Avimor Development
Habitat Management Plan

Ada, Boise, and Gem Counties, Idaho

Revised Final Report: 04-20-2022

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TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

Conservation Program Summary Table: Avimor Development

	Mitigation Action	Funding Source(s)	Implementation Phasing/Timing	Mitigation Action Status	Party Responsible for Implementation	Party Responsible for Monitoring	Monitoring Activity	Monitoring Frequency	Outside Agency Coordination	Party Responsible for Enforcement	Enforcement Mechanism(s)
1.0 Avimor Conservation Director (APC-CD)											
1.1	The APC-CD will manage the conservationand education programs for the Avimor Stewardship Organization (ASO) as detailed in the HMP Section 6.1.2 and Appendix A.	ASO Conservation Fund (HOA Fee) (ongoing)	Previous to the first plat approval	Completed	ASO	ASO and CAC	NA	Annual Review	IDFG, BLM, and others, as needed	ASO and City of Eagle	Development Agreement, Restricted Permit Authorization
1.2	Implements, manages, and monitors conservation and enhancement programs identified in the HMP.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	In Progress	APC-CD	NA	NA	NA	NA	APC-CD	Development Agreement, Restricted Permit Authorization
1.3	Monitors and coordinates with ASO to implement effective fuel breaks, and inventory, monitor, and manage weed abatement program.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	Development Agreement, Restricted Permit Authorization
1.4	Develops rehabilitation plan for all construction phases. Reports rehabilitation progress to CAC once a year, and develops an annual progress report for City of Eagle.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	Development Agreement, Restricted Permit Authorization
1.5	Serves as a representative of the AD on local conservation boards.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	NA
1.6	Seeks additional funding through grants, cooperative agreements, etc. for conservation and education programs.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	NA
1.7	Works with residents to address problems related to wildlife in the neighborhood, and work with IDFG to manage nuisance wildlife issues.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	Development Agreement, Restricted Permit Authorization

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1.8	Homeowners Flora/Fauna Manual	ASO	Update to current manual prior to 1st occupancy of first preliminary plat.	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD and ASO	Development Agreement, Restricted Permit Authorization
1.9	Neighborhood Ed. Program	ASO Conservation Fund (HOA Fee) (ongoing)	Completed	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	NA
1.10	Interpretive sign information	ASO Conservation Fund (HOA Fee) (ongoing)	As trails are completed (continuous)	In Progress	APC-CD	NA	NA	NA	Local, State, and Federal, as well as Private Organizations	APC-CD	NA
1.11	Additional miscellaneous Tasks associated with the education program that are recommended but not required by the APC-CD are discussed in Appendix A.	ASO Conservation Fund (HOA Fee) (ongoing)	Continuous	Continuous	APC-CD	APC-CD	Dependent on Tasks	Dependent on Tasks	Local, State, and Federal, as well as Private Organizations	APC-CD	NA
2.0 Conservation Advisory Committee (CAC)											
2.1	CAC will meet once a year to review the Avimor Conservation Program and any monitoring data. Recommendations shall be submitted to the City of Eagle for any adjustments to the HMP,as detailed in the HMP Section 6.1.2.	NA	Implemented	In Progress	ASO, City of Eagle, and APC-CD	NA	NA	NA	City of Eagle, IDFG, Additional Agencies could be included, as needed	City of Eagle	Development Agreement, Restricted Permit Authorization
3.0 Construction Precautions and Revegetation											
3.1 Best Management Practices (BMP)	Best management practices will be implemented during the construction phases of the project to limit impacts to habitat and wildlife, and to reduce probability of wildfire. Recommendations are detailed in the HMP Section 6.1.2.	Developer and Builders	Implemented prior to any construction activity	Continuous	Developer, Builders, and APC-CD	Developer, APC-CD, and City of Eagle	Monitors contractor compliance with BMPs.	As Needed	OSHA, City of Eagle, IDFG, BLM	Owner/Developer and APC-CD	Fines, Work Restriction, Termination of Contract

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4.0 General Neighborhood Design Guidelines											
4.1 Residential Roads	Signals, signs, and traffic-calming measures within the project area per LHD, ITD, or the City of Eagle Standards, and as detailed in the HMP Section 6.1.2.	Developer/Owner	Prior to first plat approval.	In Progress	Owner/Developer, ITD, or the City of Eagle	LHD, ITD, or the City of Eagle	NA	NA	ITD, LHD, City of Eagle, and IDFG, as needed	LHD, ITD, or City of Eagle	Development Agreement, Restricted PermitAuthorization
4.2 Fuel Breaks (Greenstrips) andother Wildfire Precautions	Required defensible space on outlying residents, firescaped trails integrated into the landscaping design, reduced fuel loads, and other mechanisms detailed in the AFP and HMP Section 6.1.2.	Private residence, ASO Conservation Fund (ongoing)	Residents: Construction phase through residential landscaping in all phases Undeveloped Uplands: As each phase is developed	Continuous	Owner/Developer, ASO, and APC-CD	APC-CD	Identification of potential wildfire hazards, and residential compliance with defensible space standards.	As Needed	Eagle Fire District and BLM	ASO, APC-CD, and City of Eagle	HOA Fines, Development Agreement, Restricted PermitAuthorization
4.3 Wildlife Fencing	Restrictions and guidelines on type, size, and spacing of fences to prioritize wildlife protection and easy passage as detailed in the HMP Section 6.1.2, and AD DesignGuidelines.	Residential Fences: Residence Community: Developer orASO	Residential Fences: As needed Community: As needed	Not Yet Started	Owner/Developer, ASO, APC-CD, and Residents	APC-CD	Residential compliance with fencing standards.	As Needed	City of Eagle, IDFG, and BLM	ASO, Developer, APC-CD, and City of Eagle	HOA Fines, Development Agreement, Restricted PermitAuthorization
5.0 Recreation Management Plan											
5.1	ARP and HMP (Section 6.1.2, Appendix E)	ASO Conservation Fund (ongoing)	Implemented	In Progress	APC-CD	APC-CD and Avimor Trail Coordinator	Monitor trail conditions and new trail alignments	Annually	IDFG, BLM, City of Eagle, and others, as needed	NA	Development Agreement, Restricted Permit Authorization
5.2	ARP and HMP (Section 6.1.2, Appendix E)	NA	Implemented	In Progress	Owner/Developer, APC-CD	Owner/Developer, APC-CD	Monitoring recreational trail use during winter closures.	As Needed	IDFG, BLM	Owner/ Developer, APC-CD, IDFG, and City of Eagle, and others, as needed.	Development Agreement and Trail Easements
5.3	ARP and HMP (Section 6.1.2, Appendix E)	NA	Implemented	In Progress	Owner/Developer, APC-CD	APC-CD	Adherence to community and trail rules.	As Needed	NA	Owner/ Developer, APC-CD, HOA	HOA Fines, Penalties,
5.4	Nuisance Wildlife (Section 6.1.2)	NA	Implemented	In Progress	APC-CD	APC-CD	Presence or residential complaint.	As Needed	IDFG, BLM	APC-CD	Fines, Penalties
6.0 Wildland Fire Management Plan											

	Mitigation Action	Funding Source(s)	Implementation Phasing/Timing	Mitigation Action Status	Party Responsible for Implementation	Party Responsible for Monitoring	Monitoring Activity	Monitoring Frequency	Outside Agency Coordination	Party Responsible for Enforcement	Enforcement Mechanism(s)
6.1	The AD will incorporate the current AFP into all future development. Changes to the plan may be made with concurrence form the Eagle fire District and the City of Eagle.	ASO Conservation Fund (ongoing)	Implemented	In Progress	ASO, APC-CD, and City of Eagle	ASO and APC-CD	Review and landscape plans to meet Firewise Guidelines. Home audits as identified in the AFP (Appendix F).	Landscape plans prior to construction. Home audits within two years, then every 5 years.	Eagle Fire District and City of Eagle	Developer, ASO, APL-CD, and City of Eagle	HOA Fines, Permit Restrictions
7.0 Wetlands Mitigation Plan											
7.1	Wetlands will be identified and assessed, delineated per Army Corp standards, on a phase by phase basis.	Developer (ongoing)	Dependent on plat design and identified timing.	Ongoing	Owner/Developer and Army Corps of Engineers (USACE)	ACO	Status of mitigation and enhancement measures identified in submitted Wetlands plan	Identified in Wetlands Plan.	ACO	ACO	Fines, Penalties, Permit Restriction
8.0 Upland Mitigation Action (Off-site Conservation Easement)											
8.1	Identification and delineation of natural open space to be set aside in perpetual conservation easement. Must be similar type (upland foothills) and location (within 30 miles) of impacted area. HMP Section 6.0.2.1	Developer/ASO	Prior to first plat.	In Progress	APC-CD	APC-CD	See specific monitoring activity described in Section 6.1.2.	Annually	NA	Owner/ Developer, APC-CD, and City of Eagle	Development Agreement, Restricted Permit Authorization

1. CD is the Avimor Conservation Director
2. CAC is the Conservation Advisory Committee
3. HMP is the Habitat Management Plan
4. IDFG in the Idaho Department of Fish and Game
5. BLM is the Bureau of Land Management
6. ITD is the Idaho Department of Transportation
7. ACE is the Army Corp of Engineers
8. BMP is Best Management Practices
9. LHD is Local Highway Department
10. ARP is Avimor Recreation Plan (Appendix E)
11. AFP is Avimor Fire Plan (Appendix F)

Note A: The options for "Mitigation Action Status" are: (1) Not yet started, (2) In Progress (start date), (3) Complete (completed date), or (4) Continuous.
Note B: The Avimor Development Program Summary Table may be updated by: (1) recommendations by the Conservation Advisory Committee (CAC) as reviewed and approved by the City of Eagle. All modifications made shall be addressed in the Habitat Management Plan and reflected in this table, including an updated revision number and date in the footer of the table.
Note C: All costing figures identified in the table above are estimates only and subject to change based on revisions to the HMP.
Note D: For this table, seasonality is defined as such: (Fall: September-November); (Winter: December- February); (Spring: March- May); and (Summer: June- August).

EXECUTIVE SUMMARY

This area associated with the Avimor Development (AD) consists of roughly 19,000-acres acres in the North Eagle and West Boise Foothills (hereafter, 'foothills'). The landscape is dominated by rolling hills of perennial and annual grasslands with dispersed native shrub stands, riparian areas, and flat agricultural fields. Much of the area has been affected by historic wildfires, with some areas burning multiple times over the last 50 years. Invasive and noxious weed species are present in all community types within the area, and in most cases their distribution has expanded. Wildlife species in the area are generally those species found in the surrounding foothills including: big game (elk, mule deer, and antelope), raptors and migratory birds, medium and small mammals, rodents, and several reptile and amphibian species. Human uses in the area include cultivated agriculture, livestock grazing, mining (historic and existing), residential and commercial development, transportation, recreation (active and passive), research, and conservation easements.

The AD Habitat Management Plan (HMP) was developed to provide the background information on the natural resources (plant communities, wildlife and their habitat, wetlands, etc.) of the area, as well as and the potential impacts associated with development and other linked human uses or impacts (recreation, wildland fire, livestock grazing, invasive species, etc.). The HMP also describes the organizational approach and conservation-based management tools and guidelines to be used to avoid, reduce, or mitigate those impacts. The background information and conservation tools/guidelines are based on 15 years (2003-2018) of area-wide resource surveys; continued coordination with local, state, and federal agencies, user groups, and conservation organizations; and the successful development, implementation, and continuous adaptation of the Avimor Planned Community's Wildlife Mitigation Plan (WMP), Fire Plan (AFP), and Recreation Plan (ARP).

The intent of this HMP is to outline a standardized framework that all existing and future developments within the AD area would be designed, constructed, managed, and monitored as it relates to the conservation of natural resources at both the project-specific and landscape level. Historic wildlife and land cover data will be combined with area-specific data associated with each proposed project within the development area in order to quantitatively determine the overall impacts of the proposed action and the level of mitigation required to offset the impacts in order to meet the management goals identified for the AD (see below). The identified conservation measures are fully defined prior to any disturbance activity, are accompanied by a standardized monitoring/management plan with third party oversight, and are connected to a perpetual funding source.

This interconnected, landscape-based management concept uses a predefined calculation to quantify the development impacts and associated mitigation requirements for a defined development area. The HMP also outlines the general management guidelines to be implemented during the construction phase and occupation. In addition, the process takes into consideration the resources of the entire AD area rather than isolating the impact analysis to each project. This allows the plan to address the cumulative impacts of development over time that would otherwise not be addressed using most exiting planning guidelines. By using a standardized approach that can adapt to changes in the environment as well as changes in the type, density, and distribution of the development products, it gives the development greater predictability in mitigation requirements, and flexibility in management tools.

Overall AD Management Goals

- Avoid, Minimize, or adequately mitigate for direct and indirect impacts to wetlands, plant communities, wildlife, and wildlife habitat associated within the development within the AD;
- Permanently mitigate impacts to existing native plant communities and critical wildlife habitat/corridors within the AD using perpetual conservation easements as the primary tool;
- Actively manage native plant communities within the region by restoring or enhancing historically Altered structural and functional components within the communities, with the intent of providing and enhancing wildlife and pollinator habitat;
- Actively manage plant communities within and adjacent to developments, with the intent of reducing the amount and connectivity of fuels in the area, as well as the potential for wildland fire ignition;
- Create and perpetuate, indefinitely a funded conservation program to protect, manage, and maintain/enhance the surrounding wildlife habitat;
- Work collaboratively with city, state, and federal agencies in restoring native habitat and managing invasive and noxious weed species within the AD and adjacent federal or state lands;
- Foster community stewardship and increase awareness of the foothills ecology through residential and public conservation and education activities;
- Work collaboratively with city, state, and federal agencies and adjacent private land owners to develop a regional, interconnected trail system that incorporates sustainable design principles and conservation oriented management guidelines.

1.0 INTRODUCTION

The Avimor Development (AD) has developed a proactive standardized approach to address potential short and long-term development impacts, both direct and indirect, to existing plant communities and resident/migrating wildlife species within and adjacent to the area. As a basis for this approach, the developer has been conducting flora and fauna surveys/inventories within the AD area for over 15 years. In addition, the existing Avimor Planned Community (APC) has implemented one of the most successful conservation-based development programs (Wildlife Mitigation Plan, Fire Plan, and Recreation Plan) for nearly 15 years.

As it is the intent of the owner to further develop within the AD, it is assumed that future development and linked uses/impacts will have certain unavoidable impacts to the existing flora and fauna. Based on the amount and extent of the existing data for the site, coupled with the experiences gained with the long-term implementation of the APC, we have developed a set of conservation-based management guidelines and a standardized delineation and mitigation process that will be used for all future development within the AD property. The purpose of this document is to: define the baseline conditions of the AD; identify a standardized impact assessment process for proposed development actions at both the site-specific and landscape level; and outline on and off-site management actions that, if implemented, would help compensate for the identified adverse impacts in areas where it is ecologically advantageous, financially possible, and socially responsible.

The most important aspect regarding this planning process is the historic and ongoing coordination with representatives from the Idaho Department of Fish and Game (IDFG), Bureau of Land Management (BLM), Ada County Soil and water Conservation District (ASWCD), National Resource Conservation Service (NRCS), and other interested agencies, groups, and individuals. At various stages throughout the development of this and the original APC's Wildlife Mitigation Plan (WMP), meetings were conducted with these various entities to determine opinions, concerns, suggestions, and recommendations regarding ecological, economical, and social aspects of the Habitat Mitigation Plan (HMP). The direction of this HMP was navigated by this cooperative approach in an effort to identify and create recommendations that would have the highest probability of success in the conservation of wildlife species and plant communities within and adjacent to the AD area.

1.1 HISTORY OF THE SPRING VALLEY RANCH

1.1.1 Background

The Spring Valley Ranch dominates the northern horizon of the City of Eagle and Boise Valley. In 2005, its 38,000 acres spread nearly 20 miles east to west and more than ten miles north to south across three counties (Ada, Boise, and Gem). The ranch's beginning, however, was much more humble. Early land records show multiple ownerships, many as small as 40-acres, across the landscape. Those records identify Eliza R. Howell as the first owner of the "heart" of the ranch, with eighty-acres straddling the Ada-Boise County line.

An 1897 USGS Map identifies the current ranch headquarters as "Howell." The August 1989 Ada County Historic Resources: A Reconnaissance Survey, conducted by Belinda Davis and Barbara Perry Bauer, states: "The Spring Valley Ranch area located on the northern edge of the county apparently was a thriving community (once known as Howell) boasting a general

store, blacksmith shop and post office. Remnants of the old road, the extension of Broken Horn Road from the Dry Creek Valley, which extended to Pearl are still visible to the east of the main house. The ranch currently exists (consists) of a massive gabled barn constructed with hewn joints and wooden pegs and a well preserved folk Victorian house" (Figure 1).

Figure 1. Historic Photo of "Howell" (CA. 1935).

"Howell" changed hands in February of 1910, when Eliza R. and William H. Howell sold the site--at least 80 acres, according to the deed. That transaction provides the first reference to William Howell and corroborates accounts, which refer to an "Uncle Billy" Howell and his extensive sheep operation in Spring Valley.

The purchasers – W.C. Cleveland and John Archabal – apparently added surrounding parcels to the ranch. When they sold Spring Valley Ranch to Colin McLeod I (and W.J. Hodgson) on October 4, 1916, there were 1,400 acres, including the two and one-half mile long Spring Valley itself.

In the absence of historical narratives, mapping was used to piece together the story of Spring Valley Ranch. The 1897 USGS map identifies two over land routes from the Boise Valley to the Payette River and the site of today's community of Horseshoe Bend. As noted above, the first followed the route of Broken Horn Road from Seaman's Gulch. The road split at Willow Creek – the west fork going to the mining town of Pearl; the east fork to Horseshoe Bend.

The other roadway, identified as the Healey Toll Road, is today's Cartwright Road. One may assume that this road was the most direct and better-maintained facility of the two, making the collection of a fee for its use acceptable.

Historic mapping also suggests that other elements of "community" were important to the widely scattered residents of northern Ada County. Three area schools are shown on the pages of the November 1938 edition of Metsker's Atlas of Ada County. Stack Rock School on Cartwright Road (formerly Healey Toll Road) and Upper Dry Creek School apparently served the residents east and south of Spring Valley Ranch. Residents of Spring Valley, Rocky Canyon and Willow Creek were served by the Spring Hill School located at the Southwest corner of Section 12, a mile west of the ranch headquarters. Orin Givens, son of Guy Givens who operated the ranch during the 1930's told stories to his family of riding his horse to the school and having to remain there with the teacher and other students during snowstorms.

Figure 2. Historic View of Spring Valley Ranch (CA. 1935).

1.1.2 McLeod Family

Colin McLeod was born in Ardgay, Rosshire, Scotland, on February 27, 1880. It was in 1899, when a young man of nineteen years, Colin came to Idaho from Scotland and entered the sheep industry at Rockville with Finley McKenzie, his employer for six years. McLeod began business on his own in partnership with John Bruce, having ten thousand head of sheep at their camp, Jump Creek, eighteen miles south of Caldwell. McLeod disposed of his interest in the business and, in 1916, purchased Spring Valley Ranch.

McLeod was recognized as one of the most progressive and enterprising young sheepmen of Idaho and did much to improve the conditions of the business in the state. After his death, his son Colin "Smokey" McLeod II continued the sheep business until about 1982, when the ranch transitioned to cattle. Smokey's son, Sandy (Colin III), took over the ranch in 1995 upon his father's death, and the family continues to operate it today.

For over 100 years, the four generations of Colin McLeod have not only operated the ranch, they have "grown" it from the original 1,400 acre purchase (Figure 2) to more than 22,000 acres. They have shared it with other area sheepmen who moved their flocks through the

ranch to private and public grazing land. Over time, ranching operations have evolved from sheep, to sheep and horses, then since the early 1980's, cattle.

Even as the McLeod name has become synonymous with Spring Valley, the land has also been home to numerous Basque sheepherders who worked at Spring Valley Ranch, caring for both the flocks and for the land. The Basque culture is still prevalent in the area and continues to flourish throughout the state and region. Spring Valley Ranch's history includes strong ties to the Basque people, who enriched the land with their successful sheep operations and created a self-sustaining way of life. It is the heritage of over one hundred (100) years of McLeod family ownership and concern for the land that form the basis for the future – and for development of a "place" upon that land for succeeding generations. It is the Scottish heritage of the McLeod family that led to the selection of Avimor, which is named after Scotland's Aviemore (note spelling difference) a thriving, active-lifestyle resort town in the Highlands, and the gateway to a major national park.

In July 2003, the McLeod family contributed 26,800-acres of their 38,000-acres ranch into a trust in a forward looking development agreement. The "contributed" acreage has since been modified, with trusts lands now reduced to approximately 22,000-acres. The goal shared by the McLeod family and Avimor LLC is to craft a conservation-based community that holds the McLeod family vision and values. It is an exemplary example of sustainable development principles, conservation-based planning, and a commitment to that active management and preservation of the natural resources the McLeod family have lived and worked on for over 100 years.

2.0 MANAGEMENT GOALS AND OBJECTIVES

The primary goal of this management plan is to build a long-term comprehensive plan that delineates current conditions; identifies direct, indirect, and cumulative impacts associated with the development; and implements adaptive mitigation actions within and adjacent to the proposed preliminary plats[a] as they are built. The primary management guidelines are based on the correlation between the proposed development plans and the existing ecological conditions of the region, and may require adjustments throughout various phases of the overall development to align with the overall AD management goals stated above.

[a]Preliminary plat: The first formal presentation by drawings of a proposed subdivision

2.1 VILLAGE SPECIFIC MITIGATION GOALS AND TIMELINES

The section below describes the standard preliminary plat mitigation goals and the associated implementation timelines that would be implemented for each. These are actions that will be taken after the AD has been annexed, but prior to the first final plat for each preliminary plat. All site clearances, regulatory requirements, agency coordination, and site mitigation process will be initiated prior to each preliminary plat application to the City of Eagle (see Section 6.0).

Based on the dynamic characteristics of the ecosystems within the AD, the influence from human impacts onsite and off, as well as the adaptive nature of the mitigation plan itself, these management timelines should be considered guidelines rather than fixed schedules. However, all implemented management actions for each final plat within the AD will be monitored and annually reviewed by an independent conservation advisory committee (CAC).

2.1.1 Initial Management Actions (Prior to Soil Disturbance Activities)

Initial management actions will focus on: setting up the management framework for the implementation and monitoring of the management activities; establishing conservation easements within predefined areas to offset development impacts; inventory and management plan for invasive and noxious weed species; development of a fuels control program and update to AFP; defining potential restoration and enhancement of riparian and upland communities within or adjacent to the development area; and developing a concept recreation plan and incorporating it into the regional ARP. Specific management actions required prior to any soil disturbing activities include, but are not limited to:

- Conservation Director and Conservation Advisory Committee will be in place;
- The location of off-site conservation easements will be established and recorded with third party manager;
- Noxious weed inventory and control plan will be developed;
- Incorporation of specified units into the AFP and the development of a fuels control plan; and
- A concept recreation plan will be initiated and implemented in to the regional Avimor Recreation Plan;

As of the revision date for this Plan (April 2022), all aforementioned initial management actions have been completed.

2.1.2 Short and Long-term Management Actions (1 to 3 years)

Short-term management actions will focus on: initiating and managing the invasive and noxious weed control program; initiating and managing restoration and enhancement of riparian and upland communities; conducting landscape reviews and audits per the AFP; updating the community recreation plan as needed; implementing community education programs; and Altering the HMP to compensate for identified opportunities and constraints. Specific management actions include, but not limited to:

- Implementation and monitoring of the noxious weed and fuels program;
- Conservation education programs will be initiated and materials distributed to residents;
- Review of landscape plans and home audits will be conducted on units identified in the AFP;
- The community recreation plan will be updated, as needed;
- Community partnerships with county, state, federal, and other developments will be supported; and
- A grant application program will be developed, as needed

2.2 CITY OF EAGLE REGULATORY FRAMEWORK AND REQUIREMENTS

This HMP was done in accordance with requirements set forth by the City of Eagle Code 12-1. In addition, the plan identifies and addresses federal requirements associated with migratory bird species (Federal Migratory Bird Treaty Act of 1972 [MBTA]) and endangered species (Endangered Species Act [ESA]). Any jurisdictional wetlands identified within a defined project area would be delineated, and would meet all Section 404 permit requirements associated with the Clean Water Act (CWA). Since there are currently no federal lands affected by the development, or federal dollars used for the development, regulatory actions associated with the National Environmental Policy Act (NEPA) are not required, but may be necessary on a project-by-project basis.

3.0 SITE DESCRIPTION

3.1 GENERAL SETTING

The proposed AD is located in parts of eastern Ada County, western Boise County, and southern Gem County Idaho in Townships 05 and 06 North, and Range 01 and 02 East (Figure 4). The AD is approximately 19,000-acres in size and is surrounded by private, state, and public lands. The property is bisected by Highway 55, north of Dry Creek Road and South of Horseshoe Bend. Portions of the South Fork of Willow Creek, Alkali Creek, Big Gulch and Gulch Creeks, Woods Gulch Creek, Spring Valley Creek, Custer Creek run through the property, as does roughly 4.5 miles of Pearl Road. Elevation ranges between approximately 3,200 and 4,500 feet above mean sea level. The AD property is primarily used for agricultural purposes, including an alfalfa field and pastures/open range for domestic livestock grazing.

The development and associated management plans for the APC were approved by Ada County in 2006. Of the 830 acres roughly 65% (580-acres) of the APC is permanently protected as natural open space, with an additional 400-acre conservation easement outside the APC boundary on the east side of SH-55. The conservation easement is managed by the Ada County Soil and Water Conservation District (ASWCD) and permanently funded by the Avimor Stewardship Organization (ASO) through Home Owner Association (HOA) fees.

While the APC represents only four percent of the total AD area, it provides over 40-miles of publicly accessible trails and two tracks, with an additional 55 miles outside the APC but on the east side of the SH-55 (Figure 5). Currently, there are over 200 miles of existing two tracks and trails that would be incorporated and managed under the current Avimor Recreation Plan as each phase is developed. Public lands administered by the BLM, State of Idaho, and private land with residential and agricultural properties border the area.

3.2 GEOGRAPHICAL SETTING

For the purposes of this document, the AD is found within the Eagle Foothills and western-most portions of the Boise Foothills (Figure 4). This region covers approximately 60,000-acres immediately north and east of Eagle, Idaho. The AD is located in Ada, Boise, and Gem Counties. The AD is approximately 19,000-acres in size and is bisected by Highway 55, north of Dry Creek Road, south of Horseshoe Bend, east of Willow Creek Road, and west of the Boise Foothills. Elevation ranges between approximately 3,200 and 4,500 feet above mean sea level.

The general climate of the area surrounding the proposed AD is characterized by sharp contrasts between summer and winter seasons. The average annual temperature recorded in the area is 51.9 degree Fahrenheit (F), with the yearly average high (88.9 F) in July and the average low (32.7) in January (Western Regional Climate Center [WRCC] 2017). The winters, though cold, are generally not too severe. The average precipitation recorded at the Boise WFO RAW station from 2014 – 2017 is 14.62 inches, annually (WRCC 2017).

