatment options may affect horses and burros differently.		
Herding and capture options	Different herding and capture options can affect the animals differently, often according to seasonal conditions.	Conduct a "cost-benefit" analysis to rank the potential stress of capture and handling in relation to potential efficacy of the contraceptive treatment and the need for boosting or re-treatment.	Minimize stress to the captured equids and develop mitigation strategies.
Treatment options	Different treatment options (e.g., darting vs. hand-injection) may impose different levels of stress on the animals. For example, hand injection involves less trauma at the injection site than does darting, but it requires capture and physical restraint.	Conduct a "cost-benefit" analysis of efficacy, need for retreatment, and trauma (hand-injection v darting). Vigorously pursue the development of safe and effective longer lasting contraceptive agents.	Maximize efficacy of treatment to limit the need for captures.
Technique development	The contraception "toolbox" is presently limited	A larger contraception "toolbox" would increase options to minimize effects on treated animals	Develop and promote contraceptive options that provide effective treatment with minimal adverse effects on the treated animals

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ENVIRONMENTAL CONDITIONS	Environmental conditions can determine accessibility to the area and affect the ability to gather the horses / burros.		
Road access	Relevant to the ability to move personnel, horses, and equipment	Assess road characteristics for the ability to handle vehicles. Terrain, road design/substrate can affect the types of vehicles that can access an area.	Determine whether road design imposes vehicle limits or whether road substrate can become hazardous or impassable when wet. Develop contingency plans to deal with changes in environmental conditions that may interfere with operations.
Snow conditions	Snow can hamper road access and interfere with helicopter operations	Determine seasonal weather patterns	Avoid scheduling operations for periods when there is a high probability of interference
Water availability	Limited water availability can concentrate horses/burros, making them easier to gather.	Determine seasonal weather patterns	Schedule operations for periods when limited watering options concentrate horses/burros; will need to provide water in the capture facilities
Feral horse/burro population status	The status of feral horse/burro populations in relation to AML and forage/water availability affects the well-being of the equids, native wildlife, and habitat	Emergency gathers can be required under dire circumstances.	Emergency gathers can result in a reallocation of resources and thus interfere with deliberate management, leading to inefficient use of financial and human resources.
Forage availability/quality	The ability of feral horses/burros to mount a robust immune response or to endure capture and handling may depend on a good body condition	Attempt to time gathers to coincide with favorable forage availability/body condition.	It may not always be possible to time gathers to coincide with the most favorable forage conditions, considering other relevant factors.
Tree cover	Tree cover can affect visibility of the horse and capture success	Develop maps ranking HMAs with respect to habitat access. Conduct gather operations when seasonal migrations locate horses in more open areas.	Use mounted wranglers where helicopters are impractical
Terrain ruggedness	Tree cover can affect visibility of the horse and capture success	Develop maps ranking HMAs with respect to habitat access. Conduct gather operations when seasonal migrations locate horses in more lower elevation and accessible terrain.	
Size of HMA	Larger HMAs will be more expensive to survey		
Characteristic horse behavior	Animals in different herds show different degrees of tolerance of humans and capture operations	Rank approachability on a 3-level scale: spooky, intermediate, tame	Approachability will affect which vaccines and delivery techniques are most appropriate
LOGISTICS	Lack of suitable equipment and experienced personnel will prevent the operation from succeeding		
Holding facilities	Holding facilities are required to temporarily accommodate horses/burros that are removed from the range.	Ensure that nearby holding facilities are available.	Build/acquire additional facilities.
Portable corral systems	In most cases, horses/burros will have to be held in a portable corral system where they can be sorted and separated	Ensure that corral systems are complete and in good repair and above all are designed to provide for animal welfare during capture, sorting and loading operations. Where there is a shortage, new systems should be constructed.	Repair existing equipment or build new systems as required.
PERSONNEL			
Veterinarians	Certain operations may require the presence of a veterinarian	Ensure that a qualified veterinarian is present	
Experienced handlers	Efficient handling depends on having experienced handlers available	Recruit and hire or contract experienced personnel, in addition to agency staff.	Have adequate staff available during gathers to ensure safety of staff and horses/burros.
Specialized expertise	The use of some contraceptive agents require administration by certified applicators	Ensure that a certified applicator is present	Have qualified staff available to meet regulatory requirements

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TECHNICAL	Some fertility-control agents have inherent limitations that affect efficacy.		
Duration of efficacy of contraceptive vaccine	Different vaccines have different performance characteristics, which will influence the optimal timing of administration	ZonaStat-H (PZP) requires primary inoculation followed by a booster a month later; boosters are required annually.	ZonaStat-H can be used where horses are easily accessed, i.e., animals are easily approached to within darting range and close to roads. Because efficacy decreases over a period of months, it is important to deliver vaccinations close to the start of the breeding season.
		PZP-22 is administered initially with pellets that contain booster doses intended to provide efficacy for ~22 months. It is important that the initial treatment is administered in late-winter or spring to ensure coverage through the second breeding season.	Subsequent boosters should also be administered in late-winter or spring to ensure coverage during two breeding seasons.
		SpayVac has multi-year efficacy, so that timing of administration is not important.	Because vaccine efficacy wains over time, additional doses are recommended during planned gathers (approx 5-year intervals)
		GonaCon may provide enhanced efficacy with a booster delivered within 1 month of the primary dose. Liposomal encapsulation might lead to a long-lasting, single-dose vaccine. These need to be tested.	Additional doses delivered 2-3 years following initial treatments may increase the duration of efficacy.
Ovariectomy - surgery	Many wild horse advocates oppose invasive surgical procedures.	Ensure that qualified veterinarians conduct surgical procedures.	The primary concerns that have been raised relate to the welfare of animals that have been subject to an invasive procedure in the field
Vasectomy - surgery	Many wild horse advocates oppose invasive surgical procedures.	Ensure that qualified veterinarians conduct surgical procedures.	The primary concerns that have been raised relate to the welfare of animals that have been subject to an invasive procedure in the field
Castration - surgey	Gelding is a common procedure used to minimize sexual behavior in male horses.	Herds could be managed to have a non-reproductive component to reduce the number of breeding animals.	Wild horse advocates generally oppose sterilization as a population management method.
FINANCIAL	Field operations are expensive and adequate budgets are required. Bringing feral equid populations under control will require substantially increased budgets.		
Model costs of implementing alternative contraceptive technologies	Different contraceptive technologies have different durations of efficacy, different implementation costs, and different re-treatment schedules	Develop cost-benefit models to compare costs of different treatment options, taking into account gather and retreatment requirements.	Although certain treatment options may cost more to implement, a longer duration of efficacy may make them more economical in the long run. Minimizing handling will reduce the stress and potential for injury to which the animals and handlers are exposed.