3.3 HISTORIC LAND USE

Prior to European settlement, two principal vegetation communities dominated the area associated with the AD: Wyoming big sagebrush (*Artemisia tridentata* ssp. *Wyomingensis*) and bitterbrush (*Purshia tridentata*), each with an understory of native perennial grasses and forbs. Riparian and grassland communities were also present, but made up only a small percentage of the total area. In addition to vascular plant communities, biological soil crusts, consisting of lichens, algae, and mosses, are another important component of the ecological community (Belnap 2001).

Over time, the overall condition of the AD area has degraded considerably in areas and generally ranges from marginal to poor condition, with scattered pockets in good and near-pristine condition based on long-term habitat condition surveys. The current condition of the area is directly and indirectly associated with human resource uses (e.g., livestock grazing, recreation, transportation, agriculture, etc.), which have resulted in: the introduction and spread of invasive and noxious weed species; increased frequency and severity of wildfires; and an overall loss or significant alteration of native vegetation communities. This reduction and alteration of native plant communities, in addition to increased fragmentation affects from fencing, roads, and development (i.e., residential, agricultural, and commercial), have also adversely affected wildlife species by reducing overall availability and connectivity of quality habitat.

3.3.1 Livestock

Domestic livestock use of this area has had significant impact on native plant communities and wildlife species, including special status plants, and ground dwelling and nesting wildlife (LEPA 2003; Hanley and Page 1981). The potential for domestic livestock to adversely affect plant communities and wildlife habitat is normally greatest when consistent heavy spring use occurs during the critical growth period of forage species and when soils are still saturated. Trampling, over-utilization, and defoliation of palatable species reduces vigor, abundance, and reproductive ability; thereby, limiting the capacity of residual perennial communities to reestablish (Blaisdell and Pechanec 1949; Jones 2000). Hoof sheer and trampling can also negatively affect ground dwelling wildlife and ground nesting birds by destroying burrow systems and crushing nests and eggs (Hanley and Page 1981).

Livestock can also indirectly affect plant communities and wildlife habitat by acting as vectors for many invasive and noxious weed species, and they create microhabitats for these species through soil disturbance (hoof sheer, bedding, etc.). These actions benefit exotic species that are better adapted to livestock grazing at the expense of native species (Holecheck et al. 2001; Laycock and Conrad 1981). Native species, such as Thurber's needle grass (*Achnatherum thurberianum*) and bluebunch wheatgrass (*Pseudoroegneria spicatum*), generally exhibit reduced growth and reproduction when over-grazed, resulting in a transition from native perennial species to exotic annual species (Kimball and Schiffman 2003). The reduction of perennial reproduction and increased competition from invasive

species can also result in augmented fuel loads that reduce the intervals between disturbance events (e.g., wildfire) and potentially enhance the size and severity of those events, which can further accelerate the expansion of exotic annual-dominated communities, reducing natural habitat for wildlife species (Whisenant 1990).

3.3.1 Mechanical Damage

Vegetation and soils are damaged by a number of activities, including off-road recreation, livestock trampling, firebreaks, habitat restoration projects, and utility and road right-of-way (ROW) developments. These activities destroy biological soil crusts, reduce soil fertility, increase susceptibility to erosion and establishment of invasive/noxious plants, and fragment wildlife habitat.

3.3.2 Wildfire

Prior to European settlement, wildfire frequency in the Snake River Plain was between 35 and 100 years for sagebrush communities and greater than 200 years for salt desert shrub communities (USDI 2000). With the increase of exotic annuals, lightning-caused wildfires began to burn with greater frequency and intensity, and affected larger and larger areas. Seeds of exotic annuals are well-suited to survive wildfire, while bitterbrush and sagebrush (Artemisia spp.) are generally eliminated by wildfire. In years of average to above average precipitation, fuel loads (primarily cheatgrass [*Bromus tectorum*] and other invasive annuals) increase considerably, resulting in a greater probability for ignition. As a result of these changes to vegetation communities, wildfire return intervals have been reduced from 20 to 50 years to an average of 10 to 12 years (Peters and Bunting 1992).

Because of the change in the wildfire regime in much of the Snake River Plain, the rate of shrub loss has far exceeded shrub regeneration (Whisenant 1990). Consequently, the vegetation in much of the area has transitioned from shrub-dominated communities to annual grasslands.

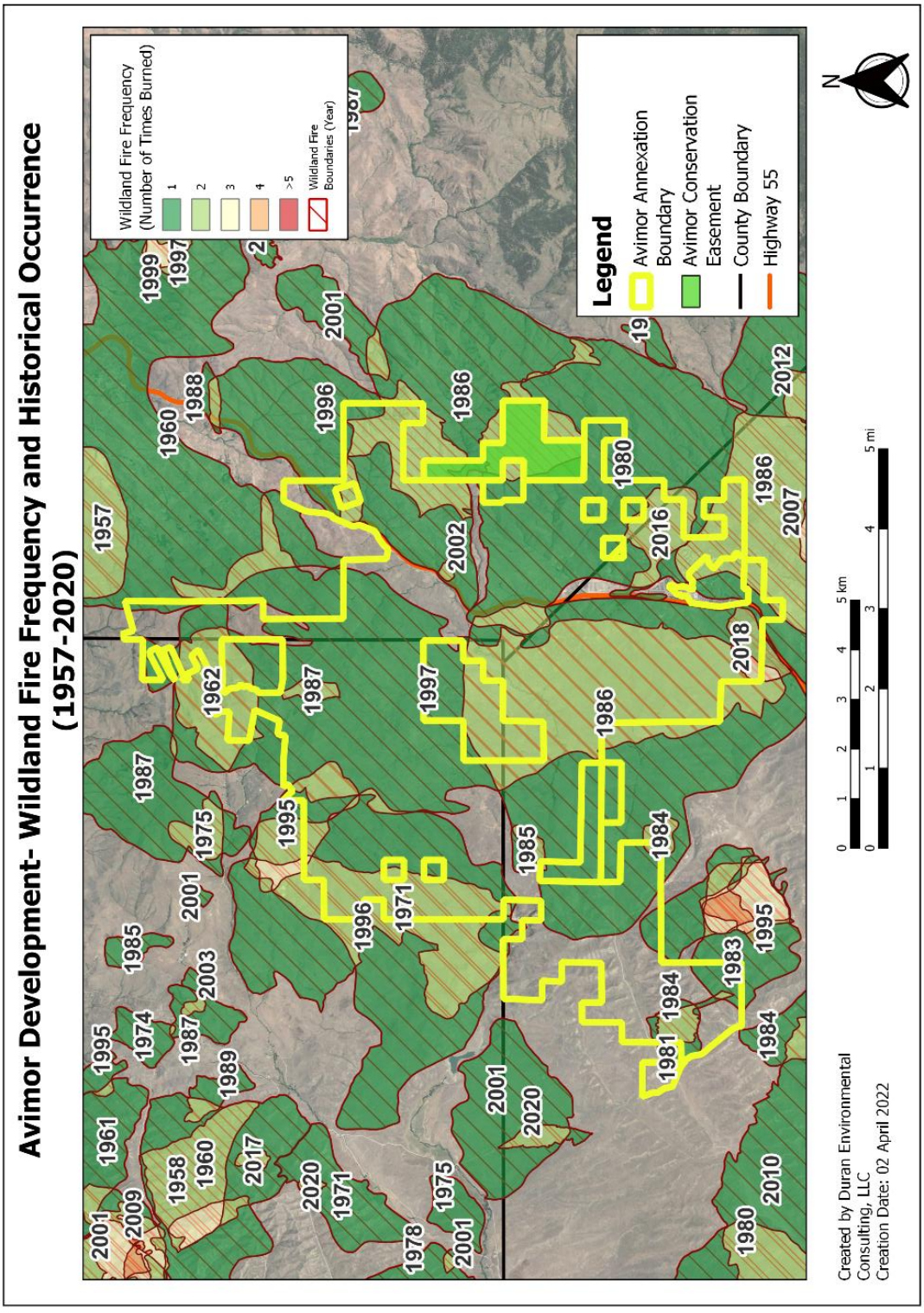


Figure 3. Wildland Fire Occurrence and Frequency 1957-2020 - Avimor Development

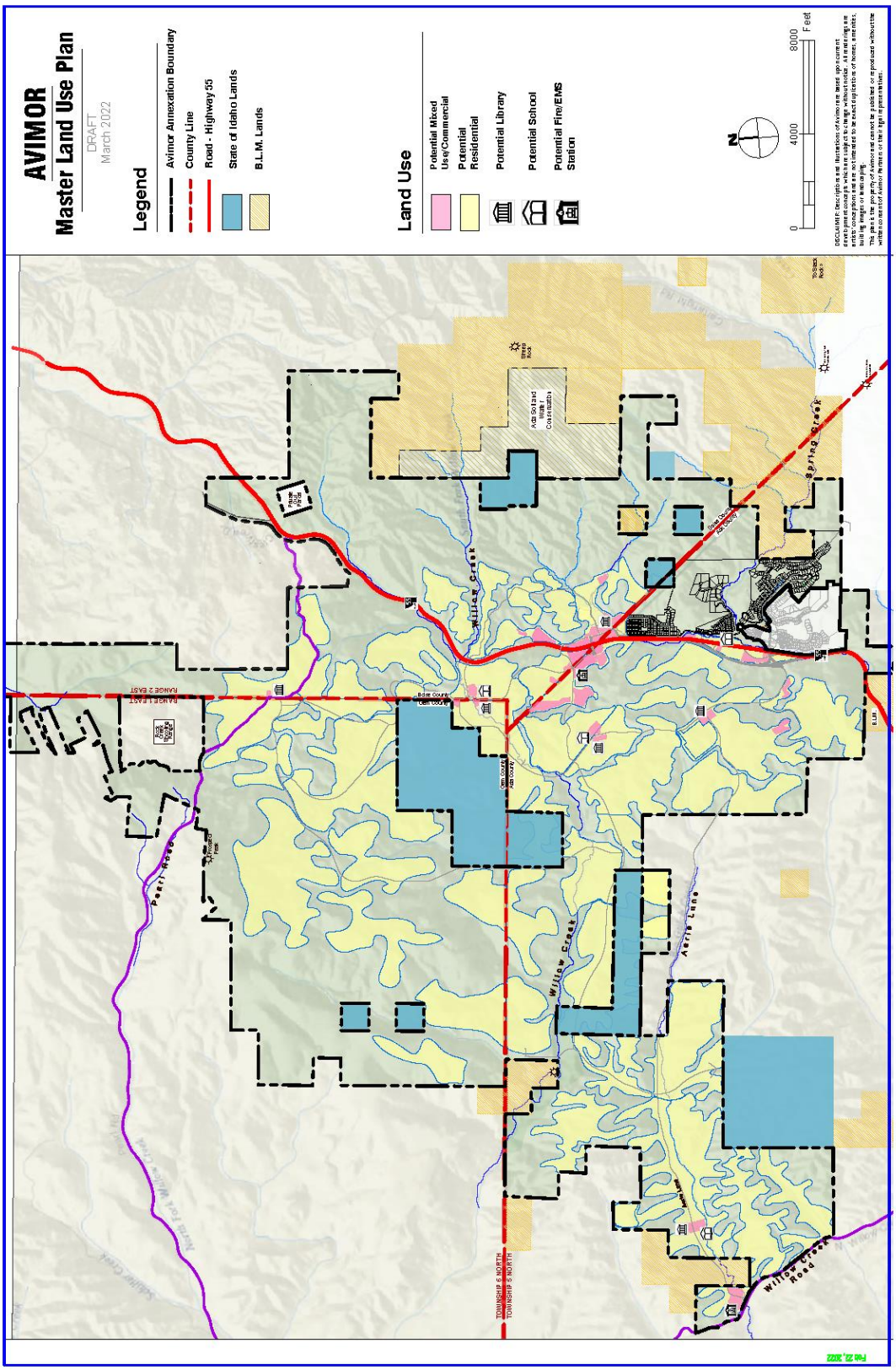


Figure 4. Vicinity and Ownership Map – Avimor Development (AD)

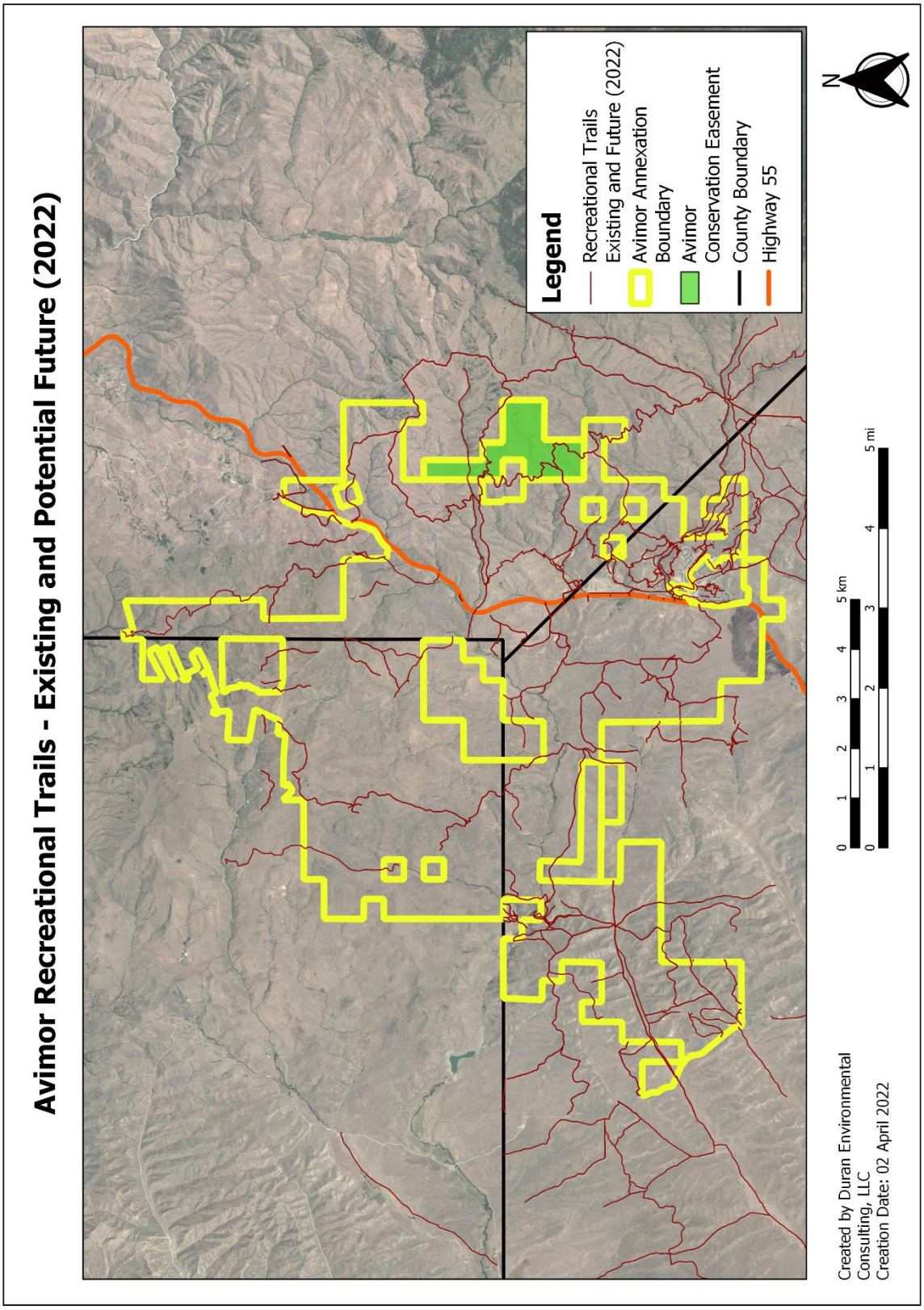


Figure 5. Existing Trails Map – Avimor Development.

4.0 SITE RESOURCES

4.1 VEGETATION, COMMUNITY TYPES, AND SOILS

According to the Public Lands Open Space Management Plan (BP&R 2000), there are six primary vegetation communities generally identified in the Eagle and Boise Foothills including: grasslands, upland shrubs, forested, mountain shrub, riparian, and planted woodland groves. Upland native plant communities in the AD foothills are predominantly composed of grassland and upland shrub communities found on the lower and mid-elevation slopes. Riparian communities are found at all elevations and generally have the greatest biodiversity of any community, but make up the smallest percentage of vegetation cover, overall. The planted woodland groves are generally non-native species restricted to the lower elevations adjacent to the Cities of Boise and Eagle. While there are no forested or mountain shrub communities within the AD, they are adjacent to the property at the high elevations in the east. The Public Lands Open Space Management Plan (BP&R 2000) defines these foothills communities as:

Grasslands
Grasslands are a dominant plant community on the lower elevation slopes composed of lacustrine, or lakebed, soils. Grazing and fire on the lower slopes has eliminated much of the former native shrub and grass vegetation and left dense stands of annual grasses. These annual grasses include cheatgrass on sandy soils and medusahead (*Taeniatherum caput-medusae*) on soils with higher clay content. Other exotics and state-listed noxious weeds have also impacted the grasslands, the most significant of which being rush skeletonweed (*Chondrilla juncea*). Remnants of native vegetation remain in some lower foothills areas such as Hulls Gulch/Camel's Back Reserve and Military Reserve where upland shrub and grass communities include bitterbrush, sagebrush, and rabbitbrush (Chrysothamnus spp.) as the primary shrub species. Perennial grasses include three-awn (*Aristida purpurea*), Sandberg's bluegrass (*Poa secunda*), and bluebunch wheatgrass (EDAW, CH2M Hill, Jensen-Belts Associates, 1996).

Upland Shrub Communities
The sagebrush and bitterbrush upland shrub communities are prevalent on mid-elevation granitic soils. Historic grazing and fires have altered the native composition of these communities. Thus, the existing shrub communities are represented in a patchwork of remnant native shrub communities. Herbaceous compositions of these shrub communities include both native to exotic species. Upland shrub populations on the northeast aspects appear to be more resilient to wildland fire and weed invasions (Mancuso, 1999). The Interagency Fire Rehabilitation Report (1996) identified shrub communities in good to excellent condition that included big sagebrush/bluebunch wheatgrass–Thurber's needlegrass on many south aspects and bitterbrush/bluebunch wheatgrass on shallow, rocky areas with south aspects. North aspects supported a big sagebrush/Idaho fescue (*Festuca idahoensis*) community type. Vegetation determined to be in poor to fair condition was characterized by increased coverage of three-awn grass, Sandberg's bluegrass, and rabbitbrush.

Forested
Forested areas are present in the upper elevations of the foothills on granitic soils. The Interagency Fire Rehabilitation Report (1996) found that plant community compositions in

the forested areas included Douglas fir/ninebark communities on the north aspects, while ponderosa pine (*Pinus ponderosa*) with understories of bitterbrush, bluebunch wheatgrass, and Idaho fescue were found on dry or rocky sites. There are no forested communities within the AD.

Mountain Shrub

Mountain shrub areas are frequently adjacent to forested areas in the upper elevations of the foothills. These shrub communities are dominated by chokecherry, bitter cherry, bitterbrush, and bluebunch wheatgrass. Mountain shrub communities also include ceanothus, aspen, serviceberry, mountain maple, ninebark, and snowbrush. There are no mountain shrub communities within the AD.

Riparian

Riparian plant communities are associated with perennial and intermittent streams throughout the foothills. Lower elevation riparian zones generally have tree canopies dominated by black cottonwood with box elder, elm, water birch, and peach leaf willows. The shrub layer is dominated by willows (coyote and arroyo), golden currant, thin-leaf alder, black hawthorn, red-osier dogwood, poison ivy, honeysuckle and Wood's rose. Riparian zones in the mid- to upper elevations generally do not have a tree canopy, but are dominated by the willows and shrubs listed above. Detailed compositions of several riparian plant communities are documented in Moseley et al., 1992. Emergent wetlands are also found within the riparian zones in the foothills. Willows, cattails, and sedges generally dominate the vegetation in these areas. Standing water can be found in some areas. Grazing and drought have reduced the extent of the wetlands throughout the AD (EDAW 1996). Many wildlife species rely on the cover of trees and shrubs for nesting, forage, and escape habitat found in riparian areas. Riparian areas and drainages are also used as movement and migration corridors for some wildlife species. Over 200 wildlife species in the area are associated with riparian communities.

Planted Woodland Groves

Planted woodland groves, consisting of exotic tree plantings, are located in the lower foothills adjacent to the city. Tree species that occur in this mix include black locust, silver maple, tree of heaven, Scotch pine, linden, Norway maple, and oak. Introduced trees in the groves show little evidence of regeneration. The understory is primarily a mixture of annual and perennial grasses (EDAW et al. 1996). Planted woodland groves are limited to the APC within the AD.

4.1.1 Avimor Development Vegetative Communities

The plant communities and associated species composition found within the AD are those commonly found throughout the western portion of the Snake River Plains. Based on the amount of area with similar habitat found throughout the Snake River Plains (millions of acres), the AD (19,000-acres) is only a very small fraction of that area.

The AD area generally supports five general vegetation communities: riparian, grassland, shrub, agriculture, and disturbed; and one non-vegetative community, rock (Table 1 and Figure 7). These communities were determined by the dominant vegetation or characteristic present (Section 4.0). In addition, past and current use and disturbance, as well as defining boundaries including roads, slope, and aspect were also considered. Table 1 quantifies the amount and percent of each community type found within the proposed AD boundary.

Table 1. General Vegetation Types by Community Type

Community Type	Total Acres	Percent
Agriculture	290	1.52%
Disturbed	160	0.84%
Grasslands	16,183	84.92%
Riparian	380	1.99%
Rock	7	0.04%
Shrubs	2,000	10.50%
Total Acres	**19,056**	

4.1.2 Baseline Data Acquisition for Quantitative Analysis

During initial baseline surveys and reports (2006), ECS staff used the most current aerial imagery provided by the USGS's National Aerial Photography Program (NAPP) to delineate the general vegetative community types at a rough linear scale (Figure 6 and Table 1). As future project areas are delineated, updated NAPP or comparable imagery would be used in conjunction with vegetative community data to further separate each community type based on its overall potential ecological condition. Land cover types shown in Figure 7 were pulled from the most recent (2019) National Land Cover Database geospatial library (Dewitz and USGS 2021).

Reference condition for each location would identified using Ada, Gem, and Boise County soil maps and their associated ecological site descriptions (Figure 7, Figure 8, and Appendix B). Using the ecological site description, reference condition can be identified and followed with site- specific surveys to confirm and adjust the delineated classifications, including: agricultural; grassland; shrub; riparian; rock outcrop; and disturbed. After the classifications are ground-truthed during field surveys, Arc-GIS with Spatial Analyst software would be used to delineate and quantify each of the communities.

Riparian and wetland areas on the property will be classified using the standard for proper functioning condition (PFC) as outlined by the BLM's proper functioning condition workgroup. BLM depicts natural riparian-wetland areas as resources whose capability and potential is defined by the interaction of three components: 1) vegetation, 2) landform/soils, and 3) hydrology (BLM 1998). For the purpose of maintaining consistency throughout this report, riparian conditions will be categorized as poor, marginal, or satisfactory condition as a baseline for mitigation purposes. Poor condition relates to non-functioning condition, marginal related to functioning at risk, and satisfactory relates to proper functioning condition.

During all field surveys detailed notes and UTM coordinates or GPS polygons will be recorded regarding plant associations, noxious weed populations, and land use patterns. The surveyors will keep lists of all plants encountered and identified during the site survey. Unknown species will be collected and identified with the following reference material: Vascular Plants of the Pacific Northwest (Hitchcock et al. 1964) and Flora of The Pacific Northwest: An Illustrated Manual (Hitchcock and Cronquist 1973), or other plant systematic key.

4.1.3 Vegetative Community Types

Grasslands (Native and Invasive)

Grasslands comprise approximately 85 percent (16,183-acres) of the project area and are readily found throughout the property (Figure 6). These sites have been significantly altered by increased frequency of fires, agriculture, and livestock grazing. The majority of the grassland is in poor condition and is dominated by medusahead wild rye, cheatgrass, and bulbous bluegrass (*Poa bulbosa*). A number of annual forbs are present as well, including annual sunflower (*Helianthus annuus*) clasping pepperweed (*Lepidium perfoliatum*), storksbill (*Erodium cicutarium*) and various mustards (*Sisymbrium altissimum* and *Descurainia sophia*). However, there are large patches of residual native species including: grasses, such as bluebunch wheatgrass, Sandberg's bluegrass, squirrel tail (*Elymus elymoides*), and purple threeawn; perennial forbs, such as Hooker's balsamroot (*Balsamorhiza hookerii*), long- leaved phlox (*Phlox longifolia*), mountain-desert parsley (*Lomatium grayi*), barestem biscuitroot (*Lomatium nudicaule*), prairie star (*Lithofragma parviflora*), and Nevada onion (*Allium nevadense*). These patches are primarily limited only to the upper elevations or steeply sloped hillsides of the proposed AD where is seems that livestock grazing has been limited. This observation is based on the limited amount of new manure and trampling observed during site visits.

Shrub Communities

Shrub communities are generally found in the north and northwestern portion of the property. They cover approximately 10.50 percent (2,000-acres) of the proposed project area. These areas generally occur at higher elevations and varying slopes. They are dominated by a mix of big basin, Wyoming big sagebrush and bitterbrush, with an understory dominated by cheatgrass and some medusa head wild rye in poor condition areas and by native bunchgrasses and forbs in satisfactory condition areas. The species of sagebrush present within an area is generally associated with the presence of water. Basin big sagebrush is found in areas where water is present or would accumulate, such as gullies and at the edge of riparian zones. Wyoming sagebrush is found in drier areas away from water. Bitterbrush generally grows in higher elevations and is a prime ingredient for mule deer wintering habitat. In addition to these dominant species, there are some residual native grass species including Sandberg's bluegrass, squirrel tail, and Great Basin wild rye (*Leymus cinereus*), as well as various annual and perennial forbs species that are also found in the surrounding grasslands.

Agriculture

Agricultural lands are primarily associated with Spring Valley Ranch and other agricultural areas spaced along Highway 55. These areas have been converted primarily to agricultural (alfalfa) use and covers a little over one percent (290-acres) of the property. Currently, these areas are represented by a monoculture of alfalfa during the growing season and bare soil after harvest and tilling. Typically, plowed agricultural fields result in the potential establishment and spread of noxious weeds and non-native invasive plant species related to ongoing soil disturbance, transported livestock, and machinery from other locations with weed infestations.

Disturbed

Disturbed areas consist of roads, quarries, wells, and the Spring Valley Ranch property, representing less than one percent (160-acres) of the project area.

Riparian Communities

Big Gulch Creek, Spring Valley Creek, and the south fork of Willow Creek are primarily intermittent streams that support marginal riparian communities and cover approximately two percent (380-acres) of the project area. The riparian communities associated with these creeks make up the smallest amount of area, but have the greatest biological diversity and abundance of plant species.

Historic and present disturbance factors, such as grazing, agriculture, and fire, have resulted in primarily poor and marginal riparian vegetative communities along Big Gulch, Spring Valley and Willow creeks. There are some satisfactory riparian areas along Willow creek that support a healthier vegetative community and have more natural structural components. The south fork of Willow creek is the main stream channel dissecting the northern portion of the property. Flowing from east to west, Willow creek carries the largest quantity of water for the longest duration during the spring and early summer months, subsequently supporting the majority of riparian and hydric vegetation found on the property.

Concentrations of woody riparian species, such as willow (Salix spp.), Wood's rose (*Rosa woodsii*), and golden currant (*Ribes aureum*) are found in the northern region of the property along portions of Willow and Spring Valley creeks. There are scattered amounts of woody species found in other locations of the property near springs and in patchy areas along Big Gulch Creek. Riparian sedges (Carex spp.), rushes (Juncus spp.), and grasses are very limited in both species diversity and quantity along the streams of the property, likely due to the intermittent and ephemeral nature of the streams in combination with land use practices. Upland vegetation species, such as sagebrush and annual grasses and forbs, have heavily encroached into the stream channels and dominate or co-dominate the majority of observed stream banks. Root masses associated with the majority of vegetation found in the riparian zone are comprised of species capable of withstanding high stream flow or flood events.

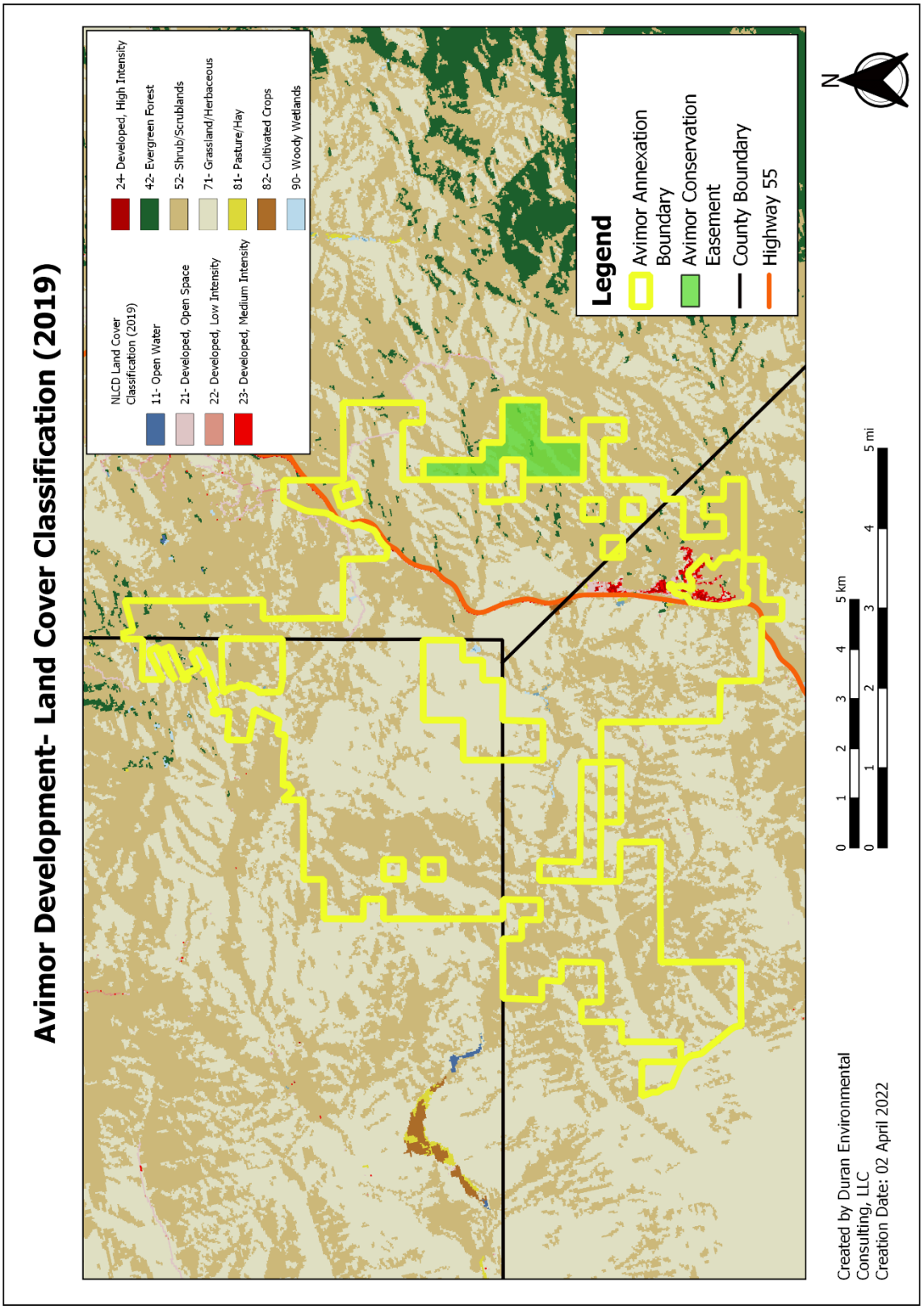


Figure 6. General Vegetation and Land Cover Within the AD (2019 NLCD Database).

4.1.4 Wetlands within the Proposed Avimor Development

Currently there are seven primary drainages within the AD: South Fork of Willow Creek, Alkali Creek, Big Gulch and Gulch Creeks, Woods Gulch Creek, Spring Valley Creek, and Custer Creek; as well as several unnamed drainages. With the exception of the Spring Valley Creek, no official wetland delineations have been conducted to-date. It is assumed at that at least portions of all seven could have jurisdictional wetlands, as defined by the Army Corp of Engineers. A full wetland delineation report and site specific mitigation plan will be developed for each proposed project, as needed.

4.1.5 Soils

Soils have been identified for the AD property using Ada, Gem, and Boise County soil maps using the USDA Web Soil Survey tool. Currently, there are 90 different soils types within the AD area (Figure 7 and Appendix B). There are numerous ways to classify soil types that take into account the structural components, erosion potential, and engineering aspects of soils. Perhaps the most useful descriptor of soils, particularly for the purposes of habitat management and land use/conservation planning, are soil groupings called ecological site descriptions (ESD). Each ESD is used to identify what the potential vegetation community could be based disturbance factors and state and transition models. The use of ESD is critical for restoration efforts; specifically, in determining what species to use in order to restore structural and functional conditions to the sites.

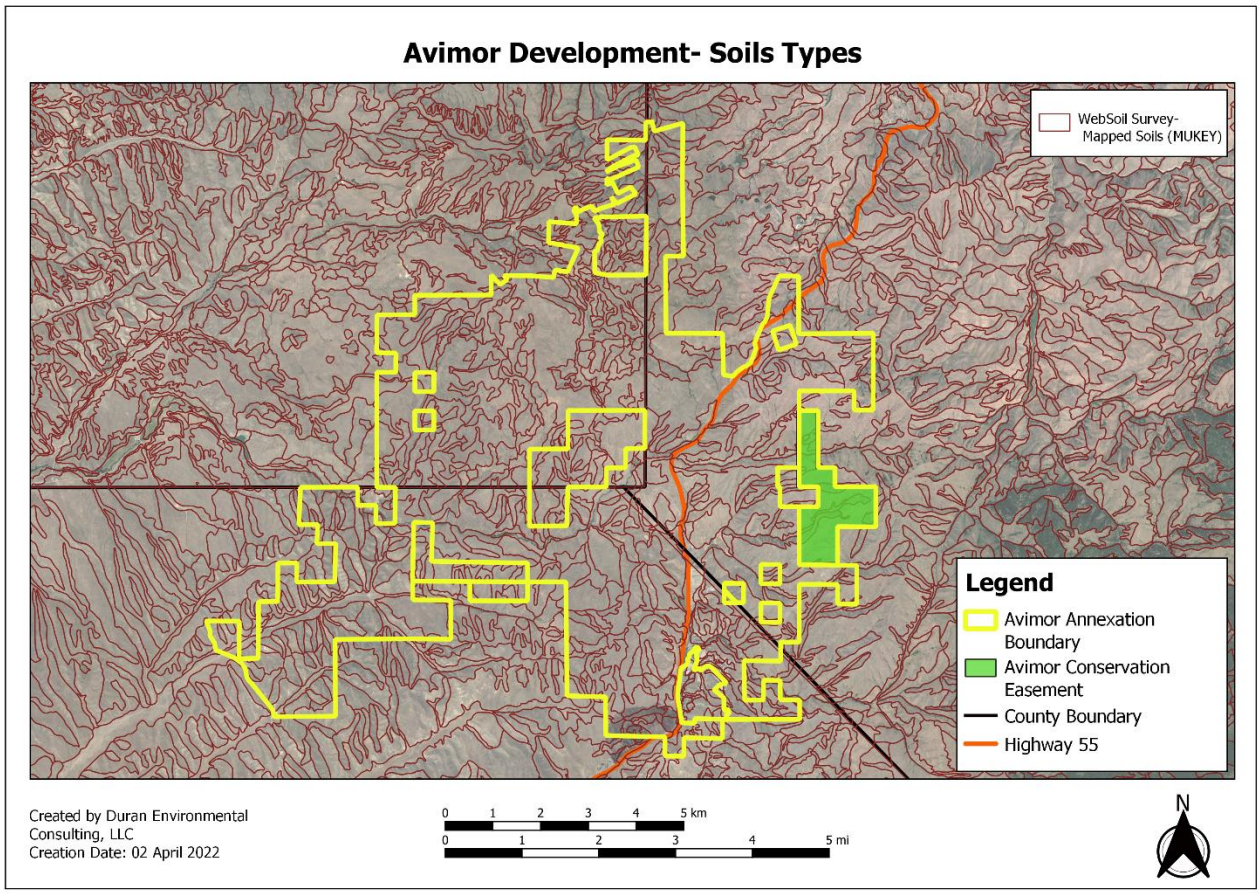


Figure 7. General Soils Map - Avimor Development

The AD is composed of 22 unique ESDs, but can be broadly categorized as loamy or granitic soils with varying depths and slope aspects (Figure 8). Most common plant associations within the dominant ESDs are sagebrush species (primarily Artemisia tridentata tridentata), bluebunch wheatgrass, antelope bitterbrush, and Idaho fescue.

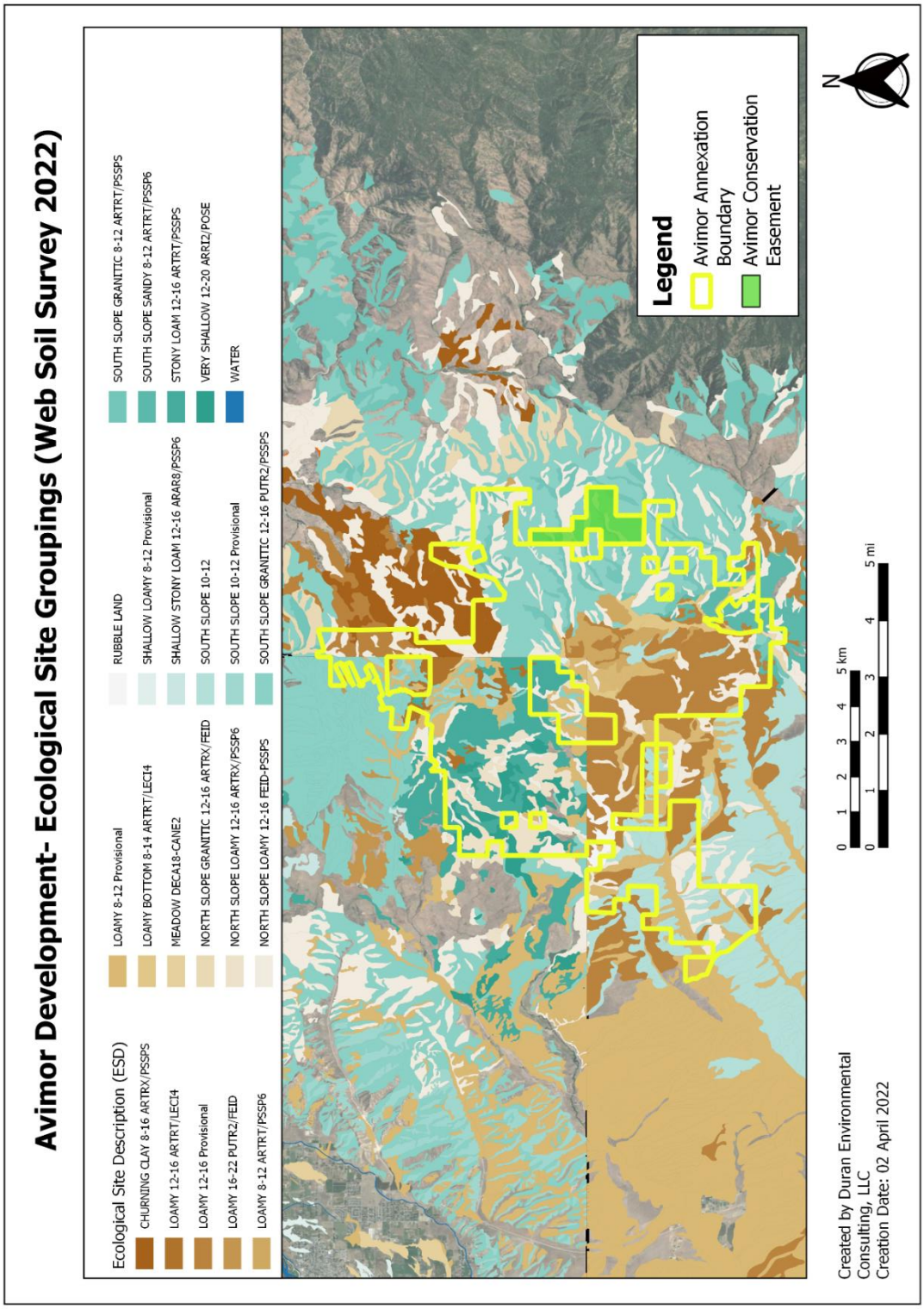


Figure 8. Ecological Site Descriptions – Avimor Development

4.1.6 Noxious and Invasive Weeds within the AD

Invasive Species

Many species of exotic invasive species were introduced into the area through contaminated crop seed, domestic livestock feces, and recreation activities. These species included cheatgrass, medusahead wild rye, several exotic mustards, and others (Yensen 1981 and Piemeisel 1951). Precipitation concentrated in late winter and early to mid-spring generally provides moisture for heavy cheatgrass production, even though the total annual precipitation remains at or below average. These annuals then cure out and are much more flammable than the native species they replace. Exotic annual communities vary greatly with soil type, former vegetation community composition, and history of disturbance. Invasive species identified during initial and ongoing property surveys include, but are not limited to: cheatgrass; medusahead wild rye; kochia (*Kochia scoparia*); bur-buttercup (*Ceratocephala testiculata*); Russian thistle (*Salsola tragus*), clasping pepperweed *(Lepidium perfoliatum*); prickly lettuce (*Lactuca serriola*); sticky gumweed (*Grindelia squarrosa*); tumble mustard (*Sisymbrium alissimum*); and other non- native invasive species have also invaded the area.

Noxious Weeds

Noxious weeds are non-native plants that have been designated "noxious" by state law because of their potential harm to the Idaho economy. The cost of controlling a noxious weed must be less than the harm the weed's presence does to the state economy (Callihan and Miller 1994). While there have been no comprehensive noxious weed inventories conducted for the entire area, a general list of Idaho-designated noxious weed species can be found at the Idaho State Department of Agriculture's website:

(*http://www.agri.idaho.gov/Categories/PlantsInsects/NoxiousWeeds/watchlist.php*).

Generally, on the lower elevations of the foothills, annual exotic grasses and other noxious weed species have replaced much of the native vegetation. The Ada County Weed and Pest Control (ACWPC) reports that infestations of noxious weeds in the foothills include: rush skeletonweed (*Chondrilla juncea*), whitetop (*Cardaria draba*), Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*), field bindweed (*Convolvulus arvensis*), puncturevine (*Tribulus terrestris*), purple loosestrife (*Lythrum salicaria*) and poison hemlock(*Conium maculatum*). Of these, rush skeletonweed is contributing the most considerable damage to the foothills ecosystem (BP&R 2000).

Various disturbance factors have likely contributed to the explosion of invasive and noxious weed species currently dominating the lower elevation portion of the foothills. Increased soil disturbance in the foothills is generally attributed to road construction, farming, domestic livestock grazing, logging, urban development, recreation, and wildfire. These disturbances remove existing native vegetation and provide an opportunity for invasive species to establish and spread (Sheley et al. 1999). In addition, exotic grasses, medusahead and cheatgrass, have had a profound effect on the foothills ecosystem by augmenting fuel loads. Augmented fuel loads increase the potential for accidental ignition, thereby reducing the amount of time between fires. Increased frequencies of wildfire generally favor annual species that require less time to establish and reproduce in comparison to native perennial bunchgrasses or shrub communities (Anderson and Inouye 2001; Entwistle et al. 2001).

Site surveys have identified several infestations of noxious weeds in the area, including: rush skeletonweed, whitetop, field bindweed, houndstongue (*Cynoglossum officinale*), poison hemlock, Canada thistle, Scotch thistle, and punctervine within the AD.

4.2 WILDLIFE

The community dynamics of the foothills ecosystems supports more than 290 species of wildlife, including wintering populations of mule deer and elk, migrating raptors and Neotropical birds, and several Idaho-listed special status species (BP&R 2000). Based on the variability of habitat requirements for each species, this report will discuss several key groups of species, including: big game species, upland game birds, and non-game species. While this chapter discusses the current conditions of wildlife in the foothills, the next chapter will identify potential impacts to wildlife and vegetation, followed by general recommendations to avoid, minimize, or mitigate impacts to overall habitat. A description of wildlife resources (big game, upland game birds, and non-game species) within and adjacent to the proposed AD is found below.

4.2.1 Big Game

The lower elevation portion of the foothills north of Boise, east and west of SH-55, and west of SH-21 are designated as big game winter range (BP&R 2000). The foothills north of Eagle and west of SH-55 also provide some winter range for big game species, but populations are considerably smaller. Both areas fall within the Weiser River and Boise River Elk Management Zones (EMZ) and Game Management Units (GMU) 32, 39, and one subunit in 33 (Figure 9).

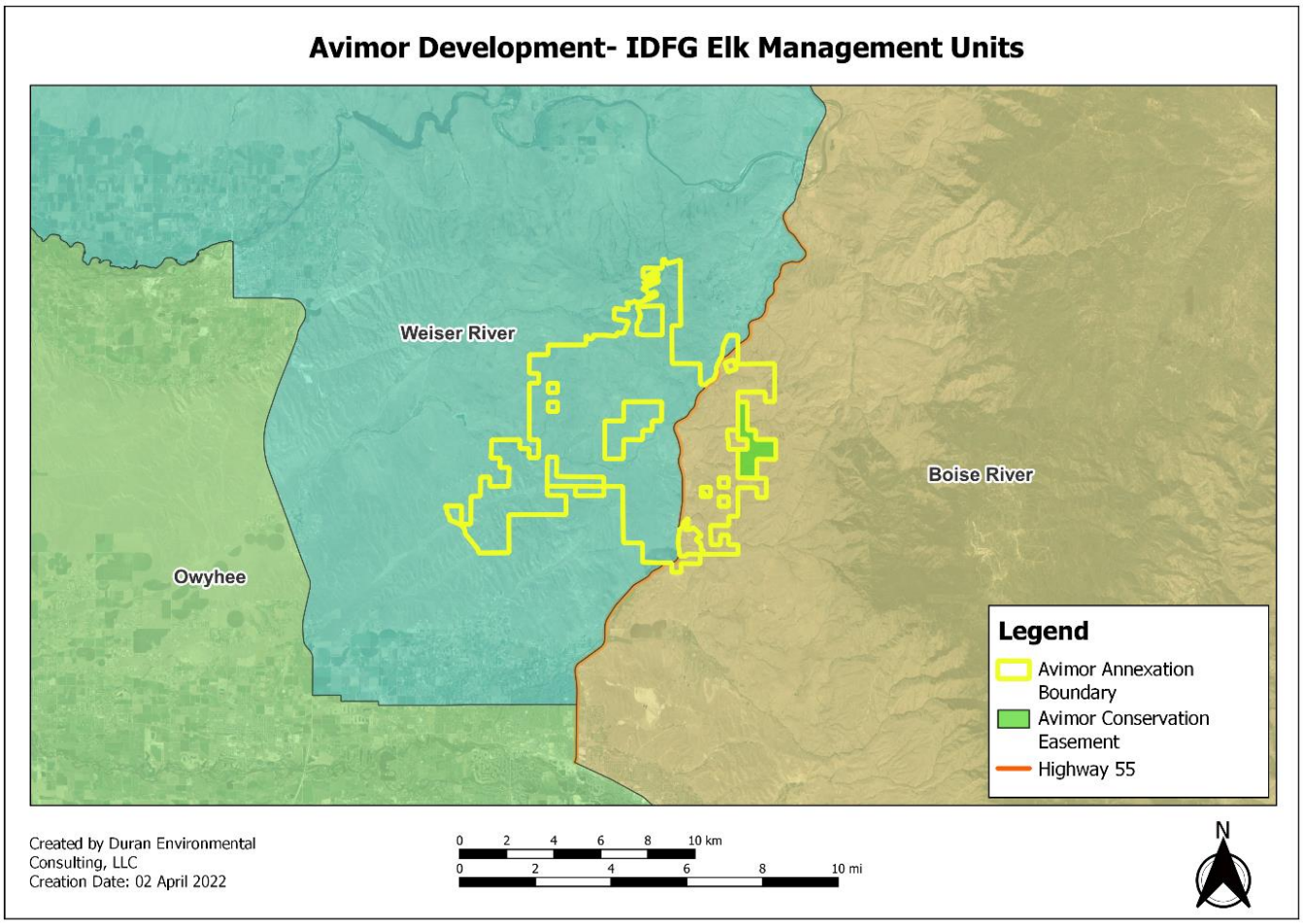


Figure 9. Map of IDFG Game Management Units (GMU)- Avimor Development.

Currently, there are three primary big game species identified within the units: mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and pronghorn antelope (*Antilocapra americana*). Hunting seasons within the units are restricted to deer and elk, and do not include pronghorn antelope. In addition to these species, white tailed deer, moose, mountain lion, and black bear have been observed in the Boise Foothills.

Small changes to critical winter habitat can have large repercussions for big game winter range across a broad area, especially during hard winters. Big game species are pushed down to lower elevation areas, identified by the IDFG as winter range, in order to over-winter. These sites require shallow snow levels, adequate food, sight and thermal cover, and limited disturbances in order to maintain energy balance and minimize over winter weight loss (IDFG 2007; Thomas et al. 1988). If these conditions are not present, energy losses could exceed gains over an extended time, potentially resulting in winter mortality or failure to reproduce the following year.

In addition to a final destination for big game during their winter migrations, the foothills also act as movement corridors that big game utilize to access different aspects of their habitat throughout the season. These areas are identified as big game migration corridors and are crucial for winter survival.

Mule Deer

Mule deer are one of Idaho's most abundant and widely distributed big game animals and provide more recreational opportunity than any other big game species (IDFG 2005a; IDFG 2007). Based on population trend estimates by the Idaho Department of Fish and Game in 2005, the approximate mule deer population within GMU-39 was 26,520, down from 27,800 in 2003 (IDFG 2007).

Mule deer are best adapted to seral transitional habitat types. They generally browse on a wide variety of woody plants, primarily during the winter when snow covers most grasses and forbs. Common browse plants include bitterbrush, sagebrush, aspen, dogwood, juniper and Douglas-fir. They graze on various grasses and forbs heavily during spring, summer and fall. They do occasionally feed on agricultural crops as well.

Streubel (2000) found that deer in Idaho showed a high fidelity to their summer range, but less so to their winter range; deer from one summer range migrated to different winter ranges. Mule deer migrate from high mountainous country to lower valleys and foothills during late fall to avoid heavy snow (Brown 1992). Mule deer winter habitat in western North America is generally defined as S, SW, SE, or W aspects of mild to medium slopes (10-45%) below 4500 feet in elevation, and are generally associated with some type of thermal cover, such as mature trees with a closed canopy or rock overhangs, with shrub species present for forage (Thomas et al. 1988, Thomas 1979; and Hoover and Willis 1987).

The mule deer migration from summer range in the Boise Mountains to the historic winter range along the Boise Foothills is generally triggered by cold temperatures and snow depth. Lower elevation habitat in the foothills is very important during hard winters as mule deer groups try to avoid deep snow, which can hamper their abilities to find forage and quickly deplete their necessary fat storage (IDFG 2005b).

Elk

Elk seem to prefer mountainous country with mixed open, grassy meadows, marshy meadows, river flats, and aspen parkland, as well as coniferous forests, brushy clear cuts, forest edges, and shrub steppe. Some populations live year-round in sagebrush desert, using grass-shrub for feeding and tall shrub or pole timber for resting in spring; they feed in clear cuts and shrub fields and rest in pole timber in summer; and stay in mesic (moderate moisture) pole timber in the autumn (Streubel 2000). Elk habitat varies greatly according to location. They are primarily a grazing species, relying on grasses for most of the year, but they also consume forbs in summer, and may browse on willow and aspen where grasses are unavailable, especially during winter months. Based on population trend estimates by the Idaho Department of Fish and Game in 2005, the approximate elk population within GMU-39 was 5,385, down from 7,236 in 2002. The number of elk, including cows, bulls, and adult bulls, in the unit over the 2005 winter was 4,554 (IDFG 2007a).

Elk migration to winter range is very similar to mule deer from the Boise Mountains. However, there is a resident population that uses the Boise Front all year long. In Idaho, and throughout the northern Rockies, herds move to lower elevations in winter to feed. Individuals exhibit a high fidelity to their home range, but may abandon it if they are excessively disturbed (Streubel 2000).

American Pronghorn

Pronghorn are normally found grazing on the surrounding grasslands and hillsides with remnant native vegetation or using the limited riparian areas for shade and water. Pronghorn are generally found on grasslands, shrub steppe, and lower elevation foothills. They seem to prefer rangeland with vegetation less than 2 feet in height and wide-open, expansive range.

They are often found in low shrubs such as sagebrush, and grassy vegetation in arid regions with less than 10 to 12 inches of snow on the ground in the winter. This may lead them to upper, wind-swept slopes in the winter, or fairly long migrations between summer and winter range. In the winter, southern Idaho pronghorn depend heavily on browse, especially sagebrush.

Pronghorn home range varies, but an Idaho study (Autenreith et al. 1975) found summer home ranges averaged about eight square miles. Home range of yearlings was two to five times greater than adults. Large herds form in the winter but disperse in spring and form separate bachelor and female-fawn groups in spring and summer. In Idaho, pronghorn typically migrate to lower elevations in winter and move back to the heads of mountain valleys in the spring.

Pronghorn have some unique adaptations for their existence in open country. These adaptations allow them to be the fastest mammals in North America. They have been clocked at nearly 70-mph and they can obtain and maintain speeds of 30 to 45-mph for fairly long distances. Historically, pronghorn

were numerous throughout the west, but agricultural development, cattle grazing, and construction of fences have drastically reduced their populations. Many pronghorn populations have not adapted to fences and their movements, and even seasonal migrations, have been blocked by fences. Some pronghorns do crawl under fences.

The majority of the proposed AD area has been fenced off to manage domestic livestock. The older fencing throughout the property uses four-strand barbed wire, rather than non- restrictive wildlife friendly fencing, and has an adverse overall impact on pronghorn populations (Figure 10). Restrictive fences act as barriers by limiting migration corridors, reducing access to forage, and fragmenting habitat. In addition, these types of fences generally result in greater injury and mortality rates for pronghorn than non-restrictive fences (USDI-BLM 1980 and Autenrieth 1975; and Oakley 1973).

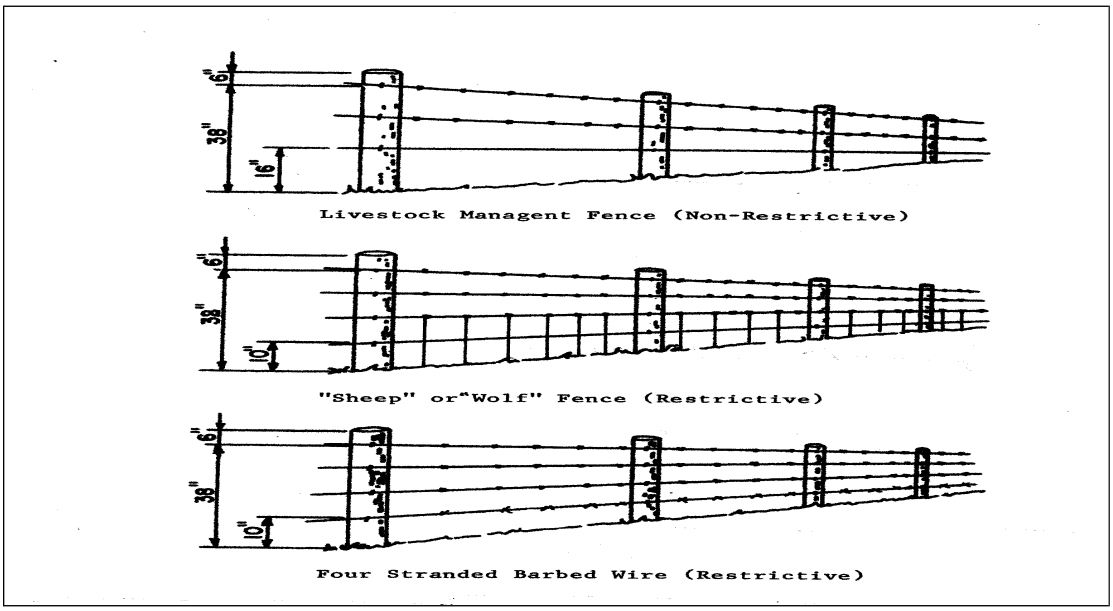


Figure 10. Diagram of barbed wire fence types found within and adjacent to the Avimor Development area.

4.2.2 Big Game Surveys

Winter Big Game Surveys (2007-2010)

The goal of the winter big game surveys was to determine which areas within the AD and adjacent lands are the most important travel corridors and foraging areas for big game, primarily mule deer and elk through the winter months. This information will be used during the planning of AD future development phases in order to protect key areas and limit overall potential impacts. These surveys are mainly focused on the presence or absence of mule deer and elk throughout the area. Survey techniques included a questionnaire for local residents, ground surveys, and aerial surveys. Big game surveys were conducted area-wide from 2007-2010, then limited to the eastern APC and surrounding area since.

Local Resident Surveys (2007-2008)

In early November, mailing addresses were collected for residents living in the north Eagle Foothills near the AD driving along Willow Creek, Sandhollow, and Pearl Road recording mailbox numbers. Nineteen letters were mailed out that included a short survey and map for residents to record where, when, and how many mule deer, white-tail deer, elk and pronghorn antelope they had historically

seen in the area. Later we received contact information for an additional ten local residents who recreate regularly in the foothills and also mailed those surveys.

Ground Surveys (2007-2010)

Starting in mid-December, fourteen higher elevation vantage points were created and GPS's throughout the AD ownership to monitor big game through the end of February. The points were located directly off roads or within a short hike from a road and gave the surveyor views of a substantial amount of the AD ownership. As the snow levels increased throughout the winter months, driving the access roads became limited to impossible, at which time snowshoeing or cross-country skiing was used to access many of the points, a couple points were terminated for the season due to access limitations. Two additional monitoring points were removed from the initial survey route because their vantages were repetitive with other points. In mid to late January, after the snow depths increased, three cross-country survey routes were created to access more terrain (Figure 11). These additional survey routes were only used 1-2 times. The regular monitoring points were initially surveyed once a week for the presence of big game. After a few surveying attempts and seeing no sign of big game at some points west of Highway 55, it was decided to survey these points less often. Generally, areas where big game sign had been identified by ECS staff or local residents were surveyed weekly. When big game species were observed, their location was recorded on a map and correlated to an existing survey point or a new GPS point was taken. Identified tracks and pellets were also recorded on data forms. Winter field work was always conducted in pairs for safety purposes.

Aerial Surveys (2008-2009)

On January 14th and February 11th of 2008 and January 19th and February 15th of 2009 Silverhawk Aviation was subcontracted to fly the entire AD ownership in a Robinson 44/Raven II helicopter. With assistance during the first survey from Mike Schlegel, a retired Idaho Fish and Game biologist from McCall, all mule deer and elk seen during the flight were counted and a GPS waypoint taken at each group/individual. A data sheet containing information on weather, animal activity, vegetation class, snow cover, aspect, slope, and GPS location was completed. The 27,000-acre AD ownership was broken into two maps, west and east of Highway 55. The survey area was generally flown in ½ mile wide swaths from north to south and worked from the east side to the west side. General property boundaries were identified using a GPS unit, but animals found outside the boundaries were also recorded (Figure 11, Figure 12, Figure 13). The pilot flew from 35-60 Knots depending on snow coverage and topography. There were two observers, one on each side of the helicopter. One person recorded information on elk while the other recorded on mule deer. If any white-tailed deer, pronghorn, or moose were identified the same information would be recorded on one of the data sheets. Total flight time needed for the survey was 3 1/2 to 4 1/2 hours. The weather needed to be fairly good because the helicopter must have visibility of 3 miles and be able to fly 1000 feet below cloud level. The helicopter refueled every other hour.

Big Game Surveys Summary

Based on the overall observations from 2007-2010, ECS staff was able to determine general wintering areas and migration corridors of big game within the AD. In addition, the information allowed us to develop a summary for residential populations that use the area year round (Figure 14). All of the data and associated information from IDFG, ITD, and other sources was used develop the Northwest Ada County Big Game Survey Summary &Northwest Ada County Wildlife Crossing Assessment (Appendix C).

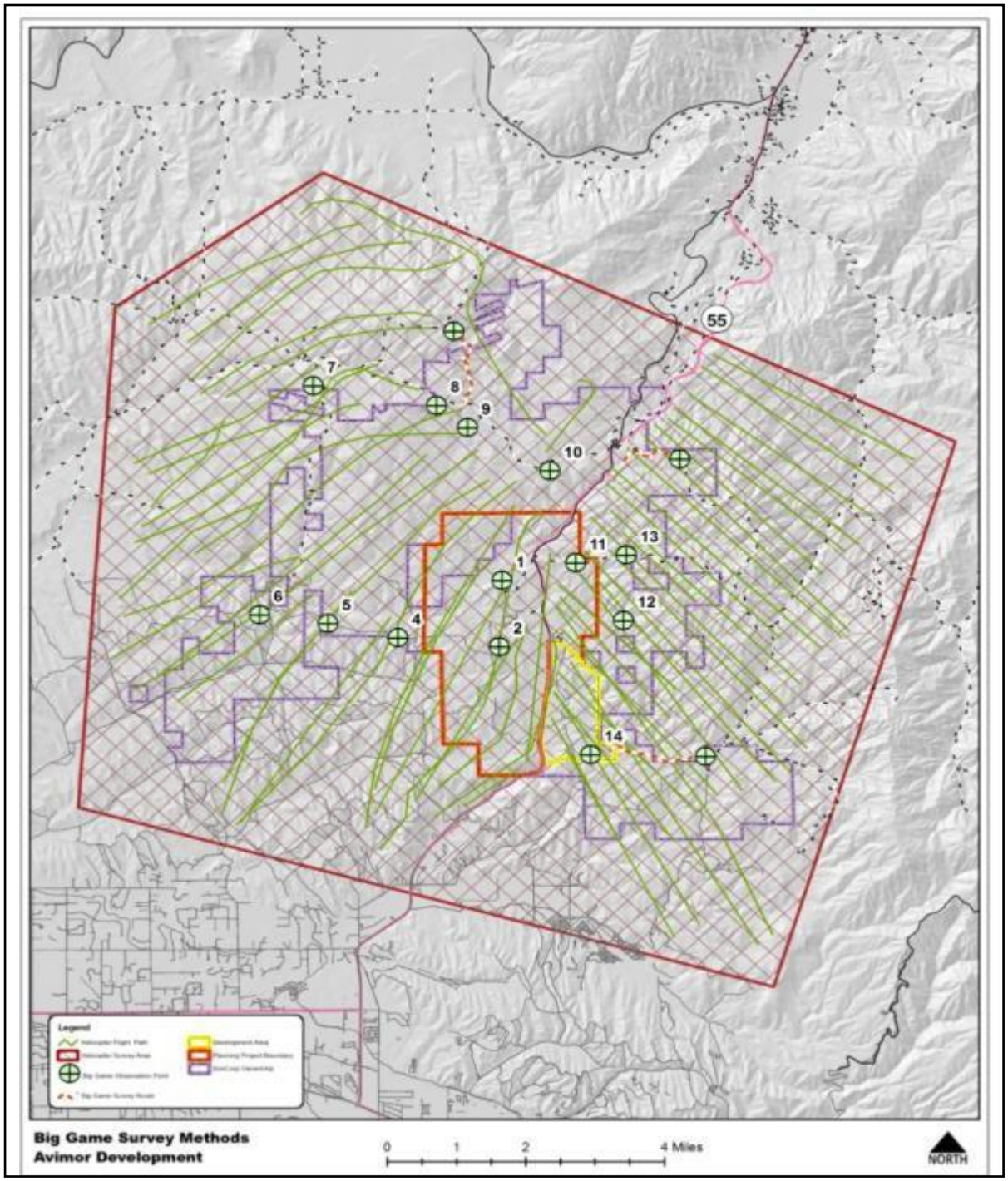


Figure 11. Aerial Big Game Survey Routes (2008-2009)

Figure 12. Big Game Aerial Survey Results- East Side of Hwy 55 (2008-2009).

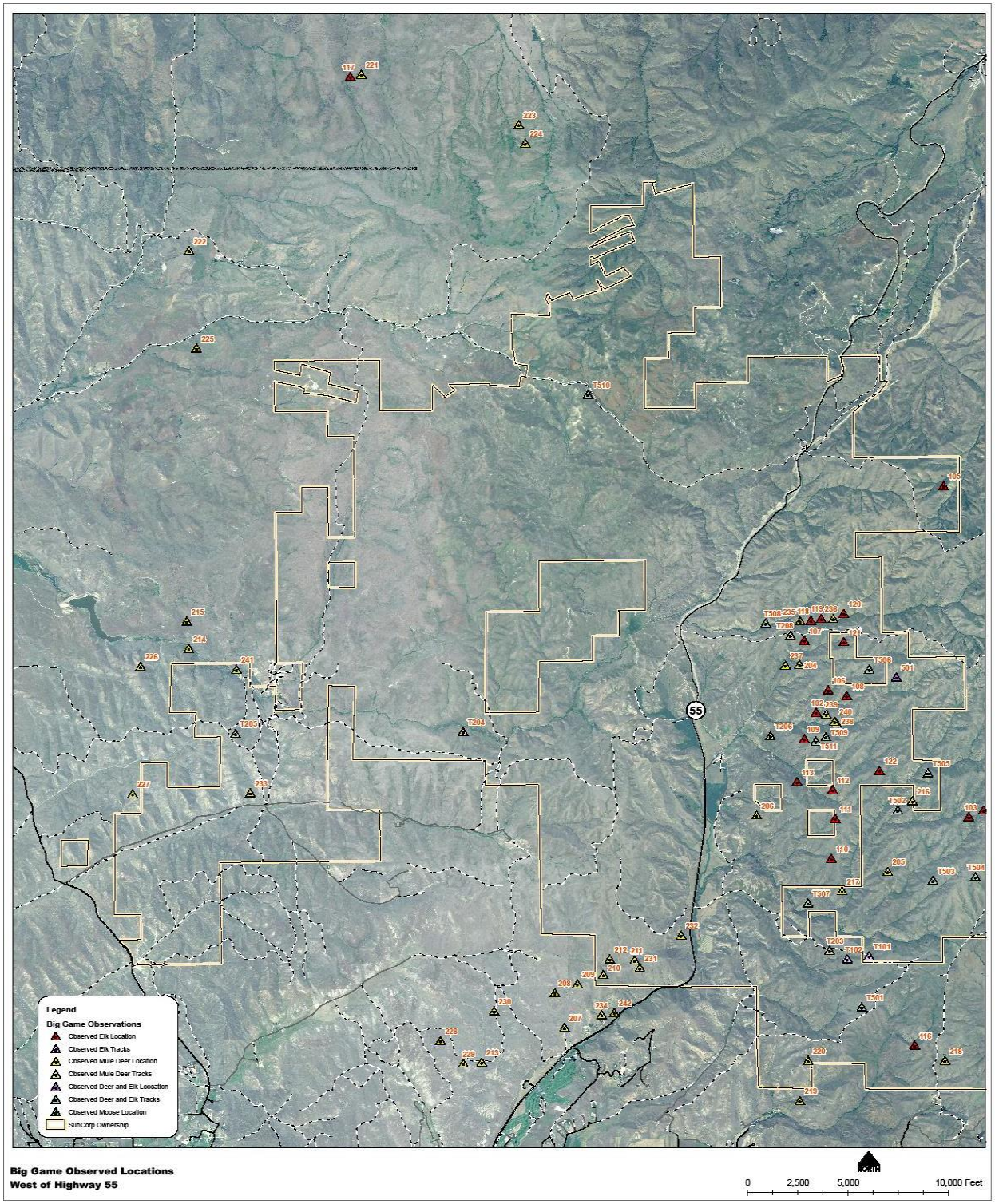


Figure 13. Big Game Aerial Survey Results- West Side of Hwy 55 (2008-2009).

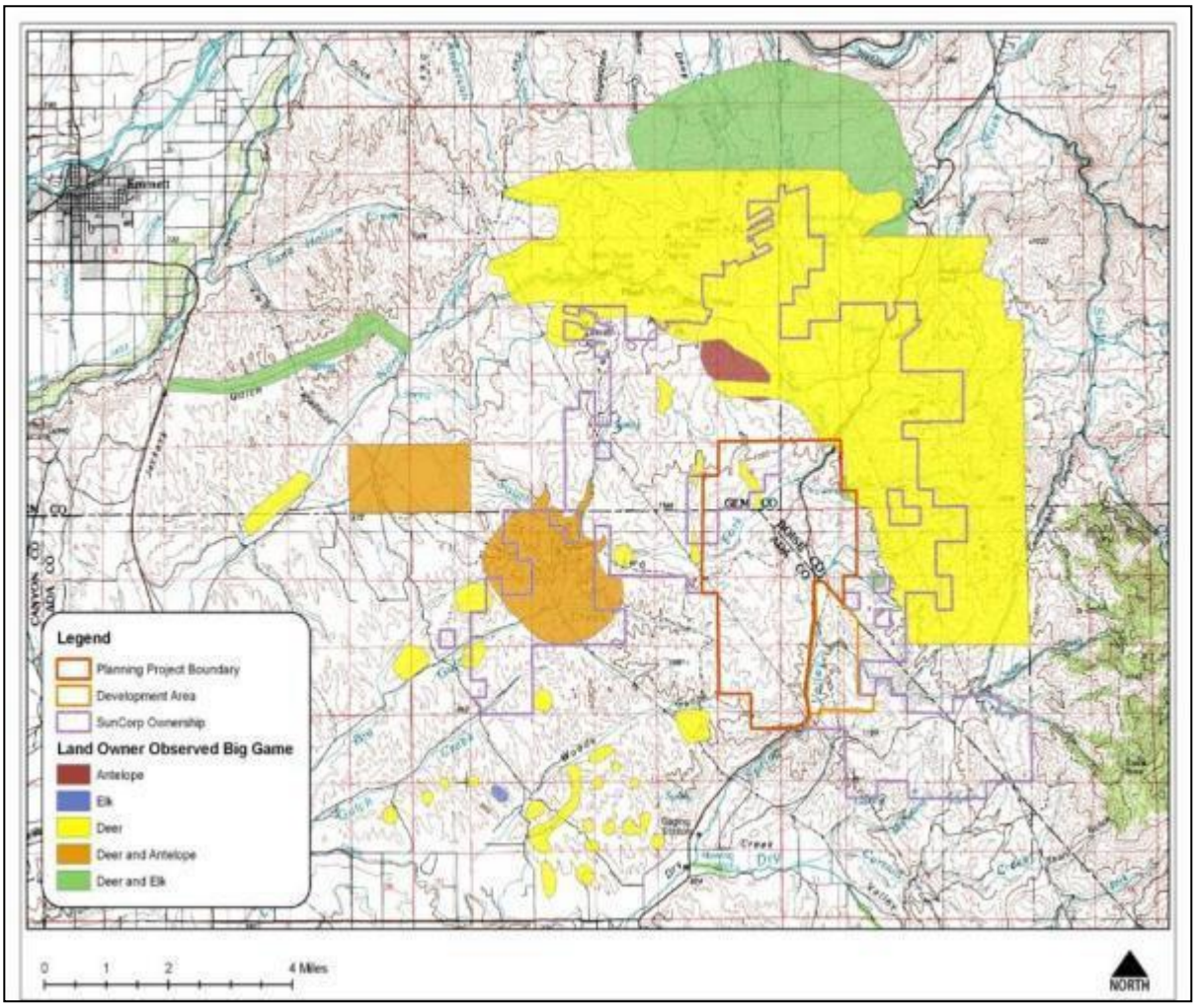


Figure 14. Resident Big Game Survey Results Summary (2007-2010)

Big Game Auto-Related Mortality Study (2009-2015)

In 2008 and 2009, ECS and Wildlife Consulting Resources developed the Northwest Ada County Big Game Survey Summary & Northwest Ada County Wildlife Crossing Assessment (Appendix C). Based on recommendations from the report, ESC staff initiated auto-related big game mortality monitoring for SH-55. The survey covered SH-55 between SH-44 and the southern base of Horseshoe Bend Hill, adjacent to the APC, at mile marker 54. Monitoring was conducted daily from October 2009 through October of 2015. All observed mortally events were recorded for date, species, sex (if identifiable), which roadside, and general comments. The location was also GPSed and input into a geo-database. A big game map was developed using the six years of observation data to determine mortality hotspots (Figure 15). The data was submitted to IDFG and Ada County annually.

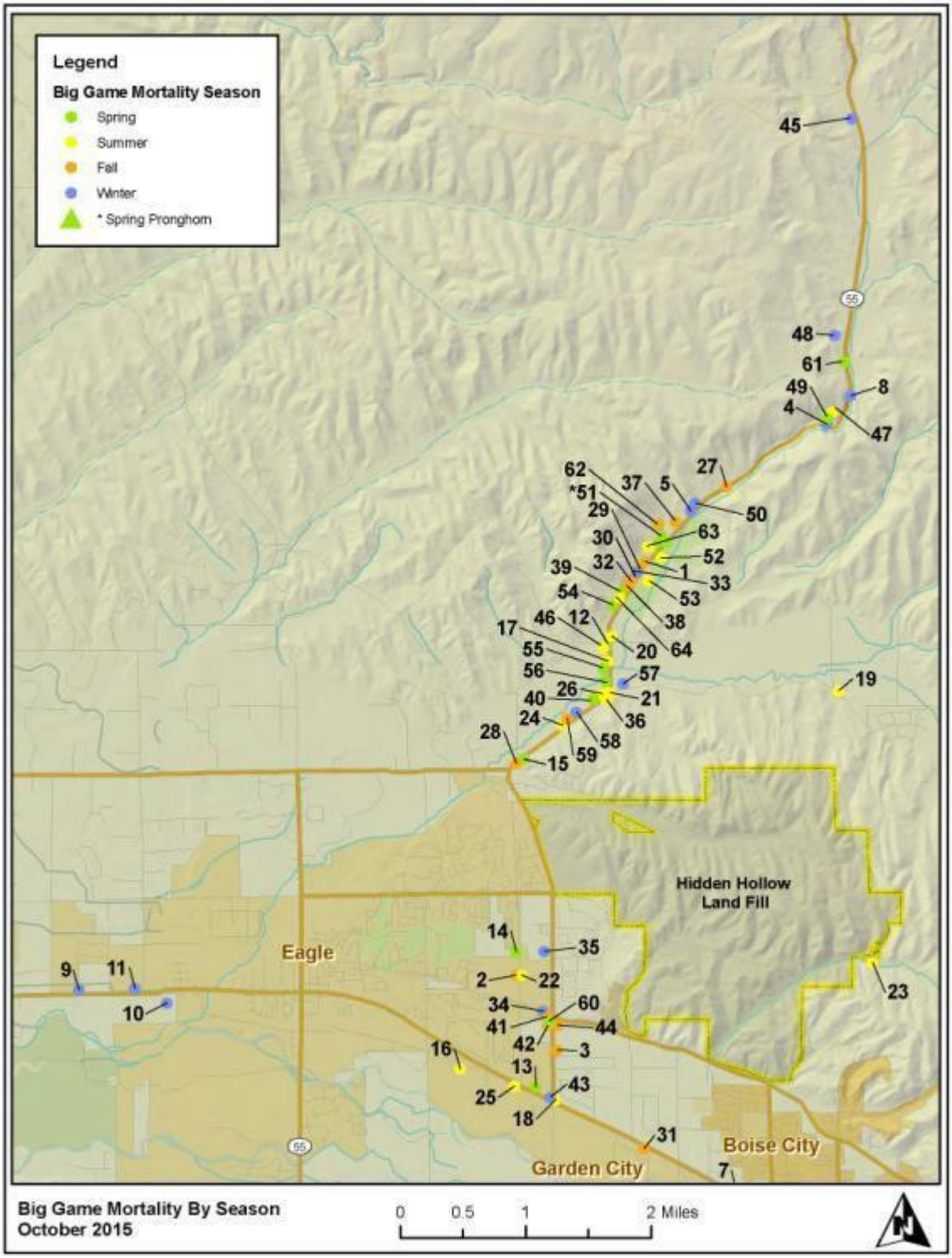


Figure 15. Big Game Auto-Related Mortality Hot Spot Map.

4.2.3 Raptors

Based on the presence of a variety of habitat characteristics, raptors species could nest or forage within and adjacent to the AD, including individual species that only use the site while migrating. Raptor species that have been identified during surveys in the area include but are not limited to:

Table 2. Raptor Species Within the Avimor Development

Nesting Raptor Species		
American Kestrel	Golden Eagle	Northern Harrier
Osprey	Prairie Falcon	Red-tailed Hawk
Turkey Vulture	Barn Owl	Western Burrowing Owl
Great Horned Owl	Long-eared Owl	Northern Saw-whet Owl
Short-eared Owl	Western Screech Owl	Ferruginous Hawk
Swainson's Hawk	Burrowing Owl	
Migrating Raptors		
Bald Eagle	Cooper's Hawk	Gyrfalcon
Merlin	Northern Goshawk	Peregrine Falcon
Rough-legged Hawk	Sharp-shinned Hawk	Broad-winged Hawk

4.2.4 Migratory Birds

Most bird species within the state of Idaho are covered under the Migratory Bird Treaty Act (MBTA), with the exception of several introduced species, such as the house sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*).

The MBTA (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Under the Act, taking, killing or possessing migratory birds is unlawful. The Act specifically states:

> *Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior (Secretary) may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones,distribution, abundance, economic value, breeding habits and migratory flight patterns. Regulations are effective upon Presidential approval. §§ 703and 704.*

The U.S. Fish and Wildlife Service's (USFWS) Law Enforcement division currently enforces the MBTA. According to USFWS law enforcement officers, since there is a possibility that migratory birds, their eggs, or inhabited nests could be inadvertently killed, crushed, or abandoned during construction activities of residential or commercial developments, these activities would be considered under the MBTA as it pertains to "take" or "kill", and could result in violation of the

MBTA. However, while the MBTA protects migratory birds, it is specific to those birds, their eggs, and occupied nests. It does not protect the habitat associated with these birds or unoccupied nest sites. Therefore, potential construction activities done in areas without migratory birds, or during time periods when these birds are not present, would not violate the MBTA. Based on current enforcement by the USFWS, the MBTA cannot be used to restrict development of an area in order to preserve habitat or maintain the presence of migratory birds.

4.2.5 Upland Game Birds

There are a number of upland game birds found throughout the foothills including pheasant, quail, chukar, doves, gray partridge, and grouse. Pheasant species are generally found on agricultural lands, but can also be found in some open drainages and valleys. Quail can be found in almost any community in the foothills and are often associated with roadways, agricultural communities and riparian zones. Chukar species generally inhabit rocky outcrops and steep hillsides with grass and shrubs components. There are several grouse species that are observed in forested systems and grass shrub steppe, but are normally found in or near riparian communities.

4.2.6 Other Terrestrial Wildlife

In addition to bird species, wolves, black bears, cougars, coyotes, fox, jackrabbits, cottontail rabbits, badgers, skunks, raccoons, weasels, mice, voles and other small mammals are also found throughout the foothill habitat types, as are reptile and amphibian species. The amphibian species most likely will be associated with the riparian areas, while the reptiles will be found in drier sites, such as rock outcrops, or low elevation shrub communities. These species, along with smaller mammals, such as ground squirrels and other rodents are an important food source for the raptors and other predators throughout the foothills.

4.2.7 Aquatic Wildlife

Aquatic species likely to be present within or adjacent to the proposed AD are the same as those identified in the regional habitat descriptions above (Section 4.0). There are no aquatic species of conservation concern identified by the Idaho Fish and Game within the area associated with the proposed AD, so an aquatic species survey was not necessary.

4.3 SPECIES OF CONSERVATION CONCERN

4.3.1 Survey Methods

ECS staff originally requested a list of known and identified Idaho Species of Conservation Concern (SCC), also known as Species of Greatest Conservation Need, both plants and animals, from the Idaho Fish and Wildlife Information System (IFWIS), formerly referred to as both the Idaho Heritage Program (IHP) and Conservation Data Center (CDC). During the revision of the HMP in 2022, Duran Environmental Consulting obtained an updated list to provide most to-date species data and listing statuses (State of Idaho and BLM). The Idaho State Wildlife Action Plan provides a framework for conserving Species of Greatest Conservation Need and the habitats upon which they depend. It is the state's guiding document for identifying, ranking, managing, and conserving at-risk species.

A list of potential ESA threatened or endangered species will be requested for each project application using the US Fish and Wildlife Service's Information for Planning and Consultation (IPaC) website, and a list was generated for the entire AD during the 2022 revision of this HMP (Appendix G) (see Section 4.4). The IFWIS and IPaC provides a list of all T&E and SCC that have been historically recorded within or adjacent to the proposed project area, as well as associated map points, GIS attribute data, and GIS metadata. This data will be used to construct a map of species of concern that have historically been identified within or near the proposed project area and adjacent habitat. Results from the IFWIS and IPaC database inquiries for the entire AD, dated July 2021 and April 2022, respectively, are shown in Figure 16.

While the IFWIS and IPaC data cannot provide a definitive statement on the presence, absence, or condition of biological elements, it is the best information available. This, coupled with historic and future site-specific surveys, will be sufficient to determine presence or absence of the species as well as potential habitat. Based on this information, appropriate mitigation recommendations will be made for avoidance, reduction, or mitigation.

Idaho Listed Species of Conservation Concern Ranking

There are a number of species of conservation concern (SCC) found throughout the foothills. Most of these species have specific habitat types and are limited geographically. Rather than identifying all of those species, we are only going to address those identified in or around the proposed project area.

Ranks represent a prioritization scheme used by the IDFG and the Idaho State Wildlife Action Plan to determine the conservation status of a species (Table 3). The rank is primarily based upon the number of known occurrences, but other factors, such as habitat quality, estimated population size and trend, range of distribution, and threats to species or habitat, are also considered. See the IDFG website (https://idfg.idaho.gov/species/taxa/ranks) for a detailed review and evaluation of this ranking system. The state rank refers to the species status within the borders of Idaho. State ranks are subject to periodic revision as new information is obtained on a species either in Idaho or elsewhere in its range. The rankings and information presented in this plan are current to April 2022.

A table of known special status plant and animal species of State Rank S1-S3 known to inhabit the AD or the area immediately adjacent to it is found below, as is an expanded description of the species and associated habitat (Table 4).

Table 3. Idaho Species of Conservation Concern State Ranking System

Rank	Description
S1	Critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction (typically 5 or fewer occurrences).
S2	Imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction (typically 6 – 20 occurrences).
S3	Rare or uncommon but not imperiled (typically 21 – 100 occurrences).
S4	Not rare, and apparently secure, but with cause for long-term concern (usually more than 100 occurrences).
S5	Demonstrably widespread, abundant, and secure.
E	Exotic or introduced species.
State Ranks Specific to Long Distance Migrants (Bats and Birds)	
B	Breeding population.

On private property, Idaho-listed SCC are not protected under federal or state regulations, nor do they require actions to mitigate impacts to these species. While these species are not protected on private property, they are being considered in early planning preparations by the developer to identify and mitigate potential impacts to the species, when feasible.

Currently, there are no federally listed species identified within the proposed project area based on the FWS data, but there is one candidate species that may occur in the AD (monarch butterfly; see Section 4.4.2). However, based on the historic information provided by the IFWIS, 16 SCC State Rank S1-S3 have been observed in the vicinity of the AD (Table 4). These species were identified as principle species for observations by ECS staff based on the proximity to known and historic populations and their current status as SCC for Idaho, the US Forest Service, or the BLM. Species surveys were conducted for all of these species over the entire AD in 2003- 2005, 2006-2008, and 2010. During these surveys, as well as incidental observations and IFWIS database observations from the last twenty years (2001-2021), ECS staff has identified 11 of the 16 Idaho-listed SCC within the proposed project area: Western toad, grasshopper sparrow, golden eagle, Western burrowing owl, ferruginous hawk, olive-sided flycatcher, loggerhead shrike, Lewis's woodpecker, long-billed curlew, sage thrasher, and Aase's onion. Of the SCC birds observed during ECS surveys, no observations were made of nesting birds (e.g., migratory, foraging, etc.).

A summary description of each species is included below and IFWIS observations are displayed in Figure 16.

Table 4. Idaho Species of Conservation Concern Occurring Within the Proposed Avimor Development.

Common Name	Scientific Name	Status	AD Property Occurrence?
Amphibians			
Western Toad	*Anaxyrus boreas*	S2, BLM Type 2 Special Status Species	Yes (IFWIS 2021)
Woodhouse's Toad	*Anaxyrus woodhousii*	S2, BLM Type 2 Special Status Species	No
Northern Leopard Frog	*Lithobates pipiens*	S2, BLM Type 2 Special Status Species	No
Birds			
Grasshopper Sparrow	*Ammodramus savannarum*	S3B, BLM Type 2 Special Status Species	Yes (IFWIS 2010, 2013)
Golden Eagle	*Aquila chrysaetos*	S3; BLM Type 2 Special Status Species	Yes (IFWIS 2010, 2013)
Western Burrowing Owl	*Athene cunicularia*	S2B, BLM Type 2 Special Status Species	No
Ferruginous Hawk	*Buteo regalis*	S3B, BLM Type 2 Special Status Species	Yes (IFWIS 2010, 2013)
Olive-sided Flycatcher	*Contopus cooperi*	S3B, BLM Type 2 Special Status Species	Yes (IFWIS 2010, 2012)
Loggerhead Shrike	*Lanius ludovicianus*	S3, BLM Type 2 Special Status Species	Yes (IFWIS 2010)
Lewis's Woodpecker	*Melanerpes lewis*	S3B, BLM Type 2 Special Status Species	Yes (IFWIS 2009, 2013)
Long-billed Curlew	*Numenius americanus*	S2B, BLM Type 2 Special Status Species	Yes (ECS surveys)
Mountain Quail	*Oreortyx pictus*	S2, BLM Type 2 Special Status Species	No
Sage Thrasher	*Oreoscoptes montanus*	S3B, BLM Type 2 Special Status Species	Yes (IFWIS 2012)
Fish			
Trout, Bull	*Salvelinus confluentus*	S4, BLM Type 1 Special Status Species, Federally Listed as Threatened (ESA)	No
Mammals			
Pygmy Rabbit	*Brachylagus idahoensis*	S3, BLM Type 2 Special Status Species, Forest Service Sensitive	No
Plants			
Aase's Onion	*Allium aaseae*	S2, BLM Type 2 Special Status Species, Idaho Native Plant Society-Global Priority 3	Yes (IFWIS 2008-2019, ECS surveys)

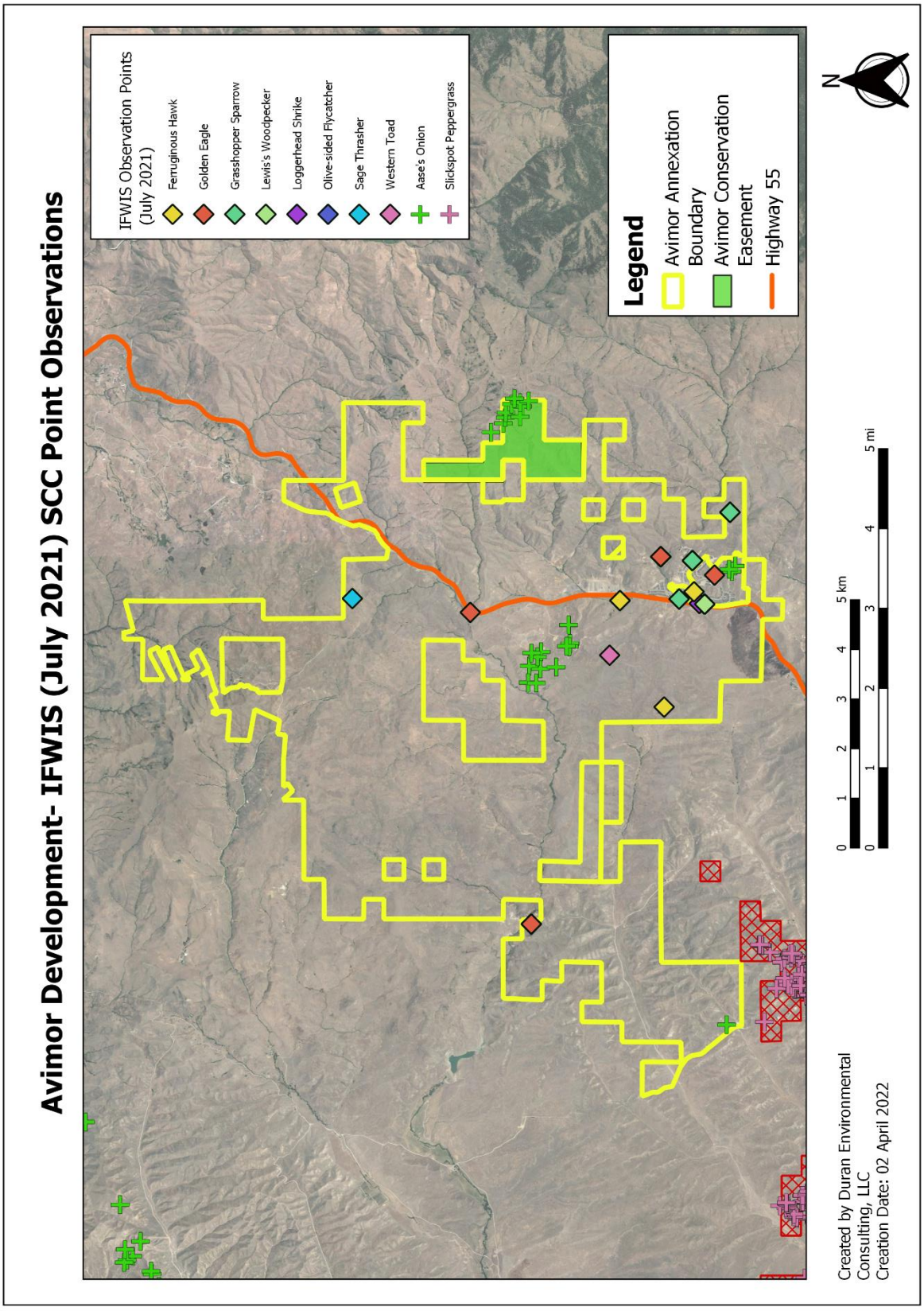


Figure 16. Idaho SCC Point Observations (IFWIS July 2021)- Avimor Development

4.3.2 AD Species of Conservation Concern

Western Toad (*Anaxyrus boreas*)

Western toads occur in a wide variety of habitats ranging from desert springs to mountain wetlands. They range into various upland habitats around ponds, lakes, reservoirs, and slow-moving rivers and streams; sometimes they move up to a few kilometers through uplands. For shelter, they dig their own burrow in loose soil or use those of small mammals or seclude themselves under logs or rocks. Egg laying sites include shallow areas of ponds, lakes, or reservoirs, or pools of slow-moving streams. According to the IFWIS database (2021), there has been one observation of Western toad within the AD west of highway 55 in a small ephemeral pond in 2021 and no observations within Spring Valley Creek or Willow Creek through multiple years of riparian surveys (Figure 16).

Woodhouse's Toad (*Anaxyrus woodhousii*)

Woodhouse's Toads are typically found in habitats such as prairies, agricultural areas and brushy flats often associated with a water source. The water source may vary from irrigation ditches, ponds, and small lakes to backwaters of the Snake River. Even though there is generally water in the area, they may forage quite a distance from the water source that they mate and lay eggs in. These toads are active in wet or dry weather. They are inactive during the cold months of fall, winter, and early spring. When inactive, they burrow underground, or hide under rocks, plants, or other cover.

Potential habitat for woodhouse toads on the AD proposed project area occurs along Spring Valley Creek and Willow Creek. Woodhouse toads prefer lowland sandy areas, such as river bottoms, mountain canyons, desert streams, and are even know to use suburban backyards. Because of the diversity of habitat types used by the woodhouse toad, this species could be present on the AD project area. According to the IFWIS database (2021), there has not been a recorded observation of this species within Spring Valley Creek or Willow Creek.

Northern Leopard Frog *(Rana pipiens)*

Northern Leopard Frogs in Idaho are generally associated with heavily vegetated marshes, ponds, streams, and wet areas. Otherwise, they seem to breed in areas that are also heavily vegetated. In Idaho, Northern Leopard Frogs are found throughout much of the southern part of the state, following the Snake River Plains. Populations also exist in the northern portion of the panhandle. These frogs hibernate in streams, ponds or other aquatic locations during the winter. They disperse to moist uplands or permanent water during dry-up in summer and require moderately high ground cover for concealment. They are generally preyed upon by garter snakes. When disturbed, these frogs leap rapidly and erratically. Very little information exists to explain their decline in Idaho. However, based on the habitat types that occur on the AD proposed project area along the valley bottom adjacent to Spring Valley Creek and Willow Creek, this species could be present. According to the IFWIS database (2021) and AD site surveys, there has not been a recorded observation of this species within Spring Valley Creek or Willow Creek.

Grasshopper Sparrow (*Ammodramus savannarum*)

Grasshopper sparrows are conspicuous ground-nesting birds and are relatively uncommon throughout much of southern Idaho's grasslands. They occur within grassland, hayfields, and prairie and breed in rather dry fields and prairies, especially those with fairly tall grass and weeds and a few scattered shrubs using just small cups in the grass for nesting. Grasshopper sparrows are particularly susceptible to impacts from improper grazing where removal of herbaceous vegetation reduces nest concealment, thereby increasing exposure to predation, weather, or nest parasitism. According to the IFWIS database (2021), there have been several observations of the species within the APC and up Burnt Car Trail in 2010 and 2013 (Figure 16). Grasshopper sparrows readily use a wide range of grassland and agricultural areas, making it highly unlikely that development under the AD specifications would have a significant impact on the species' range.

Golden Eagle (*Aquila chrysaetos*)

Golden eagles are found throughout Idaho, wherever there is open habitat, but nests primarily in the southern half of the state. There are an estimated 130,000 individuals in North America and approximately 1,600 of these are present in Idaho during the breeding season. While common, golden eagles in Idaho are experiencing some population decline leading to a state sensitive status. Nesting population declines have been associated with loss of shrubs and jackrabbit habitat, their primary prey species, due to widespread fires. Mortality of individual birds from illegal shooting has been documented via power pole surveys in the Snake River Birds of Prey Area (Idaho Power Company, pers. comm., 2015, as cited in the Idaho State Wildlife Action Plan and Katzner et al. 2020). As a wide-ranging predator, this species may be negatively affected by wind energy development. Increases in OHV use have been implicated in the decline of Golden Eagle occupancy and nest success in southwest Idaho. Because of their tendency to feed upon carrion, this species is attracted to roadkill and consequently can become subject to vehicle collisions.

Golden eagles likely forage within the AD year-round, but are unlikely to find suitable nesting substrate within the property. According to the IFWIS database (2021), there has been just one observation of golden eagles within the AD west of highway 55 along Alkali creek (Figure 16).

Western Burrowing Owl (*Athene cunicularia*)

The western burrowing owl is considered a species of special concern and ranked SB2 in the state of Idaho. They are often found in open grasslands and disturbed areas and nest in burrows dug by mammals. In Idaho, badger burrows are typical nesting sites and burrowing owl may become prey to badgers and coyotes (Rich 1986). Burrowing owls typically return to the same nest sites each year, and multiple pairs often nest in close proximity. They have strong nest fidelity; the absence of nest burrows or individual birds is not an indicator that breeding activity will not take place within or adjacent to the project area in the future. No individuals were recorded during any ECS site visits, and there are no known nests or nest colonies currently or historically recorded within the AD. There are also no observations from the IFWIS database of the species within the AD.

Ferruginous Hawk *(Buteo regalis)*

In Idaho, ferruginous hawks nest in the southern half of the state and winter in small numbers in the south and southwestern counties (Stephens and Sturts 1998). They winter from southern Idaho south into Mexico (Sibley 2000), though are mostly present in Idaho during the breeding season. They nest in open habitat in trees and shrubs, on cliffs, pinnacles, rock outcrops, buttes, banks, slopes, the ground, and utility structures. They also nest readily on communication towers and artificial nest platforms. They primarily feed on small mammals, but also eat birds, reptiles and insects. Ferruginous hawks are unique among other local raptors in that they forage and nest selectively in grassland habitats (Lehman et al. 1996). Ferruginous hawk populations have not decreased after wildfires and in fact, may have increased slightly. There were no individuals recorded during any site visits, however the IFWIS database shows three observations of the species in 2010 and 2013 (Figure 16) not associated with nests or breeding activity.

Olive-sided Flycatcher (*Contopus cooperi*)

Olive-sided flycatchers breed throughout Canada south through western US along the Cascades and Rocky Mountains from sea level to 3,350 m (11,000 ft) and undergoes one of the longest migrations of all northern-breeding migrants, wintering primarily in Panama and the Andes Mountains of South America. In Idaho, Olive-sided flycatchers breed throughout the northern half of the state. Olive-sided flycatchers typically breed in mid- to high-elevation mixed conifer forests along forest edges and openings, including burns and clear-cuts. They require tall, prominent trees and snags, which serve as singing and foraging perches, and unobstructed air space for hunting. This species preys almost exclusively on flying insects, especially bees. Olive-sided flycatcher abundance is often higher in forest recently burned by stand-replacing wildfire, and is considered by some to be a burn specialist. According to the IFWIS database (2021), there have been two observations of olive-sided flycatchers within the AD in 2010 and 2012 near Foothills Heritage Park and Spring Valley Creek, respectively (Figure 16). Given the species affinity for nesting in forest edge habitats, it is unlikely olive-sided flycatchers would nest within the AD property, though may pass through during non-breeding seasons.

Loggerhead Shrike (*Lanius ludovicianus*)

Loggerhead shrikes are predatory songbirds present during the breeding season and in limited numbers during the winter throughout southwestern Idaho (Stephens and Sturts 1998). Sometimes referred to as "butcher birds," loggerheads typically hunt from high perches and pursue prey, often large insects and sometimes small birds, rodents or lizards, impaling them on barbed wire or other spikes. The species is gradually disappearing from much of its range, particularly in the northeastern United States, for reasons that are poorly understood, though population decline in Idaho has largely been attributed to loss of shrub. Shrikes prefer semi-open country with lookout posts (e.g., wires, trees, scrub) and breed in any kind of semi-open terrain, from large clearings in wooded regions to open grassland or desert with a few scattered trees or large shrubs. According to the IFWIS database (2021), there has been one observation of the species in 2010 off the Spring Valley Creek greenbelt (Figure 16).

Lewis's Woodpecker (*Melanerpes lewis*)

Lewis's woodpeckers primarily occur in the western US and closely follow the distribution of ponderosa pine. Lewis's woodpeckers breed throughout Idaho except in the southeastern portion of the state. The species is a somewhat atypical woodpecker in that it flycatches during the breeding season and stores mast (e.g., acorns and corn) during the winter. Breeding sites generally occur in burned ponderosa pine forests, cottonwood riparian forests, and aspen groves. This species appears to prefer nesting in large diameter, well-decayed snags in relatively open forests with a well-developed understory. Nests are sited in natural cavities or abandoned nest holds of primary excavators. This species exploits superabundant food sources and is generally considered to be nomadic. Given the lack of ponderosa pine habitat within the AD, it is unlikely that Lewis's use the AD for breeding, but may move through the area during early or late-season migration. According to the IFWIS database (2021), there have been several observations along the Spring Valley Creek greenbelt from 2009-2013 (Figure 16).

Long-billed Curlew (*Numenius americanus*)

The long-billed curlew is a grassland species on the BLM watch list and an Idaho State Imperiled species due to the declining population trends and loss of habitat. Long-billed curlews are known to feed and nest in open grassy areas and agricultural fields. A pair of curlews was recorded by ECS staff during a site survey on May 28th, 2008, with additional incidental observations made annually in the foothills east of the existing Avimor PC, near Cartwright Road. Due to the species' adaptability to human development, especially agricultural and grazing lands, the project is not expected to have a strong negative impact on this species. However, pre-construction surveys are recommended before any disturbance of grassland or old agricultural communities. In the case that an individual or population is present and identified to have a nest, that area should be restricted from development until the nest is vacated, per the 1918 MBTA.

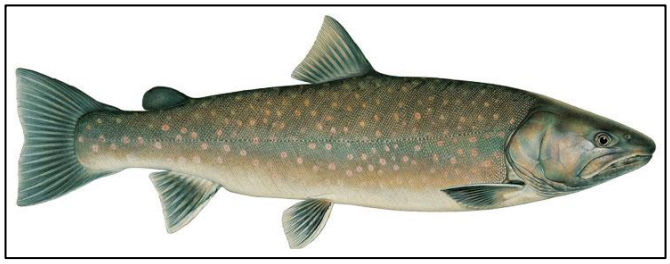
Mountain Quail (*Oreortyx pictus*)

The mountain quail builds a concealed nest in a depression on ground, frequently near shrubs, bases of trees, or fallen logs. It forages on the ground, usually in early morning and late afternoon, and rests at mid- day. The species normally forms coveys (small groups) of 3 – 20 birds in late summer and early fall, which disperse in late winter. Populations in Idaho have been declining for the last 30 years, due primarily to riparian habitat degradation. Recent Idaho study points to predation by feral cats as a problem as well (Heekin et al. 1994). Habitat associated with this species is generally restricted to higher elevation riparian communities, above 3,000 feet, in or near upland shrub and forested communities. While there is potential habitat present within the AD, based on the current condition and small percentage of riparian habitat within the proposed AD it is unlikely that this species is present. There were no individuals recorded during any site survey, nor does the IFWIS database (2021) have any historic sightings within the AD project area.

Sage Thrasher (*Oreoscoptes montanus*)

The sage thrasher is often found in sagebrush as well as scrub, brush, and thickets, rarely around towns. In Idaho, they are found primarily in big sagebrush and prefer to nest in taller-than-normal shrubs with greater cover (Streubel 2000). This species is of concern in Idaho because of the continued loss of suitable habitat due to development, increase fire cycles, invasion of exotic species, and over-utilization in sagebrush habitats. According to the IFWIS database, there has been one observation of the species in 2012 off Pearl Road near Poplar Pond (Figure 16).

Bull Trout (*Salvelinus confluentus*)



There is over 6 ½ miles of intermittent stream throughout the AD project area where bull trout could potentially exist. However, habitat for trout is generally of poor quality due to the degraded streambanks from extensive cattle grazing and agricultural runoff from adjacent fields that has likely contributed sediment and nutrient loads to Spring Valley Creek and Willow Creek resulting in decreased water quality and negative impacts to overall trout and aquatic habitat in general. In addition, portions of Spring Valley Creek and Willow Creek go dry during the late summer further reducing the potential for the presence of bull trout. According to the IFWIS database (2021), there has not been a recorded observation of the species within Spring Valley Creek or Willow Creek, and the closest recorded observation of bull trout was in Arrowrock Reservoir. In addition, neither Spring Valley Creek or Willow Creek are designated as Critical Habitat for bull trout, as per IDFG (IFWIS 2021).

Pygmy Rabbit (*Brachylagus idahoensis*)

The pygmy rabbit is a sagebrush-obligate species that has been found from 2900 ft. to over 6000 ft. in elevation in southwestern Idaho. The pygmy rabbit is currently listed as endangered under the Endangered Species Act (ESA) due to destruction and fragmentation of sagebrush habitat in the western U.S. This rabbit relies on sagebrush year-round for shelter and food.

Between 1984 and 1994, pygmy rabbits were found during spotlight transects in old (100 years +), dense big sagebrush stands around Initial Point on the Snake River (Doremus and Bolln 1987; Doremus and Blew 1988; Doremus et al. 1989; Knick 1990; Knick 1991; Knick 1992; Knick 1993; Watts and Knick 1994). A sighting of a pygmy rabbit was also made during spotlight transects in the Snake River Birds of Prey National Conservation Area just south of the proposed AD, however no documented sightings have been made north of I-84. A number of surveys by federal and state agencies in the region have been done on large patches of big sagebrush in recent years, either on foot or by spotlight, with no sign of pygmy rabbits (Pers. Comm. Dana Quinney 2003; Pers. Comm. Helen Ulmschneider 2003). It is likely that pygmy rabbits no longer inhabit the region. There were no individuals recorded during any site visits nor does the IFWIS database (2021) have any historic sightings within or near the AD project area.

Aase's Onion (Allium aaseae)

Aase's onion is endemic to Idaho in the lower foothills from the Boise to Weiser areas. It typically grows in coarse sandy soil on steep southerly exposures on or near ridge tops in sagebrush-grass communities, often with three-awn grass and bitterbrush, from 800-1500 m elevation. Because Aase's onion typically grows on steep slopes near ridge tops its habitat has experienced less soil surface disturbance from livestock or agriculture (Mancuso 2000; Moseley 1994; Fisher et al. 1996).

Aase's onion populations in the foothills comprise approximately half of the global distribution of the species in terms of both area and numbers. Aase's onion is restricted to steep, well-drained sandy slopes in the lower foothills. Populations of Aase's onion are found on many of the undeveloped, sandy south-facing slopes. These populations can be quite dense, but the total area occupied by the onion is relatively small. Habitat loss and degradation caused by development and other activities are the main threats to this species (Moseley et al., 1992). During site surveys conducted by ECS staff from 2003 to 2010, 13 separate populations have been recorded within the AD. These locations were all reported to the IDFG's IHP office and incorporated into the IFWIS database. It is recommended that a map of the known Aase's onion locations be reviewed, and site specific surveys conducted before future phase planning and any grading begins (Figure 16 and Figure 17).

4.4 THREATENED, ENDANGERED, AND CANDIDATE SPECIES

Based on a review of the 2022 IPaC and 2021 IFWIS data, there are no Endangered Species Act (ESA)-listed animals or plant species, or critical habitat within or adjacent to the proposed project area (Appendix G). The only listed species within the region is slickspot peppergrass (*Lepidium papilliferum*) (see below). It is currently listed as a threatened species under ESA, with proposed critical habitat to the southwest of the project area. No observations have ever been recorded to date within the AD. There is one historical slickspot peppergrass Element Occurrence (EO) within the AD (EO#33, Figure 17), however, this EO has been identified as extirpated and, according to the IFWIS database (2021), has been surveyed multiple times with no observations of the species.

In addition, there is one species currently under consideration for official listing under the ESA- the monarch butterfly (*Danaus plexippus*) (see below).

4.4.1 Slickspot Peppergrass (Lepidium papilliferum)

Slickspot peppergrass is restricted to microhabitats known as slick spots and also referred to as mini-playas or nitric sites. Slick spots appear sporadically in low spots of the landscape, collecting water as shallow basins throughout the wet season. These sites are physically and biologically distinct from the surrounding sagebrush-steppe community. Ranging in size from about 1 to 12 square meters, slick spots display soils that are high in both clay and salts (Fisher, et al. 1996), with properties more hydric than the surrounding arid soils. In terms of biologic production, these sites have low output compared to the surrounding habitats. Due to their low productivity, slick spot soils accumulate relatively little organic matter and nutrients.

The rangelands within the AD have traditionally been used for livestock grazing and recreational use. In addition, much of the area also exhibit signs of disturbance from fire. This combination of disturbances likely caused site-specific mechanical damage to soils, overall reductions in sagebrush cover, and ushered in a host of invasive plant species. As a result, historic slick spots in surrounding plant communities that may have once supported slickspot peppergrass have likely been degraded to such an extent that it is unlikely any individuals or dormant seeds remain viable for future populations (Moseley 1994).

Area-wide surveys have been conducted for this species in 2003-2005, 2006-2008, and 2010. There was no slick spot habitat identified or slickspot peppergrass found during these site surveys. Due to the lack of suitable habitat in the project area and results from the long-term surveys it is unlikely that development of the area would have any adverse impacts on the species. There have been no observations of the species within the AD recorded in the IFWIS database (2021) (Figure 17).

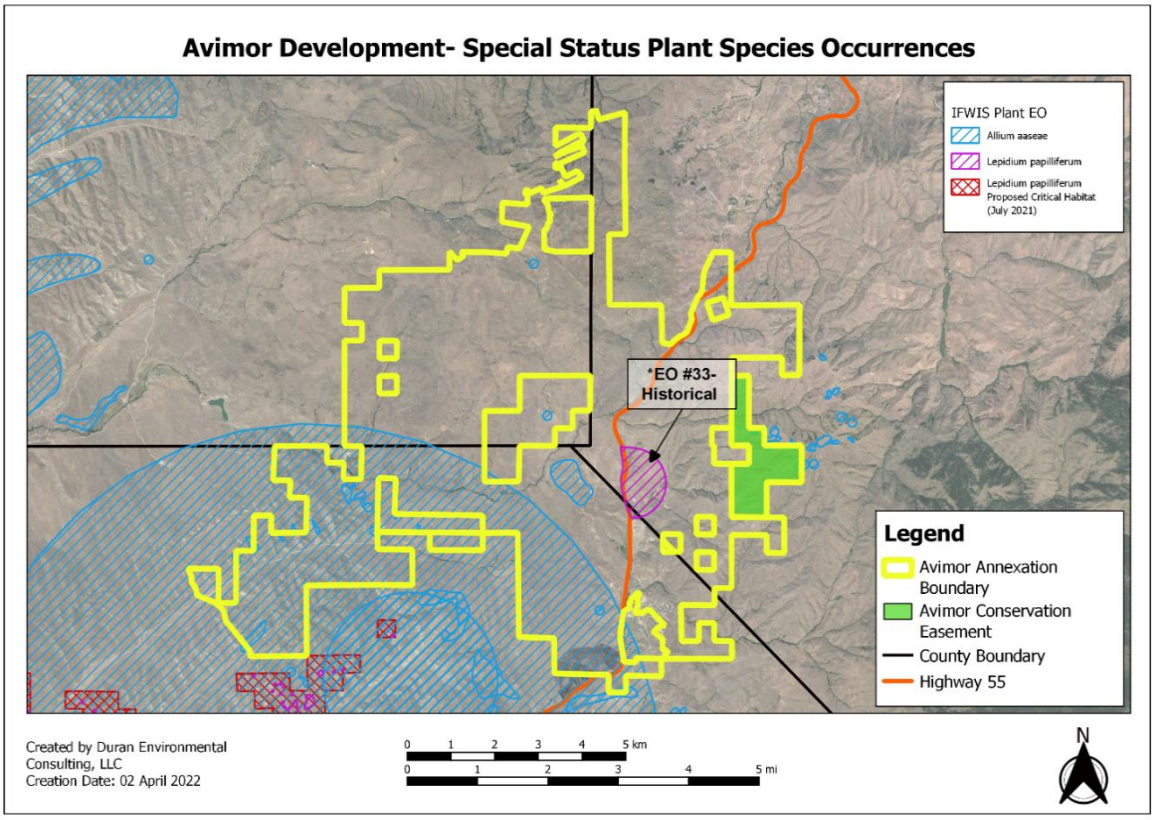


Figure 17. Slickspot Peppergrass and Aase's Onion Element Occurrences (IFWIS 2021) - Avimor Development

4.4.2 Monarch Butterfly (Danaus plexippus)

Monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily Asclepias spp.). Larvae depend on milkweed to feed on during development and sequester toxic chemicals (cardenolides) as a defense against predators.

The 2020 Monarch Butterfly Species Status Assessment (SSA) (USFWS 2020) identified the main threats facing monarch butterflies to be habitat degradation and loss from agriculture, logging, insecticide and herbicide use, urban development, drought, and climate change.

It is possible the species occurs throughout the property, particularly in areas with high concentration of forbs, including landscaped urban or developed areas, or patchy areas of remnant native forb communities. Milkweed, particularly showy milkweed (*Asclepias speciosa*), is widely distributed throughout Idaho, including in portions of the AD, (Kinter 2019) and may serve as breeding sites for monarchs. However, in a habitat suitability model created by the USFWS and Xerces Society (USFWS and Xerces 2016), the highest suitability for showy milkweed in southwestern Idaho is mostly associated with the Snake River Canyon with moderate to low suitability in the foothills rangelands. Milkweed can readily grow in many environments, including disturbed areas like roadsides, and efforts to encourage milkweed growth within the AD, including neighborhood pollinator gardens, may provide valuable habitat for the species.

5.0 DIRECT AND INDIRECT IMPACTS

The potential impacts to wildlife habitat and associated plant communities from construction actions in the short- and long-term are discussed in the following section. An impact analysis is essential in assessing how to avoid, minimize, and mitigate adverse impacts resulting from the proposed development, which is identified in Section 6.0. Impacts are determined based on the proposed actions and are often location-specific. Impact duration is assessed where applicable and can be short-term (less than 1 years) or long-term (greater than 1 years). Additional information used to identify and assess impacts includes: a review of relevant scientific literature, previously prepared environmental documents, interviews with IDFG personnel and others with local, long-term knowledge of the area, and best professional judgment (Table 5).

Knowledge is, and always will be, incomplete regarding many aspects of the terrestrial species and vegetative communities and their interrelationships. The ecology, inventory, and management of ecosystems are a complex and evolving discipline. However, basic ecological relationships are well-established and understood. In addition, a substantial amount of credible information about the ecosystems in this region is available. Impacts based on the proposed development were evaluated using the best available information about these ecosystems.

Table 5. Impacts to Habitat and Wildlife

Impact or Action	Source	Potential Impact	Species Affected	Duration	Direct or Indirect
Conversion of Open Space	Construction; Planned Community	Permanent Habitat Loss or Alteration	All[1]	Long-term	Both
Disturbance to Riparian Areas	Construction; Planned Community	Reduced Riparian Habitat	Riparian and Aquatic Associated Species (Limited)	Short- and Long-term	Both
Noise	Construction; Recreation; Planned Community	Area Avoidance by Species	Wildlife (Primarily Bird and Coyotes)	Short-term and some Long-term	Direct
Lights	Planned Community	Area Avoidance by Species	Primarily Nocturnal Species	Long-term	Both
Recreation	Residents of Community; Public Access (when allowed)	Increased Use and Disturbance to Soils; Increased Noise; Habitat Fragmentation	All	Short- and Long-term	Both

Impact or Action	Source	Potential Impact	Species Affected	Duration	Direct or Indirect
Pets	Residents of Community; Public Access (when allowed)	Area Avoidance by Wildlife; Induced Stress to Wildlife; Nest Disturbance and Potential Increased Mortality	Wildlife (Primarily Rodents and Avian Species)	Short- and Long-term	Direct
Introduction of Invasive and Noxious Species	Construction; Planned Community; Recreation	Habitat Loss or Degradation; Increased Fuels for Wildfire	All	Short- and some Long-term	Both
Wildland Fire	Construction; Recreation; Planned Community	Habitat/Forage Loss and Degradation; Increased Risk to Residents	All	Long-term	Both
Traffic	Road Construction; Residential, Commercial Vehicles	Fatality (road kill); Area Avoidance	Wildlife	Long-term	Direct
Nuisance Wildlife	Wildlife Entering the Community	Species Mortality; Relocation	Wildlife (Primarily Rodents and Coyotes)	Short-term	Both
Mosquitoes and Other Pests	Planned Community	Increased Pest Population	Primarily Avian Species	Short- and Long-term	Both
Permanent Protection of Habitat	Conservation Easements	Permanent Protection of Habitat Values and Connectivity of Resources	All (positive)	Long-term	Both

[1]"All" Includes plant and wildlife populations present within the proposed project area (Table 4 for SCC). However, impacts will vary in intensity by species depending on the type of impact.

For the purposes of this section, it is assumed that all proposed areas identified for development within the proposed AD represent areas of permanent habitat loss or alteration for various plant and wildlife species. While conservation measures can be implemented within residential and commercial development areas to increase habitat value, the majority of developed lands is of limited use for most wildlife species. The opposite is also true. Any permanent protection of private property constitutes a significant benefit to wildlife and the associated habit as these areas would otherwise be developed.

5.1 SUMMARY OF EFFECTS BY RESOURCE

5.1.1 Conversion of Open Space

Future developments within the AD will include residential and commercial development. Removing the existing ground vegetation would likely have an adverse impact on native plants and most wildlife species that continue to use the area by reducing potential nesting sites, amount of forage and cover, and other essential habitat components. However, the overall impact would not likely be significant because vegetation in these areas has already been degraded through historical disturbance (livestock grazing, wildfire, and recreation), and provides only limited habitat for most wildlife species in the area.

The loss of shrub lands, which range in condition from poor to satisfactory, would have a far greater impact than grasslands in the area, based on the current condition of most grasslands and the number of species dependent on intact sagebrush stands for nesting, foraging, and cover. Based on the overall condition and altered community dynamics associated with sagebrush stands in poor condition, impacts would not likely have a significant adverse impact (direct or indirect) on wildlife species. However, disturbance of sagebrush stands in marginal to satisfactory condition would have a greater adverse impact, both directly and indirectly.

Upland community types (grasslands, shrub, agricultural) provide habitat for a large number of burrowing animals, such as ground squirrels and badgers. These areas provide prey for a wide variety of predators such as coyotes, raptors and snakes. Converting these areas to residential or commercial would likely reduce the abundance of these prey sources, resulting in short-term adverse impacts. However, the large expanse of open-space public land surrounding the property, which contains the same or similar habitat types, would reduce the overall local impacts taking place on this comparatively small area.

Big game species have been identified utilizing the riparian and shrub habitat associated with the AD area, primarily in the upper elevation foothills east of State Highway (SH) 55, and the shelf running along SH-55 on the southern boundary (Figure 11, Figure 12, Figure 14, Figure 15, and Appendix C). Given results from big game surveys within the AD (Section 4.2.1, Appendix C) and IDFG big game habitat suitability models (for mule deer and elk), Based on the quantity, quality, and variability; its overall connectivity; and its relative proximity to human disturbance, the big game habitat found in the higher elevations and Cartwright Canyon to the east of SH-55 is considerably better than the habitat to the west. Due to this finding, the conservation easement was established to capture a large portion of the highest quality big game wintering habitat. The remaining habitat within the AD serves as moderate to low-use big game habitat. Permanent conversion of unprotected high-use areas would likely have a negative direct and indirect effect on big game in the region, resident populations, and especially to wintering populations, though makes a small portion of the AD outside of the easement. In contrast, the current easement and potential future permanent protection of these areas would have a significant benefit.

Heavily manipulated or disturbed areas are prone to the establishment of invasive plant and animal

species that compete with, and may displace native species. Although some species thrive in these disturbed habitat types, most are eliminated. For example, fox squirrels (Sciurus niger), European starlings, and California quail may thrive as a result of the proposed project. This invasion causes indirect adverse impacts as species that are adapted to the drier landscape, such as ground squirrels, sage thrashers, and lizards that are displaced. Therefore, the permanent replacement of existing habitat with non-native species, and the associated reduction in biodiversity, is a primary concern (IDFG 2005). Permanent protection of these resources is the highest priority for management of native species.

Species/Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- Potential mortality during construction. Indirect- Reduction in available habitat.
Sagebrush-obligate and migratory songbirds[2]	Direct- Potential nest mortality during construction. Indirect- Reduction in foraging and nesting habitat
Raptors[3]	Direct- None Indirect- Reduction in prey populations
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.2 Disturbance to Riparian Areas

There are several riparian areas within the AD, however, at this time, no wetland delineations have been complete to assess the amount present. Project planning will avoid destroying or disturbing any wetlands identified within the property boundaries, when possible. Any delineated wetlands that are disturbed/destroyed will be assessed and mitigated to ACE requirements.

There is riparian habitat within the project area that could be significantly enhanced. Based on the current conditions, they have diminished value for riparian/wetland functionality and as habitat for wildlife (Section 4.0). Actively protecting or restoring and managing the functionality of these communities could increase the hydrologic function of the system; increase water quality; enhance stream morphology; and reduce competition of residual native species with invasive weedy species. In addition, by reestablishing the functional components of the system, the overall amount, availability, and stability of wildlife habitat would increase.

Based on the dynamic nature of riparian and wetland systems, a static restoration plan is not recommended. Rather, an adaptive approach that allows for multiple actions that can be altered quickly is more preferable. Specific restoration tools may include, but are not limited to: restructuring channel morphology; changes in elevation and topography through soil grading; structure protection for erosion control and slope stabilization with geotextiles, riprap, bioengineered treatments (wattles, fascine, bundles, etc.); removing invasive species through mechanical, chemical, or biological control; reestablishment of native vegetation through seeding, plant propagation, planting cuttings or plugs, and wetland sod. These tools will be used in conjunction with augmented water supplies associated with wells, irrigation systems, treated effluent, and other sources. Through proper restoration techniques and practices, a riparian system can reestablish pre-existing functioning conditions with natural ecological functions and processes. Overall, the AD will follow the most to-date guidance and requirements from the Army Corps of Engineers in regards to impacts and restoration of riparian corridors.

Species/Group Impacted	Impacts (Direct and Indirect)
Ground nesting/burrowing animals[1]	Direct- potential mortality associated with construction activity. Indirect- loss of habitat.
Sagebrush-obligate and migratory songbirds[2]	Direct- none Indirect- limited loss of habitat.
Raptors[3]	Direct- none Indirect- reduction of potential nesting/ perching sites.
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.3 Noise

Current noise levels in the area are generally associated with human recreational activities in the area, such as off-road vehicle use and target shooting. Large machinery, equipment, construction crews, and building processes will increase consistent noise levels during the construction phases of the proposed development and will be short-term in nature. Noise associated with construction activity is likely to have an adverse impact on many wildlife species that exist within or adjacent to future proposed projects (Oxley et al. 1974). However, the magnitude is unknown and likely species-specific. Big game would likely avoid the area during initial construction. Impacts resulting from construction noise would be very local in spatial extent and short-term in timeframe.

Noise associated with residential activities would likely have an initial adverse impact causing temporary displacement of wildlife. However, some species would likely acclimate to noise conditions of on-going residential activities. Therefore, the magnitude and duration of the impact would be species-specific.

Species/Group Impacted	Impacts (Direct and Indirect)
Ground nesting/burrowing animals[1]	Direct- none Indirect- avoidance of the area.
Sagebrush-obligate and migratory songbirds[2]	Direct- none Indirect- avoidance of the area.
Raptors[3]	Direct- none Indirect- nesting/breeding disruption
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.4 Artificial Light

The presence of residential and commercial development will increase light sources through streetlights, commercial facilities, increased traffic, and residential property lights. Increased light sources could have long-term adverse indirect impacts on plant and wildlife species by disruption or altering animal behaviors associated with foraging, reproduction, and others. For example, exposure to artificial light during nocturnal activities can result in reduced feeding and reproductive activity of certain frog species (Harder 2002). It was also identified that behavioral decisions associated with foraging, mating calls, and movement, in relationship to risk of predation, were influenced by associated light levels in some nocturnal species (Lima and Dill 1990).

Light pollution can also confuse animal navigation, alter competitive interactions, change predator-prey relations, and influence animal physiology (Longcore and Rich 2004). For example, many diurnal birds and reptiles forage under artificial lights which are deleterious for prey species such as small rodents. Small rodents forage less at high illumination levels (Lima 1998), a tendency also exhibited by bats (Rydell 1992) and other nocturnal wildlife.

Species/Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- none Indirect- foraging alteration; increased predation pressures
Sagebrush-obligate and migratory songbirds[2]	Direct- none Indirect- area avoidance, altered forage pattern.
Raptors[3]	Direct- none Indirect- area avoidance, altered forage pattern.

[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel;
[2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike;
[3]Golden eagle and ferruginous hawk

5.1.5 Recreation

The AD currently provides a wide range of recreational opportunities that include, but are not limited to: walking, hiking, jogging, mountain biking, off-highway vehicle (OHV) use, snowmobile use, photography, horse-back riding, shooting, sightseeing, wildlife viewing, antler hunting, dog training, and others. All forms of recreation vary widely and have different potential impacts on wildlife and vegetation. However, due to the nature of private property, recreation can be regulated closely by the property owner and modified in real-time to adapt to condition and conservation needs.

Direct and indirect impacts to vegetation and soils would likely result from the use of non- designated trails and the creation of user-defined trails by hikers, bikers, and OHV users. These type of impacts range from localized to landscape-wide based on the amount and distribution of use. Direct impacts to vegetation could include trampling and crushing of individual plants. While this would have limited short-term adverse impacts, long-term adverse impacts would likely be greater based on the reduced overall reproductive capability of the population. Indirect impacts associated with recreation could include disturbance and compaction of the soils, increased erosion potential, the spread of non-native plant species, and an increased probability of human-started wildfires associated with OHV use.

Wildlife harassment is one of the primary direct impacts from recreational users on wildlife. Wildlife harassment can affect the survival of certain wildlife species, and it can also influence growth rates,

behavior, and reproduction (IDFG 2003). Specific site-related disturbances include avian harassment and direct mortality, generally associated with pets (see below), or nest abandonment, which can result in un-hatched eggs, abandonment of young and loss of reproduction potential for that year.

A broad definition of harassment is any activity by humans or their domestic animals that increases the physiological cost of survival or decreases the probability of successful reproduction of wildlife. Based on the probability of increased public access and recreational activities in the area, potential adverse impacts (short- and long-term) to wildlife would be expected without implementation and enforcement of mitigation measures.

Species/ Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- disruption of nesting activities or nest abandonment associated with harassment. Indirect- increased use and disruption of soils, reduction of available forage and increased wildfire probability associated with establishment and spread of exotic species.
Sagebrush-obligate and migratory songbirds[2]	Direct- disruption of nesting activities or nest abandonment associated with harassment. Indirect- increased use and disruption of soils, reduction of available forage and increased wildfire probability associated with establishment and spread of exotic species.
Raptors[3]	Direct- disruption of nesting activities or nest abandonment associated with harassment. Indirect- potential reduction in prey base (see above).

[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel;
[2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike;
[3]Golden eagle and ferruginous hawk

5.1.6 Pets

Free-roaming domestic pets can result in significant wildlife harassment. The location of the proposed AD with regard to open space public lands creates a higher potential for adverse wildlife impacts resulting from domestic pets.

Dogs

Dogs harass and kill many wildlife species. Dogs can be especially destructive to wildlife when wildlife is most vulnerable, such as nesting and brooding periods. People enjoy large open space areas, especially for the opportunity to exercise with their dogs off-leash. Harassment issues that were discussed in the above recreation section are exacerbated when combined with free-roaming dogs. The area of wildlife impact for this analysis is enlarged substantially to include the range covered by a dog. Wildlife species often flush when dogs approach them, which often provoke a chase that can lead to the animals' or dogs' death (IDFG 2003).

As the population of Eagle and the surrounding area increases, the demand for open space to run dogs off-leash will also increase. The likely result will be an increased use of the area and greater overall impacts to wildlife from free-roaming dogs. Controlled leash-less dog parks can significantly reduce these potential impacts by providing open space for dogs to run in areas that are not used by native wildlife.

Cats

Domestic and feral free-roaming cats have been shown to be major predators of game and songbird populations. Feral cats predominantly eat birds and small mammals. Domesticated cats, even when fed regularly by their owners, retain their motivation to hunt and will hunt and kill the same animals as feral cats. Feral and free-ranging cats kill millions of native birds and other small animals annually, with birds constituting approximately 20% to 30% of the prey of feral and free-ranging domestic cats (Drennan 2005). In fact, historically, cats have been specifically implicated in at least 33 bird extinctions, making them one of the most important causes of bird extinctions worldwide (Nogales et al. 2004). Increased cat populations could have a significant long-term adverse effect particularly on ground nesting birds and other small animals such as voles, snakes, frogs and toads.

Species/Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- increased predation pressures, harassment Indirect- none
Sagebrush-obligate and migratory songbirds[2]	Direct- increased predation pressures, harassment Indirect- none
Raptors[3]	Direct- potential predation mortality Indirect- reduced prey base.
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.7 Invasive Plant and Noxious Weed Species

Invasive weed species are exotic plant species that invade and displace more desirable native vegetation. In general, invasive and noxious weed species thrive on disturbed soil, and are typically spread by various avenues, including: wind, water, animals, machinery, livestock, pets and people.

Invasive and noxious species are currently present throughout most of the AD property, as well as in the surrounding rangeland. Ground disturbance gives invasive species an opportunity to establish and spread because the native plant competition has been removed or disrupted. Once these species have gained a foothold, they can spread into adjacent native stands of vegetation and out-compete them. The establishment and spread of invasive species can have an adverse impact on vegetation by increasing the overall competition with native species for limited resources (water, nutrients, space, etc.). Over time, invasive species can have an adverse impact on vegetation and wildlife by Altering the structural and functional components of a system (i.e., soil structure/function, hydrologic function, fire return intervals, energy flow, etc.) severely enough that reestablishment of native or desirable species is extremely difficult (Barbour et al. 1999; West 1993). Compared to perennial species, the small amount of root structure associated with annual invasive grass and forb species provides very little soil stability and contributes little organic matter to the soil structure, which increasing the likelihood of erosion and soil loss during times of heavy precipitation and runoff.

Construction activities associated with future project could create a large amount of ground disturbance, consequently creating ideal conditions for invasive species. The ongoing presence of large amounts of residents and recreational users could further facilitate the introduction and spread of invasive and noxious species. However, reducing the amount and accessibility of livestock to the area could also have long-term benefit by reducing the overall spread of these species in the area.

Species/Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- none Indirect- reduction in suitable foraging habitat and increased competition, potential loss of cover, habitat loss/fragmentation from increased fire cycle.
Sagebrush-obligate and migratory songbirds[2]	Direct- none Indirect- potential habitat loss/fragmentation from increased fire cycle.
Raptors[3]	Direct- none Indirect- reduction in prey numbers, habitat loss/fragmentation from increased fire cycle
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.8 Wildland Fire

Historic impacts from human uses (livestock, development, etc.) have altered the vegetation components and fire regimes of habitat over a large portion of the Snake River Plains. The communities in the region are generally dominated by introduced annual invasive species (e.g., cheatgrass and medusa head). These altered communities and fire regimes have resulted in increased fire frequency and intensity, which has historically: (1) destroyed native vegetation over very large areas, resulting in reduced populations and habitat for SCC and reduced forage potential and habitat for wildlife, (2) reduced soil structure and function, resulting in increased erosion, and (3) increased risk to human structures and life (Whisenant 1990).

During the summer and fall seasons, vegetation on the open rangelands associated with the AD area becomes dry and combustible. Annual invasive grasses and forbs have augmented natural fuel loads and created a widespread, interconnected ignition source. Construction activities and the presence of homes, businesses, residents, and recreational activities in the surrounding area would likely increase the probability for human-caused wildland fire ignition. Potential ignition sources may include, but are not limited to, cigarettes, automobiles, ATVs, motorcycles, and fireworks.

Based on the historic alteration of the community dynamics (structural and functional components) over a majority of the AD, development, construction and residential activities would reduce fuel loads and connectivity of fuels, which could have a long-term beneficial effect. However, the increased number of potential ignition sources would likely have a greater potential long-term adverse impact on habitat in the area.

Species/Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- potential mortality. Indirect- decreased/fragmented habitat, loss of cover.
Sagebrush-obligate and migratory songbirds[2]	Direct- potential mortality. Indirect- decreased/fragmented habitat, loss of nesting sites and cover.
Raptors[3]	Direct- potential mortality. Indirect- reduced prey populations.
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.9 Traffic

Traffic levels along SH-55 between Horseshoe Bend and SH-44 (State Street) are anticipated to increase only marginally during the construction phase of the project. However, as the number of residential and commercial developments throughout the corridor expands, including the growing population of Horseshoe Bend, Avimor, and other planned communities, the overall amount of commuter traffic will increase. In addition, public access to managed trail systems in the area is also likely to augment the amount of traffic in the area. Based on the overall increase in traffic, road kill rates for all species are likely to increase to some degree as a result of elevated traffic levels (Case 1978; Oxley et al. 1974).

Reed and Woodward (1975) identified two primary factors, which help to determine the level of

impact to wildlife resulting from increased traffic: (1) the number of vehicles and (2) the speed of travel. It is reasonable to assume that the number of animals killed as a result of vehicle collisions will increase as the number of vehicles increase. Further, SH-55 is a high-speed highway, having an additive effect on road kill rates. Big game will be increasingly affected from elevated traffic levels on SH-55, especially during the early spring months when big game has been identified in the area. However, construction, traffic noise, human presence, and inevitably residential and commercial properties, could act as a barrier between SH-55 and the foothills habitat, which could lead to a potential reduction in the number road kills within the proposed AD area during periods of construction activities (Forman and Alexander 1998). Preventing access along the proposed AD property on SH-55 would likely redirect and concentrate big game crossings and subsequent road kills to other locations along SH-55.

Species/Group Impacted	**Impacts (Direct and Indirect)**
Ground nesting/burrowing animals[1]	Direct- increased mortality Indirect- see noise and artificial light above.
Sagebrush-obligate and migratory songbirds[2]	Direct- increased mortality Indirect- see noise and artificial light above.
Raptors[3]	Direct- increased mortality Indirect- see noise and artificial light above.
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.10 Nuisance Wildlife in the Community

When open space is converted to residential development, wildlife may not recognize these new boundaries and will encroach into the neighborhood, creating interaction problems with residents. Several wildlife species will continue to access the proposed residential areas, attempting to make a home, forage, or utilize it in other ways. These issues could involve a wide spectrum of wildlife species, ranging from Mormon crickets and rodents to snakes, skunks, raccoons, badgers, coyotes, and other wildlife. Human tolerances for these species, however, are quite variable depending on personal preferences, past experiences, and one's ecological perspective (DeNicola *et al.* 1997). Nuisance wildlife interactions typically result in relocation or destruction of the nuisance animal.

This interaction, while a potential nuisance to residents, could have an adverse long-term impact on the encroaching wildlife species. Smaller species would likely be removed or dispatched, while larger species would likely be trapped, chased, or relocated off the property. Some species would be left alone for viewing pleasure. Regardless of the mechanism for removal, overall impacts to wildlife associated with human harassment are adverse in both the short- and long-term.

Species/Group Impacted	Impacts (Direct and Indirect)
Ground nesting/burrowing animals[1]	Direct- relocation of animals, harassment, and potential mortality. Indirect- future conflicts with residential maintenance.
Sagebrush-obligate and migratory songbirds[2]	Direct- none Indirect- none
Raptors[3]	Direct- none Indirect- contamination of food supply (i.e., preying on poisoned pests, potential conflict with pet predation).
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.1.11 Mosquitoes and Other Pests

Development of residential facilities, including, but not limited to: storm water retention areas, developed parks, landscaping ponds, and water treatment facilities, will likely increase the available habitat and occurrence of insect pests; specifically, mosquitoes. Increases in these populations could potentially have an adverse long-term impact on human residents, domestic pets, and wildlife species, including migratory species, because of the increased risk associated with the West Nile, heartworm, and other blood-borne pathogens associated with mosquito and other insect bites.

Control measures associated with these pests could also have long-term impacts on wildlife species and human health. Many pesticides and insecticides used for pest management are broad-spectrum poisons which kill a wide variety of insects and pests, as well as some non-target fish and wildlife species (Grue et al. 1997). This could result in direct, long-term adverse impacts to local wildlife.

Indirect impacts to non-target insect populations could result in diminished prey fish and wildlife species. When insect populations are significantly diminished by pesticides, bats and birds that feed on insects must search a much greater area to find sufficient food. If they are not able to find enough food, adult and juvenile mortality rates can increase (Maurer and Holt 1995). Similarly, reductions in insect populations could have long-term adverse impacts on plant populations, including crops, by reducing potential pollinators (Pimentel et al. 1992).

Species/Group Impacted	Impacts (Direct and Indirect)
Ground nesting/burrowing animals[1]	Direct- potential increased mortality. Indirect- increased number of disease vectors, potential reduction in forage (insects) associated with pesticide applications and secondary poisoning impacts.
Sagebrush-obligate and migratory songbirds[2]	Direct- potential increased mortality. Indirect- increased number of disease vectors, potential reduction in forage (insects) associated with pesticide applications and secondary poisoning impacts.
Raptors[3]	Direct- potential increased mortality. Indirect- increased number of disease vectors, potential reduction in prey base associated with pesticide applications and secondary poisoning impacts.

Species/Group Impacted	Impacts (Direct and Indirect)
[1]Western burrowing owl, long-billed curlew, grasshopper sparrow, and Piute ground squirrel; [2]Grasshopper sparrow, sage thrasher, olive-sided flycatcher and loggerhead shrike; [3]Golden eagle and ferruginous hawk	

5.2 CUMULATIVE EFFECTS

The cumulative effects on plant and wildlife populations are essentially the same as those identified above. However, based on the growing population in the region and the growing number of proposed developments within the region, the impacts would likely be to a greater extent spatially and temporally when combined with effects of other developments and land uses.

Although it is assumed that the proposed development will not have a strong adverse effect on a particular SCC because of the available existing habitat surrounding the project area, the cumulative effects of multiple new developments within the area will have a much larger impact and may have a strong negative effect on the success of a population within southwestern Idaho.

It is estimated that shrub-steppe habitat has been reduced by greater than one-third in the Interior Columbia River Basin and that less than 1% of remaining shrub steppe exists in its original condition (West 2000). Remaining shrub-steppe exists in a patchwork of habitat islands which are often highly separated. This fragmentation has serious implications for wildlife species. A recent assessment of the Columbia River Basin has identified shrub-steppe as the highest priority for conservation, based on trends in habitat and wildlife populations (Saab and Rich 1997). Based on the historic and regional loss of sagebrush habitat, these communities are becoming increasingly more sparse, adversely affecting sagebrush-dependent species such as the sage thrasher, loggerhead shrike, slickspot peppergrass, and other sagebrush-obligates. Therefore, residual stands of sagebrush, especially those in satisfactory or better condition, have a greater importance and should be protected, enhanced, or reestablished to the greatest extent possible.

Direct and indirect impacts, as well as cumulative effects, can potentially be compensated for through proactive conservation measures and active management. The next section identifies actions to avoided, minimized, or mitigate the adverse impacts for the proposed AD identified above.

6.0 MANAGEMENT ACTIONS TO AVOID, MINIMIZE, OR MITIGATE ADVERSE IMPACTS

6.1 AD MANAGEMENT ACTIONS

This section identifies and describes specific and general management actions identified to compensate for adverse direct and indirect impacts to open space, plant communities, and wildlife species associated with development activities within the AD. Incorporating these management actions into the proposed development plans for each proposed project could help avoid, minimize, or mitigate potentially adverse impacts, as well as facilitate an ongoing legacy of public education, understanding, and respect for the natural environment within the AD. The general mitigation plan for the AD identifies nine primary components:

- Perpetual open space and habitat preservation;
- The Conservation Director and Advisory Committee;
- Wetland Construction and Restoration;
- Compliance with the Federal Migratory Bird Treaty Act of 1972;
- Nest Boxes and Perches;
- Pest Control and BMP's;
- Habitat Enhancement and Restoration Plan (Includes Invasive and Noxious WeedManagement Plan);
- Construction Precautions;
- General Neighborhood Design Features (including Firewise® landscaping and annual audits);
- Recreation Guidelines and a Trails Advisory Board; and
- Nuisance Wildlife Guidelines

The identified management actions outlined below are a compilation of local and regional professional suggestion and judgment, state and federal technical references, and over 15 years of site surveys and observations. They are based on general construction impacts and may require site-specific modification for each application process, as well as the construction and post-construction phases of the development (see Conservation Director and Advisory Committee). Table 6 summarizes the direct and indirect impacts addressed by each management component.

In addition to describing the management actions, this section also identifies and describes the monitoring program and funding mechanisms. These aspects of the HMP are the primary mechanism that guide and support the overall plan and are essential to its success.

Table 6. Summary of Management Actions and Addressed Impacts.

Mitigation Component	Impacts Addressed
Conservation Easements	All
Conservation Director	All
Advisory Committee	All
Wetland Construction and Restoration;	Conversion of Open Space, Disturbance to Wetlands/Riparian Area, Wildlife Habitat
Compliance with the Federal Migratory Bird Treaty Act of 1972	Conversion of Open Space, Disturbance to Riparian Areas, Wildlife Habitat
Nest Boxes and Perches	Conversion of Open Space, Disturbance to Riparian Areas, Wildlife Habitat
Invasive/Noxious Weeds, Pest Control, and BMPs	Mosquitoes and Other Pests
Habitat Enhancement and Restoration Actions	Conversion of Open Space, Disturbance to Riparian Areas, Wildlife Habitat, Invasive and Noxious Species, Wildland Fire
Construction Precautions	Noise, Light Pollution, Recreation, Pets, Invasive and Noxious Species, Wildland Fire, Traffic
General Neighborhood Design Features	Disturbance to Riparian Areas, Light Pollution, Invasive and Noxious Species, Recreation, Wildland Fire, Traffic
Recreational Guidelines	Noise, Light Pollution, Recreation, Pets, Invasive and Noxious Species, Wildland Fire
Nuisance Wildlife Guidelines	Nuisance Wildlife

6.1.1 Actions to Avoid Impacts

Each proposed project within the AD will have a different development footprint relative to the site characteristics and potential impacts to habitat. The layout for all development within the AD will take into consideration these resources to the extent possible. However, based on the landscape and topography of the area, developable sites are generally constrained to specific areas of suitable slope. As such, it is unlikely that the majority of the impacts identified in Section 5.0 could be completely avoided. Therefore, the primary mechanisms to limit the overall impacts to plant and wildlife communities will be reduction and mitigation.

6.1.2 Actions to Reduce and Mitigate Impacts

Since it is unlikely that most impacts could be avoided, the primary emphasis of this plan will be to reduce or mitigate the overall adverse impacts identified in Section 5.0. Based on the literature, historic monitoring data, and professional experience, optimizing development (high density) in isolated pockets over the landscape is considerably more effective in conserving natural resources, preserving connectivity, maintaining open space, and supporting the funding of sustainable conservation actions relative to dispersed low density development over the same area. As such, most actions relative to reduction will be associated with landscape-wide reductions in development and reduced impacts to wetlands and riparian corridors. Again, these are constrained based on the amount and availability of developable lands.

Therefore, the primary management tools associated with construction within the AD will be associated with mitigation actions, construction precautions, development standards, residential education, and site planning (noxious weeds, recreation, fire, etc.). In particular, the AD through the HMP recognizes and promotes the value of permanent preservation of natural open space and habitat to mitigate the impacts from development (e.g., conservation easements). This approach addresses both the spatial and temporal aspects related to development impacts, and when coupled with other management actions would minimize or mitigate the identified adverse impacts. Since many of the actions identified below both reduce and mitigate impacts, they will be addressed at the same time. Following each narrative description is a summary table outlining the general impact and effect of the reduction or mitigation action.

Permanent Protection of Natural Open Space (e.g., Conservation Easements)

Conservation of natural open space will be the primary tool used to mitigate development-related impacts within the AD area. This is the permanent protection of natural open space on private lands that could otherwise be developed in the future. Natural open space would be placed within similar (type and location) habitat; set aside in perpetuity from future development impacts via a contract with a third party organization that will be approved by the City of Eagle; monitored by conservation easement holder; reviewed annually by the CAC (see below); and funded in perpetuity using the Avimor Conservation Fund (see below).

Working with the IDFG over the last 15 years, it has been identified that the most effective way to mitigate development impacts to wildlife habitat is the permanent protection of other lands with similar habitat value that could otherwise be developed in the future. The use of land preservation as a higher priority than habitat enhancement has four primary benefits. First, the action can be fully enacted in the short-term (i.e., the mitigation is immediate and does not require long periods to develop like habitat restoration actions). Second, the success of the action is guaranteed (i.e., once the lands are set aside, the action is successful and is not dependent on variables that can reduce effectiveness, such as precipitation, wildland fire, invasive species, etc.). Third, the action is permanent in nature (i.e., the development rights on those lands are given up in perpetuity). Fourth, the cumulative effective of the action (i.e., placement of an easement can be done in a location that has greater habitat value than the area affected, or it can be placed in proximity to adjacent public lands resulting in a great area of affect). Because of these factors, Avimor is implementing a standardized, spatially-derived model to define the amount of lands impacted by development that will be mitigated by using land preservation rather than relying on habitat enhancement actions. These conservation tools (e.g., habitat enhancement) may also be used (see below), but they are secondary in nature and not required.

The minimum amount of open space that must be set aside for open space within Avimor shall be as

follows: For every two (2) acres of developed land within each preliminary plat (excluding developed open space areas), the Master Developer will place one (1) acre of unfragmented habitat land, which may be owned and/or controlled by a third party. The Master Developer has already set aside 640 acres of unfragmented habitat land adjacent to the Avimor development area in a permanent conservation easement—400 acres provide habitat mitigation for the entire Village One Area in accordance with original Ada County approvals; 240 acres will offset developed acres in future preliminary plats within Avimor. With each preliminary plat, the Master Developer will designate Open Space areas that equal or exceed 20% of the developed land within the preliminary plat. By full build out, Avimor will include total Open Space areas that equal or exceed 50% of the Avimor acreage overall. The 20% per preliminary plat and 50% overall Open Space requirements may be satisfied with designated improved or unimproved Open Space areas within Avimor together with all lands placed into a permanent Open Space.

High value open space will generally be located outside the preliminary plats on the eastside of state highway 55 and adjacent to the existing 640-acre conservation easement and BLM parcel (Figure 4, Page 17). Of the existing 640-acre conservation easement, 400 acres were set aside to protect critical wildlife habitat and mitigate impacts from the APC in accordance with the original Ada County approvals. As such, 240 acres is still available to be used to offset developed acres in future preliminary plats within the AD area.

As each preliminary plat within the AD is defined, the location of the developed lands and open space within and outside the preliminary plat will be mapped and preserved with a conservation easement or other approved mechanism. All open space for each preliminary plat will be delineated and placed in an easement or other approved method prior to the final plat for each preliminary plat. A third party organization will hold and manage the off-site conservation easements in perpetuity. As part of the management requirements, the third party manager will also develop a summary report outlining the condition of the easements at least every three years. The report will be included in the annual CAC monitoring report (see below).

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	Conversion of open space and habitat fragmentation	Natural open space and habitat is protected in perpetuity providing all animals and plant communities within, or using the area as a migration corridor, protection. Based on the amount of natural open space protected, the overall effect of development is mitigated.

Conservation Director and Advisory Committee

Conservation Director

Some of the impacts to plant communities and wildlife species associated with development of the AD are single-event occurrences; although, the effect and resolution may be long-term. Loss of open space and habitat is one example. Other issues related to the development will be persistent throughout the life of the project. Examples include, but are not limited to: dogs belonging to construction workers and homeowners harassing wildlife; well meaning, but misguided, residents feeding wildlife; habitat enhancement projects; and weeds management.

While single-event issues (e.g. open space and habitat loss) can be predicted and either avoided, minimized, or mitigated, persistent issues (e.g. pets, weeds, etc.) will require constant monitoring and

quick response. Consequently, it is both desirable and appropriate to have a Conservation Director as part of the management structure. This position would be responsible for enforcement of the HMP, community education, habitat development and monitoring, recreation issues, interactions with county, state, and federal agencies, as well as other issues related to the ecology of the area. The duties associated with this position would include, but are not limited to:

- Implement, manage, and monitor conservation and enhancement programs identified in the HMP;
- Monitor and maintain effective fuel breaks, and inventory, monitor, and manage invasive and noxious weed management program;
- Establish and implement a wildlife conservation and education program for residents of the current and future developments (newsletter, website, interpretive signage– Appendix A);
- Serve as a representative of the AD on local conservation boards, such as Resource Conservation District member or future Cooperative Weed Management Area committees, as well as cooperative management programs with the BLM and other public land administrators;
- Seek additional funding through grants, cooperative agreements, etc. for conservation and education programs; and
- Work with residents to address problems related to nuisance wildlife in the neighborhood, and work with BLM and the IDFG to address the issues.

The Conservation Director would be responsible for the implementation, management, and monitoring of HMP for the community. The position is funded and managed under the ASO, and coordinates annually with the CAC (see below). The person or firm responsible for the Conservation Director duties must have an in-depth knowledge of the ecology and land uses of the area, and maintain communication with county, state, and federal agencies, as well as private foundations and groups.

It is important that the Conservation Director be independent of the Homeowners Association so the position remains based in wildlife and conservation issues without being steered, influenced, or financially governed by other interests. As this position will be separate from the Homeowners Association, the Conservation Director will not be able to issue fines, rather the ASO would be the entity that may issue fines to residents through the Homeowners Association. Appendix A details potential conservation and education activities.

Current and future developments in the surrounding area have similar wildlife and recreation- related issues. The Conservation Director may coordinate a shared Conservation Director position that has responsibilities with other developments.

Species/Group Impacted	**Impact**	**Effect of Mitigation Actions**

All	All	Based on trend monitoring, quick decisions can be made on resource management utilizing approved and available tools. Development and implementation of resource-based education programs for residents and students to reduce adverse impacts by educating the public what those impacts are and how to avoid, minimize, or mitigate for their presence and impact.

Conservation Advisory Committee (CAC)

The Conservation Director will be the primary mechanism for conservation efforts, environmental and recreational management, and education for the community. However, an advisory committee, made up of a minimum of five representatives from the IDFG, BLM, City of Eagle, HOA representative, Development Representative, and Conservation Easement Manager (if applicable) will make up the CAC. While the Conservation Director will manage the meeting, they are a non-voting member. The CAC will meet once a year to review the monitoring data and overall progress of the mitigation actions. Based on the progress of the implemented actions, the committee may make recommendations to the Conservation Director for changes in management direction or Alteration of the HMP.

In order for the HMP plan to be adaptive and timely, the Conservation Director will be allowed to make alterations to site-specific plans and management actions. However, those changes must fall within the parameters identified in the HMP. In order to make changes outside those parameters or alter the HMP, the changes identified by the Conservation Director must be addressed and approved by the CAC and the ASO, with final approval from City of Eagle.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	All	Acts as the checks and balances for the Conservation Director and monitors the developments overall progress in meeting the goals and objectives outlined in the HMP.

Wetland Construction and Restoration

Any potential wetlands affected by proposed project within the AD will be assessed and delineated per U.S. Army Corps of Engineers (ACE) standards, including cultural resource surveys meeting Secretary of Interior standards for Section 106. The ACE will be contacted before any wetland restoration projects are undertaken. If construction activities impact existing wetlands, mitigation will be completed as directed by the ACE.

In general, there are two options to address impacts to wetlands; restoration of existing wetlands or construction of a new wetland area. These two options are different and will be considered carefully before embarking on any wetland mitigation efforts. Wetland restoration involves returning an existing wetland to a previous state. Wetland construction involves conversion of an upland site into a vegetated wetland area. Wetland restoration is often the less costly of the two because even degraded wetlands display the three wetland characteristics naturally: hydrology, hydric soils, and wetland vegetation.

Wetland restoration and mitigation activities will be done in coordination with the ACE and will refer to best available and most-recent guidance from the Army Corps of Engineers.

In general, the following principles have been identified by wetland specialists for wetland restoration and construction projects (Mitsch and Gosselink 2000) and may be used during wetland restoration and construction projects within the AD:

1. Design the system for minimum maintenance. The system of plants, animals, microbes, substrate, and water flows will be developed for self-maintenance and self-design.

2. Design a system that utilizes natural energies, such as the potential energy of streams, as natural subsidies to the system. Flooding river transport great quantities of water and

nutrients in relatively short time periods, subsidizing wetlands open to these flows.

3. Design the system with the hydrologic and ecological landscape and climate. Floods, droughts, muskrats, geese, and storms are expected disturbances and will not be feared. Natural ecosystems generally recover rapidly from natural disturbances to which they are adapted.

4. Design the system to fulfill multiple goals, but identify at least one major objective and several secondary objectives. If a wetland is being created or restored to replace a lost wetland, replacement of function will be an important consideration.

5. Design the system as an ecotone. This may require a buffer strip around the wetland site, but it also means that the wetland site itself will be a buffer system between upland and aquatic systems.

6. Give the system time. Wetlands do not become functional overnight. Several years may pass before plant establishment, nutrient retention, and wildlife enhancement can become optimal, and mature soils systems may take decades. Strategies that try to short- circuit ecological succession or over manage it are doomed to failure.

7. Design the system for function, not form. If initial plantings and animal introductions fail but the overall function of the wetland, based on fulfillment of initial objectives, is being carried out, then the wetland has not failed. The outbreak of plant diseases and the invasion of alien species are often symptomatic of other stresses and may indicate false expectations rather than ecosystem failure.

8. Do not over engineer wetland design with rectangular basins, rigid structures and channels, and regular morphology. Natural systems will be mimicked to accommodate biological systems.

Freshwater Marshes and Ponds

Some common emergent plant species used for wetland restoration and construction in areas where water accumulates and ponds will be useful for developments within the AD. These species will include but won't be limited to: bulrush (*Scirpus spp. and Schoenoplectus spp*.), cattails (*Typha spp.*), and sedges (*Carex spp*.). Resources spent on submerged plants may be wasted since their establishment is often limited by algal growth and turbidity.

Riparian Areas

Restoration of riparian areas associated with Willow Creek, Spring Valley Creek, and other drainages with the AD may be possible but will have limited success unless the stream setbacks allow periodic flooding. Even without periodic flooding, some restoration of the riparian area is possible given the existing channels morphology in the area. Some common species used for wetland restoration along riparian areas in Idaho include black cottonwood (*Populus balsamifera*), willow (*Salix spp.*), river birch (*Betula occidentalis*), rushes and sedges. Species used for restoration will match those indicated for each mapping classifications of the Preliminary Wetland Delineation. Figure 17 displays how the streambank gradient affects the potential for aquatic, riparian, and upland vegetation.

Bioengineering methods to remove debris are described below. These methods provide channel stability with the added benefit of providing wildlife habitat. Mesh plastic or wire tubing helps protect new seedlings from browsing damage and can be installed before or after planting. Consideration will be given to the location of plantings.

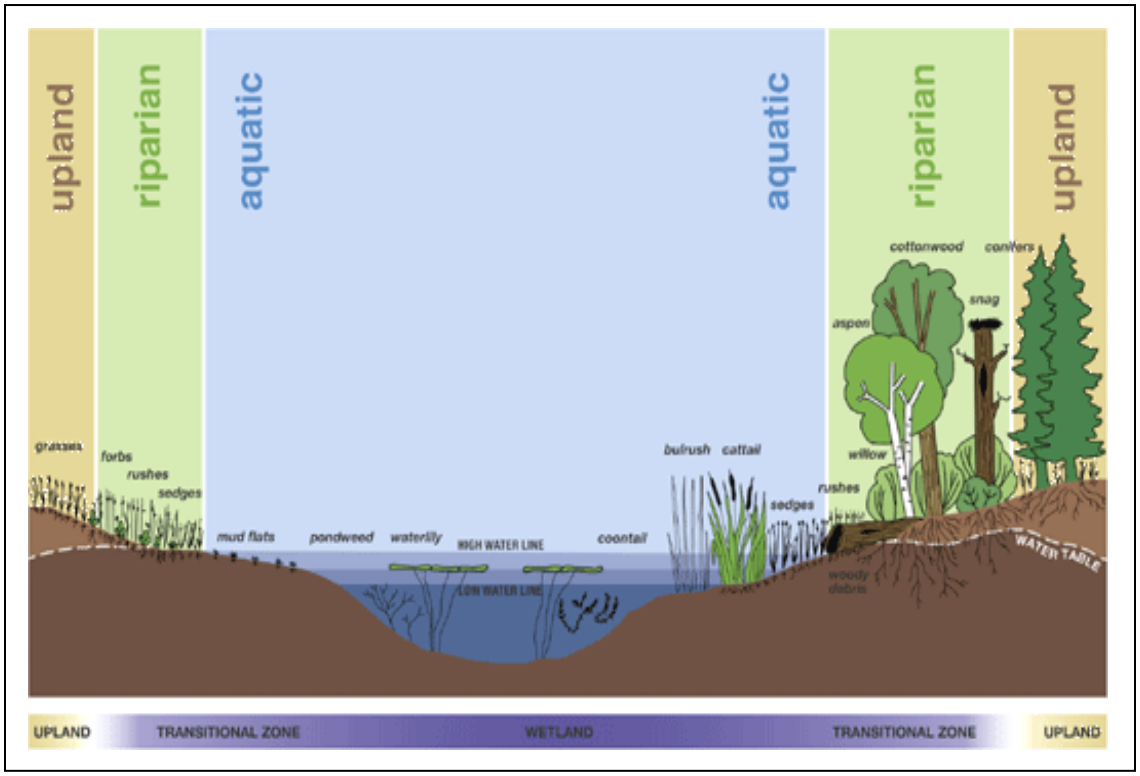


Figure 18. Relationship Between Aquatic, Riparian, and Upland Vegetation.

Bioengineering Methods

Wattles/Fascines

Wattles are bundles of live, woody material tied into bundles, generally 4 to 12 inches in diameter and typically 8 feet long. They will be placed in shallow trenches on banks or slopes parallel to the stream contour. They will be partially covered with soil. Wedge-like dead stakes will secure them into place at 2 to 3 foot intervals. This live-rooting material grows into a live fence-like erosion barrier. The wattle and the trench create a sediment trap. Straw mulching the site after installation will retain moisture and reduce surface erosion. This is the most functional and easiest to install of the bioengineering materials.

Brush (branch) Layering

This technique utilizes a 2 to 4-inch layer of readily rooting live branches which are 0.25 to 0.5 inch in diameter and 3 to 6 feet in length. Brush (branch) layering will be planted on terraced benches with two-thirds of the basal material covered with soil. Six to 12 inches of upper growth will be exposed. Before installing, soil terraces can be additionally protected by putting down geo-fabric. Secondary layers of live branches are added 3 to 4 feet from the bottom of the slope. Before growth begins, they will add stability and aid in moisture retention. Straw mulch may be used to provide additional moisture retention and erosion control.

Brush Mattressing

This technique utilizes live, woody material 0.5 to 3-inches in diameter, at random lengths. This material is placed 4 to 6 inches deep on sloped areas. Generally starting at the bottom of the slope, they are laid in a crisscross pattern protecting six or more feet of slope. They are held in place with wedge-like dead stakes and secured with string or wire. Four inches of loose soil is placed on top to sufficiently cover the majority of the branches. The brush mattressing will act as an immediate

sediment trap and grows into a shrubby carpet-like protective barrier. This technique is effective on slopes with a 2:1 ratio or flatter.

Live Cuttings
Cuttings are living plant material of unrooted, woody stems that will root and establish shrubs in wet, fertile conditions. They are ideal for planting in mass where erosion control and bank stability are an immediate concern.

Live Whips
Live whips are woody shrub material 0.25 to 1 inch in diameter and 4 feet to 6 feet long. Live whips are used in conjunction with gabion walls, riprap and geo-fabrics. Two-thirds to three quarters of live whips will be covered with soil. Whips can be installed laying on their side or erect in the soil. Live whips must be long enough to reach soil behind or below hard structures.

Rooted Cuttings and Bareroot Plants
Plants have 8 to 36 inches of above-ground growth and established roots. They are used to establish shrubs and trees on restoration projects. These materials are to be planted 2 to 8 feet apart and their roots must be covered with soil. See list of available species above.

Wedge-like Dead Stakes
These are pieces of wood cut in long wedges. They measure 1.5 by 3 inches by 2.5 feet long. These dead stakes are driven into the soil to secure wattles, brush mattressing, and other applications of soil bioengineering.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	All	Mitigate, restore, or enhance wetlands and riparian areas. Increase hydrologic functionality and structure of system for aquatic and terrestrial habitat.

Federal Migratory Bird Treaty Act (MBTA)
To ensure that migratory and nesting bird species are not adversely affected by construction activity and to comply with provisions identified by the Federal Migratory Bird Treaty Act (FMBTA), preventative clearing of brush and other vegetation during non-breeding season (September – March) would be done to the extent possible to limit the need for seasonal restrictions. Pre-construction surveys may also be completed by the Conservation Director or qualified biologist prior to construction activities to identify potential nesting locations. In the event that an occupied nest with eggs or juveniles present is identified, the nest and surrounding area will be marked and construction activity will be diverted around the site until the nest is vacated or relocated in coordination with state or federal wildlife agencies. In the event a tree is occupied, that tree will not be felled until juveniles have vacated the nest.

A report of the species, site location, and actions taken to protect the nest will be developed by the Conservation Director or qualified biologist and given to IDFG and City of Eagle.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All nesting and migratory birds	Potential mortality, nest abandonment	Avoid nesting and brooding activity disruption until nest sites are vacated, avoiding nest/chick abandonment and/or mortality.

Nest Boxes and Perches

Loss of open space and habitat associated with construction activities could have a short-term adverse impact on avian and bat species by reducing available nesting and perching sites. To help compensate for the potential loss of habitat, areas remaining in natural open space will be significantly enhanced for cavity nesting birds, hawks, and bat species by constructing a minimum of artificial nest and perch structures. Nest boxes, bat boxes, and perch sites will be funded and strategically placed within the community, as well as the rangeland surrounding the AD. These can include small boxes for cavity dwelling swallows and bats, larger boxes for American kestrels and platforms in appropriate locations for ferruginous hawks.

Nest boxes have the potential to be utilized by nuisance bird species that displace native species, such as the European starlings. Monitoring of these boxes will be done by the Conservation Director, preferably in coordination with education or children's groups. Bat boxes may also be placed throughout the community near riparian areas. These have the added benefit of controlling mosquito and other insect populations without the use of pesticides or insecticides. Specific designs and locations will be determined in conjunction with local BLM and IDFG wildlife specialists, and is preferably done in coordination with education or children's groups.

Species/Group Impacted	Impact	Effect of Mitigation Actions
Raptors	Loss of nesting and perching structures	Lessen the effect of loss of habitat due to development by creating artificial nesting and perching platforms/boxes, increase availability of nesting sites for platform dependent species. Create educational tools for residents and students.
Cavity nesting birds and bats	Loss of nesting and perching structures	Lessen the effect of loss of habitat due to development by creating artificial nesting, roosting, and perching platforms/boxes. Create educational tools for residents and students.

Pest Control and BMP's

The increased presence of residential development and associated infrastructure associated with storm water retention areas, developed parks, landscaping ponds, and water treatment facilities, will likely increase the available habitat and occurrence of insect pests; specifically, mosquitoes. To mitigate the potential increased pest population, the Conservation Director will work in conjunction with the Idaho State Department of Agriculture's pest management program and urban pest coordinator to create and implement an Integrated Pest Management (IPM) program. The primary emphasis of the IPM program will be the management of habitat and pest population control within the AD utilizing chemical and non-chemical measures. Non-chemical and biological control measures will be emphasized, with chemical application as a secondary control.

Non-chemical measures include but are not limited to:

- Biological controls;
- Water conservation and irrigation management practices;
- Turf management on parks, and residential lawns;
- Wetland and landscape pond management;

- Equipment storage;
- General maintenance and monitoring of storm water and water treatment systems;and
- Residential education and training.

The overall objective of the pest management program will be to reduce health risks to residents and wildlife species that could be adversely affected by increased presence and population of pest species. The objectives will be measured qualitatively, because of the limited health impacts (West Nile) associated with pest species; rather than quantitatively, based on the ambiguous nature of the impact.

Species/Group Impacted	Impact	Effect of Mitigation Actions
Insectivorous wildlife and associated predators	Consumption of chemically treated insects	Reduce mortality due to consumption of pesticides through the trophic feeding levels.
Avian species	Harassment and disease vectors	Reduce the spread of the disease by reducing the number of vectors (i.e., the spread of West Nile by mosquitoes).

Habitat and Open Space Enhancement and Restoration Plan

To increase the overall health and functionality of the lands within and adjacent to future developments, an enhancement and restoration plan may be developed for each preliminary plat. Each plan would have two primary components. The first is management and control of invasive and noxious weed species (Appendix D). The second is the reestablishment and restoration of natural structural and functional components of natural open space within the development or conservation easements.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	Conversion of open space	Enhanced or restored remaining open space provides better quality, more sustainable habitat.
Nesting birds	Loss of nesting and foraging habitat	Provides connected spans of enhanced or restored native habitat for nesting and increased forage base associated with reestablishment of native vegetation for prey, i.e. insects utilize.
Ground nesters and burrowing animals	Conversion of open space	Increased diversity of habitat for nesting and increased forage base associated with reestablishment of native vegetation for prey (i.e., insects utilized).
Raptors/other predators	Reduced prey base	Increased prey numbers and expanded hunting range.

Invasive and Noxious Weed Management Plan

Invasive and noxious weeds are currently, and will continue to be an ongoing issue for the AD due to current established infestations, initial construction ground disturbance, as well as increased population and recreation levels. Invasive and noxious weed management objectives for the development include, but are not limited to:

- Control the current spread of noxious and undesirable weeds within the AD, map existing locations, and keep record of species present to the extent possible;
- Prevent new infestations, monitor the effectiveness of control measures, and adaptnew management strategies and control measures as necessary;
- Meet state and federal safety guidelines for the use of prescribed burning and chemical application;
- Work and coordinate with BLM and other adjacent land owners to extend AD conservation and restoration programs beyond the projects boundary to enhance vegetation, reduce fuel amount and continuity, and to potentially assist in landscape-wide restoration projects; and
- Work with residents and the public to educate them on invasive and noxious weeds, and the ecological, social, and economic impacts on the surrounding rangelands.

The control and management of invasive and noxious weed species is an essential component of open space and habitat. Therefore, the initial mitigation measures should primarily be associated with reduction and control of these species on all non-developed areas within each project area, including both developed and undeveloped-open space. The AD weed management plan (Appendix D) will be applied during development of each preliminary plat. Invasive and noxious weed management strategies will be adaptive to existing conditions and change over time based on the goals associated with the plan as well as incorporating best available techniques and science. Tools identified for use of invasive and noxious weed control include, but are not limited to:

- Mechanical treatment (mowing, hand pulling, plowing, chaining, etc.);
- Prescribed burns;
- Biological treatments; and
- Herbicide application.

These types of treatments should significantly reduce mature populations and the amount and viability of seed for future generations. In areas with only limited components of invasive present, spot-applications of herbicides, bio-control agents, or mechanical thinning should be used, while restricting prescribed burns. The initial and continued use of herbicides, as well as the type of herbicide, will be determined based on a site-by-site basis. In addition, prescribed burns and herbicide application projects may be done in collaboration with BLM, Ada County Pest Management, and other resource agencies and specialists.

A weed management program must be implemented and carried out throughout the year. This program will utilize various treatments including mechanical, chemical, and biological control methods. For example, spot spraying of invasive grass species in areas with established native species would likely reduce competition for limited resources and increase the ability of young natives to establish and reproduce. However, the use of herbicides can have adverse effects on native species as well. Therefore, mechanical and biological controls should be used as much as possible in these areas.

It is recommended to use biological control agents to the extent possible in order to manage and control invasive and noxious weed species. While invasive and noxious weed species can be reduced

with chemical and mechanical treatments, these require significant amounts of time and resources, and can result in adverse impacts to remnant native population. Bio- control agents are generally species-specific and have limited effects on other species. In addition, these treatments are less time and resource consumptive, and can affect a very large area with a minimal application.

Initial and continuous treatments of the area will be required to control and manage these invasive communities. However, the primary factor in managing the establishment and spread of new populations will be education and support of the community residents and the public. An aggressive education program will be emphasized so that residents and the general public are aware of the impacts from these species on native communities and wildlife. In addition to on-site programs, the community shall have continued communication and enter into cooperative programs for weed management and education with county, state, and federal agencies.

Species/Group Impacted	**Impact**	**Effect of Mitigation Actions**
All	Increased fire cycle	Reduction of fuels would reduce overall probability and severity of wildfires
Ground nesters and burrowing animals	Loss of native habitat	Decreased competition with more desirable native vegetation to reestablish native communities that supply better forage and cover.
Raptors/ other predators	Reduced prey densities/increased competition	Decreased competition with more desirable native vegetation to reestablish native communities that supply better forage to increase the prey base and provide more cover.

Habitat and Open Space Restoration Plan

After initial reduction and control measures have been done or started for invasive and noxious weed species, restoration of the site may take place to enhance habitat in all natural open areas. Habitat restoration objectives for the development include, but are not limited to:

- Reestablish native vegetation in natural open areas within each preliminary plat;
- Reduce or limit reestablishment of invasive and noxious weed species in uplands and riparian areas by reestablishing native plant species;
- Establish long-term monitoring sites to assess the effectiveness and success rateof restoration activities in order to identify trend and potentially adapt new restoration measures as necessary;
- Work and coordinate with BLM and other adjacent land owners to extend AD conservation and restoration programs beyond the projects boundary to enhance vegetation, reduce fuel amount and continuity, and to potentially assist in landscape-wide restoration projects; and
- Work with residents and the public to educate them on the natural ecology of the surrounding rangelands, as well as the structural and functional components necessary to sustain that system.

Treated (mechanical, prescribed burns, biological, and chemical,) areas will be reseeded or hydro-seeded, where necessary, with a mix of native grasses, forbs, and some shrub species.

While native species are emphasized, the use of some desirable non-native species will also be included for structural and functional components. It is recommended that these species either be sterile or non-aggressive, i.e. they will not out-compete or displace more desirable native species. The shrub component will come primarily from rooted material, plugs, or transplanted individuals rather than seeds. While these species are not native, they can affectively be used to reduce erosion potential, reestablish hydraulic function, and act as nurse crops, i.e. sterile wheatgrass or other recommend species. The shrub component will come primarily from rooted material, plugs, or transplanted individuals rather than seeds.

Areas with hydro-seedings should be allowed to germinate and set for a minimum of one season based on seasonality and time constraints. The following season, plugs, super-cells, potted plants and transplants of a variety of grass, forbs, and shrubs will be added to the sitein order to reestablish a diverse stand, both species diversity and age class diversity, of nativeor desired species. The use of live mature plants in addition to seedings and irrigation will likely increase the potential success rate of the project significantly in relationship to seeding only. In addition, live mature plants will be available for aesthetics and landscaping features, as well as functional and structural components of the system, i.e., soil stability, hydrologic function, and nutrient processing.

As the structural and functional components are reestablished, the site will be more resistant to invasive and noxious weed species, and more resilient to disturbances such as recreation, wildfire, and others. In addition, restored areas will have improved habitat for plant and wildlife species, while increasing the intrinsic value of the area for residents and public recreation.

Species/Group Impacted	**Impact**	**Effect of Mitigation Actions**
All	Increased fire cycle	Restoration of native community dynamics including fire regime conditions that have been significantly Altered through historic uses.
Ground nesters and burrowing animals	Loss of native habitat	Overall increase of native vegetation used for cover and forage, improved sustainability.
Raptors/other predators	Reduced prey densities/increased competition	Increased prey populations associated with greater stability and quality of habitat; however, restoration of native species would also increase cover for prey species.

Construction Precautions

While some direct and indirect impacts associated with construction activity can be avoided, such as unmanaged recreation or unleashed pets, many cannot. Therefore, best management practices (BMP) are required to be incorporated into the construction plan. Included in these BMPs will be measures that:

- Noxious weeds observed near or adjacent to construction areas will be treated with herbicides or physically removed to prevent further establishment and spread;
- Periodic surveys by the Conservation Director will take place to identify and treat invasive and noxious weed infestations, particularly after soil-disturbing activities;
- Areas of topsoil salvage will be monitored and aggressively treated with

herbicides to prevent the establishment or spread of invasive and noxious weed species;

- Disturbed areas will be reclaimed immediately after the completion of construction and restored with native seed and live plants. In areas with high erosion potential, hydro-seed and mulch with tackifiers will be used to reduce erosion impacts and reestablish native species;
- Certified weed-free mulch will be used in restoration, and certified weed-free straw bales will be used in sediment barriers, and;
- Approve of SWPPPs

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	Invasive species establishment and spread	Limit establishment of new species and populations, and reduce spread of established invasive and noxious weed species.
All	Wildfire	Reduce probability of wildfire, and increase response time to control potential human caused wildfires thereby reducing the overall adverse impacts associated with a larger wildfire.
Ground nesting birds	Harassment, winter mortality, and nest abandonment	Reduce harassment and potential indirect mortality of species during critical periods; educate construction personnel on species of interest to report observations that may not normally be reported.
Aquatic species	Soil erosion/ compaction and water quality	Limit adverse impacts to structural and functional components in order to reduce erosion potential and subsequent reduction in water quality, and limit compaction that would normally restrict plant establishment and root depth as well as water permeability.

General Neighborhood Design Guidelines

This section outlines identified requirements associated with construction activities that pertain to the neighborhood layout, design, or Charter.

State Highway-55 and Residential Roads

Wildlife-vehicle collisions along SH-55 are the primary cause of big game mortality (primarily mule deer) in the vicinity of the AD. In an effort to reduce big game mortality and risks to motorists associated with wildlife and road crossings a three-year survey was conducted with wildlife and transportation experts to determine some recommended actions (Appendix C). The Avimor Conservation Director will work cooperatively with a partner agency (IDFG, ITD, etc.) to apply and receive money in an effort to make SH-55 more wildlife-sensitive.

To reduce the potential for big game collisions within the AD, several measures will be incorporated into the design, which may include but not limited to: a series of signals, signs, and other traffic-calming measures; engineering of roadways with increased line of sight; and roadside barriers were feasible. These measures will be incorporated into the design of each project based on Ada County

Highway District standards in order to control or reduce excessive speeding and subsequent collisions, with both wildlife and people.

While these actions can reduce the occurrence of wildlife-vehicle collisions, it will not eliminate road kill altogether. In the event of road kill along SH-55, the Conservation Director will work with the Idaho Department of Transportation regarding monitoring and reporting.

Species/Group Impacted	Impact	Effect of Mitigation Actions
Small mammals and rodents	Increased mortality	Reduced speed and increased visibility of motorist will reduce automobile-related mortalities.

Wildland Fire and Fuel Breaks (Greenstrip)

The AD is located in an area that is dominated by annual grasses and forbs. When these annual species (primarily medusa head and cheatgrass) are a dominant presence in a vegetative community, they can form a virtual carpet choking out preferred native species. In the summer and fall months of the year this carpet becomes an ignition and fuel source, which can ignite and spread wildfire at alarming speeds. Fire is a potential threat at any time in the foothills; however, the threat is especially high from July to September when the moisture levels are low, vegetation is fully grown and dried out, and recreational use is greatest. As discussed earlier, increases in local houses, residents, and recreation will likely increase the wildfire ignition probability in the area. Therefore, all proposed development within the AD will fall under the management of the Avimor Fire Plan (AFP) (Appendix F) including a requirement to obtain a letter of approval from Eagle Fire District at time of final plat. Included in the management plan will be the use of fuel reduction actions and the use of green strips to reduce the amount and connectivity of fuels in the area

Greenstrips are generally long, narrow bands of fire-resistant vegetation used to reduce the amount and connectivity of fuels, buffer developments from wildfire, and limit ignition potential in high-use areas (Gebhardt et al. 1987; Davison and Smith). Plants growing on these sites should be widely spaced, have high moisture content, and "green-up" longer or later than other species. Greenstrips can also include gravel, decorative rock, or developed walking paths, which are easily incorporated into the landscaping plan for the community.

Greenstrips will have a required width of 8-30 feet in areas adjacent to open space or adjacent rangelands. The variation in width is due to the fact that different land uses will occur along the rangeland boundary of the development. Along the residential areas where backyards and irrigated vegetation exists, a narrower greenstrip would apply. In other non- irrigated open space areas, a broader fuel break will be needed to protect against wildfire. Practical planning will be used when determining fuel break widths. In areas where a connected green strip would detract from the natural aesthetics of the area, firescaping will be incorporated around individual residents to create defensible space and reduce risk.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	Loss of habitat due to wildfire	Reduced connectivity of fuels and buffers limits the impact of potential human-caused fires spreading into the open areas surrounding the development.

Perimeter Fire Hydrants, Access Roads, Fire-Wise Community

A series of fire hydrants will be strategically located along roadways, near the perimeter of the proposed developments to provide fire hose access to neighborhood water in the event of a wildfire. Hydrant hose attachment threading will be compatible with local city, state, and federal hose attachments to facilitate quickness and efficiency in the event of wildfire. In addition to hydrants, access points will be designed into the proposed projects to allow fire crews to access the rangelands beyond the boundaries of the development, while limiting access to residents and recreationists. The developer will coordinate with the City of Eagle and Eagle Fire District to identify locations for perimeter hydrants and access points.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	Loss of habitat due to wildfire	Reduced response time and increased access to suppression resources would limit the overall size and severity of wildfires.

Wildlife Fencing-Residential/Higher Density Areas

Charter and design guidelines will restrict residential fencing from having protruding objects, spikes, or rails that could impale wildlife. Fencing should either be closed to limit direct access to small and medium sized mammals, or limited to 4 inch or less distance between bars for rod-iron. Fences will also maintain compatibility with the AFP. Large open areas such as parks and playgrounds will either not be fenced or have large access/egress points for escape in order to reduce the likelihood of trapping or injuring large wildlife that may be wandering.

Species/Group Impacted	Impact	Effect of Mitigation Actions
Medium and small mammals	Nuisance wildlife, increased mortality/injury	Reduced injury/fatality events for big game moving through the development. Decreased number of trapped animals acting as nuisance to residents.

Wildlife Fencing-Open Spaces/Common Areas/Perimeter Development

Open space areas of the development that are connected to or adjacent to open rangelands will likely be places that wildlife species enter the development. Development in perimeter areas that are lower density and adjacent to open space will be regulated by Charter and design guidelines to provide for wildlife friendly fencing.

The priority for wildlife-suitable fencing in open areas is easy passage and low risk of injury or death. Fences constructed for livestock grazing control can comply with wildlife friendly fencing standards. Specifically, the bottom wire or barrier on these fences will not be barbed, and be at least 16 inches off the ground to facilitate the safe passage of pronghorn antelope and young big game species. The top level of fences would ideally be constructed of wood to increase visibility and safety for antelope and mule deer. The top level should not have any protruding objects or rails that could potentially impale crossing wildlife. The top of all fences should be no higher than 40 inches, with at least 12 inches between the top two levels (Figure 10).

Residential fences in areas directly adjacent to natural open areas should be no more than 48 inches high, capped with no protruding ends, less than 4 inch gaps, and comply with the Avimor Fire plan.

Species/Group Impacted	Impact	Effect of Mitigation Actions
Big Game, mainly pronghorn antelope	Nuisance wildlife, increased mortality/injury	Reduced injury/fatality events for big game moving through and around the development. Decreased number of trapped animals acting as nuisance to residents.

Artificial Lighting

Lighting within the development will comply with "dark sky" development guidelines to address light pollution. Lighting within residential and commercial areas will be restricted to low wattage, directed fixtures (down). This includes street lamps and private residential lighting. There will also be fewer light posts that are increasingly spaced as you travel from more concentrated residential areas toward the peripheral sites adjacent to rangelands or natural open space. These lighting requirements are based on the conceptual plan and are likely to be altered as the plan is altered. In addition, key night use areas may be modified for safety reasons. All lighting will, at a minimum, conform to all city and county lighting standards.

Species/Group Impacted	Impact	Effect of Mitigation Actions
Raptors, other birds, ground nesting/burrowing animals and other nocturnal terrestrial wildlife	Area avoidance Foraging Alteration; increased predation pressures	Minimize the overall effect by reducing the amount of area affected by artificial light, and leave areas with greater concentrations of wildlife, the periphery of the development, with dark patches for cover. Minimize the overall effect by reducing the amount of area affected by artificial light, which would reduce the effect of changing behavior and area avoidance of nocturnal animals; reduce unnatural night-time exposure of prey animals.
Aquatic species	Disruption of breeding patterns/increased predation pressures	Minimize the overall effect by reducing the amount of area affected by artificial light, which would reduce the effect of changing behavior.

Recreation Guidelines

Recreation poses one of the largest potential adverse impacts to local wildlife and plant communities in the region, and has significant implications associated with public access and use of the area. While the BLM has an obligation to provide public access and use on public lands compatible with the protection and enhancement of wildlife and wildlife habitat, private properties do not. The developer has identified that public access and recreation on open space for the public is a priority; however, this does not include all forms of recreational use during all times of the year.

Open space areas do not necessarily imply that it is open for all types of recreation. The developer may work in coordination with, but not limited to, the Conservation Director, City of Eagle, IDFG, BLM, and representatives from various private recreation groups to assess new and existing recreation uses to analyze and ensure compatibility with wildlife and public access. Recreation types that are not compatible with wildlife objectives of the area may be restricted. As the area on the west side of SH-55 is developed, so will the recreation system. As such, the Avimor Recreation Plan (ARP) (Appendix E) will continue to adapt and integrate these new trails, uses, and management guidelines.

In addition, as per the ARP, the developer may construct and maintain trailheads and trail systems within the private lands and appropriate conservation easements, and coordinate with the City of Eagle and BLM on programs for accessing and maintaining adjacent trails on public lands. The developer and Conservation Director will be required to maintain an ongoing relationship with the BLM and other pertinent agencies and groups in an effort to monitor and update regional long-term recreational plan (Appendix E).

Species/Group Impacted	Impact	Effect of Mitigation Actions
Raptors and other nesting birds	Harassment	Established trails, limited off-road recreation and seasonal regulations will limit overall area affected by recreation and reduce nest disruption and associated abandonment or failure.
Aquatic species	Increased soil loads	Reduced soil and vegetation disturbance would reduce overall erosion potential, which would limit stream sedimentation and reduce potential adverse impacts to water quality.

Pets

All pets will be required to be on leash at all times within the residential and commercial portion of the development, unless posted. All open space and trail users will comply with leash requirements outlined in the ARP (Appendix E). The Conservation Director will maintain involvement with residents, local agencies, and user groups to identify, and address as needed, potential conflicts and issues resulting from the presence of dogs and other pets in relationship to native wildlife.

Cats can decimate populations of birds and small mammals. They can also become prey to some wildlife species. Therefore, it is recommended that residents be educated on wildlife issues and that cats be kept indoors at all times. If a cat is outside they will be required to wear some type of auditory device (e.g., bells) to limit their effect on bird populations in the area.

To reduce wildlife use of residential properties, pet food will be required through Charter to be stored indoors or in a sealed container. Pet food should not be left outside, because this can entice various wildlife species and result in nuisance animals that will have to be removed or terminated.

Species/Group Impacted	Impact	Effect of Mitigation Actions
All	Harassment/ Mortality	Reduced harassment or mortality by pets off-leash and out of control of their owners.
Small birds and mammals	Increased predation pressures	Reduced occurrences of additional exotic predators (cats and dogs).
Raptors and other predators	Increased competition	Reduce competition for prey by keeping cats inside and dogs on-leash, kenneled, or inside.

Nuisance Wildlife

Based on the potential for wildlife interactions in the area, the Conservation Director will create and distribute educational materials for construction contractors and residents concerning wildlife in the area. This can be in the form of wildlife manuals, informational videos, trail signage, nature walks, etc.

The Conservation Director will develop protocols to address resident/wildlife interactions cooperatively with state and federal wildlife agencies. For example, the Conservation Director should be the initial contact person for construction crews and residents concerning wildlife interactions or questions. This would limit the overall number of calls to state and federal agencies. Other aspects concerning wildlife interactions and protocols will be identified and addressed by the Conservation Director and representatives from state and federal agencies.

Based on the location of the AD and likelihood of nuisance wildlife issues, it will be required that the following non-depredation language be incorporated into a home buyer's disclosure statement and signed by all residents within the AD area:

"This area has been identified as wildlife habitat. Damage to property or landscaping from wild game animals shall be the responsibility of each individual lot owner and shall not be the responsibility of the State of Idaho, City of Eagle, or the Developer. None of the identified entities will be liable for wildlife depredation."

Species/Group Impacted	Impact	Effect of Mitigation Actions
Big Game	Relocation and harassment	Reduced harassment or accidental mortality through education of residents and construction crews. Education and tolerance of big game interactions will reduce adverse resident feeding or other interactions that result in the need for relocation of animals over time.
Ground nesting/ burrowing animals	Harassment and mortality	Education of residents and construction workers will reduce harassment in understanding that they are living in/around natural habitat areas, and that trapping or extermination is not a recommended solution.
Raptors and other predators	Mortality and illness	Reduction in the use of pesticides and chemicals to treat prey 'nuisance animals' will reduce the number of infected animals preyed upon.

Residential and Commercial Landscaping

Landscaping will conform to the standards outlined in the Avimor Design guidelines, as well as the AFP. In addition, any changes to individual landscape plans must be approved by the Avimor design committee. This is a critical step in making sure that homeowner changes do not put their or their neighbor's home at risk for wildland fire, or create potential risks for wildlife species, i.e. incompatible fences, landscape features, or toxic plant species such as Japanese Yew (*Taxus cuspidate*).

Species/Group Impacted	Impact	Effect of Mitigation Actions
Big Game	Injury or poisoning	Reduced injury to wildlife species from landscape features or toxic plant species.

6.2 CONSERVATION FUNDING (AVIMOR STEWARDSHIP ORGANIZATION)

Based on the breadth of conservation actions outlined in this HMP, a permanent and sustainable conservation funding source is critical to the success. To address this, the Avimor development has developed a conservation funding system based exclusively on HOA dues. It was identified that transfer fees were not dependable funding sources and in most cases were inadequate over the long-term for the number of proposed actions.

In addition to funding issues, Avimor also identified that it needed an organization separate from the HOA to collect, distribute, and monitor funding requirements. As such, the Avimor Stewardship Organization (ASO) was developed. This organization is responsible for funding the conservation and education program (CEP). The CEP includes all conservation funding, funding for the ARP and associated events, and outreach/social programs for residents. In general, 50% of the ASO funds will be used by the CEP towards conservation actions (e.g., riparian restoration), and the other 50% is designated for funding the ARP (e.g., trail development and maintenance) and resident outreach/social programs.

The ASO funding is based on a $10/month HOA fee, which may be amended from time to time due to inflation, for each household and each commercial development. This equates to $120 per household or commercial building per year. As the population within the development increases so does the Conservation Fund. For example, the existing APC has roughly 550 units, which equates to $66,000/year. At full build out the AD is expected to have 9,500 residential units and 220 commercial units for a total of 9,720 total units. Based on the current HOA fund, that would equate to $1.2 Million/year. This estimate does not take into consideration inflation. However, since a fixed percentage of the home price was used to determine the HOA fee, fluctuations in home prices will allow for changes over time.

Conservation associated costs, including restoration, enhancements, and the Conservation Director, will be covered by the developer until the conservation funds (i.e., ASO) can do so. Conservation associated actions after that point will be fully financed through CEP funds, as will post-restoration activities, such as, but not limited to:

- Continued restoration and enhancement activities and maintenance;
- Initial, annual, and trend monitoring;
- Invasive and noxious weed monitoring, control, and maintenance;
- Educational materials, classes, and outreach events; and
- Other activities associated with the CEP and HMP.

In addition, these funds can be used to purchase, enhance, and monitor off-site conservation easements to mitigate direct and indirect impacts to plant communities and wildlife associated with the development.

Costs incurred by the developer that are directly associated with CEP actions that exceed annual CEP funding can be recouped from the conservation fund when it has sufficient funds to do so.

6.3 ADAPTIVE MANAGEMENT AND ALTERNATIVE ACTIONS

6.3.1 Adaptive Management Strategies

Adaptive management is a relatively new tool designed to improve decisions regarding the planning,

design, management and operation of large engineered projects in relationship to their setting. Adaptive management is a highly-valued management concept and iterative process that has been at the core of many inter-agency and intra-agency discussions specific to the development, design and operation of the proposed project.

Adaptive management is based upon a concept of science that understands ecosystems are complex and inherently unpredictable over time. It approaches the uncertainties of ecosystem responses with attempts to structure management actions using a systematic method from which over time learning is a critical tool. Learning and adapting is based on a process of long-term monitoring of impacts to vegetation and wildlife from this project.

The development team recognizes that the findings of long-term monitoring could indicate the need for modification of the management of open space within portion of the AD through the application of adaptive management. The development team and the Conservation Director will work cooperatively with the homeowners, City of Eagle, the IDFG, other state and federal agencies, and various special interest groups to develop appropriate actions or mitigation measures designed to address issues or concerns identified as a result of monitoring. Adaptive management tools that are available include, but are not limited to: timing stipulations during construction, operational changes of open space management and public use, sighting considerations in future phases of the development, lighting scenarios, and increased mitigation.

6.3.2 Alternative Management Actions

In the event that fewer acres remain for natural open space during and after construction within the proposed preliminary plat, or the overall amount of identified open space is less than that identified for the preliminary plat, alternative mitigation actions will be taken. Alternative mitigation actions would likely involve additional mitigation acreage (e.g., conservation easement), or revision of the phasing and development plan to ensure impacts to existing habitat are addressed.

Any alternative mitigation actions, including any additional acreage set aside in a conservation easement or revision of phasing plans would have to be approved by the CAC (as stated above).

6.4 CONNECTIVITY OPPORTUNITIES WITH ABUTTING PROPERTY

With the Ridge to Rivers trail system to the southwest, the City of Eagle's Master Tail Plan in the future, other developable private lands in the region, and patched BLM and state administered lands surrounding the AD; this location would be an excellent opportunity for cooperative management and maintenance of publicly accessible trail systems. Key sites within the proposed development could be designated as public access points to trail heads that originate within privately held lands. These trail systems could connect to a managed regional trail system. Similarly, future developments in the area could potentially integrate their community trial system into the regional one.

As development pressure increases in these areas, management of interconnected lands will become increasingly important for the successful management of plant and wildlife species, invasive species, open space, human uses, and others. These types of opportunities should be identified and actively pursued by both the developer and adjacent land owners.

6.5 FEDERAL PERMITTING

Clean Water Act-Section 404 Permitting

All proposed projects will comply with the Clean Water Act as stated in Section 6.1.2 of this document.

Endangered Species Act

There are currently no threatened, endangered or candidate species known to occur within the AD property at this time. Therefore, no incidental take permit under the ESA would be required for proposed actions. However, in the event that a species is listed that has been identified within or directly adjacent to the AD, additional site surveys will be completed, and a species-specific protection plan may be developed by the Conservation Director and incorporated into the HMP, per the approval of the CAC, City of Eagle, and FWS.

Migratory Bird Treaty Act

The developer of the proposed AD will comply with the Migratory Bird Treaty Act as stated in Section 6.1.2 of this document.

7.0 REFERENCES

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