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APPENDIX 1: GLOSSARY

Wyoming Domestic Water Well Permits

41-3-907. **Same; preferred right of appropriations for stock or domestic use.** Appropriations of underground water for stock or domestic use; the latter being defined as household use and the watering of lawns and gardens for noncommercial family use where the area to be irrigated does not exceed one (1) acre, where the yield or flow does not exceed .056 cubic feet per second or twenty-five (25) gallons per minutes, shall have a preferred right over rights for all other uses, regardless of their dates of priority, subject to the provisions of section 41-128, Wyoming statutes 1957 [41-3-911], as amended, if an appropriation is for two (2) or more uses, and includes one (1) of the above preferred uses, the preferred use shall be limited to .056 cubic feet per second or twenty-five (25) gallons per minute, and the application shall specify one (1) acre upon which such preferred uses shall be made. Such preferred use shall not include municipal use by any person of water appropriated by a municipality or company, or any instance where water is purchased or held out for sale. Source: Laws 1957, ch. 169, 2; W.S. 1957, 41-124; Laws 1969, ch. 213, 2.

Montana Development Terms

Subdivision: a division of land or land so divided that it creates 1 or more parcels containing less than 160 acres that cannot be described as a ¼ aliquot part of a U.S. government section, exclusive of public roadways, in order that the title to or possession of the parcels may be sold, rented, leased, or otherwise conveyed and includes any re-subdivision and further includes a condominium or area, regardless of its size, that provides or will provide multiple space for recreational camping vehicles or mobile homes.

Certificate of Survey (COS): a document submitted to record any of a variety of property alterations and transactions, including a range of activities exempted from subdivision review. COSs include family transfers, and agricultural exemptions.

Donut: in local planning parlance, lands within a radius of up to 4 ½ miles around three incorporated municipalities in Gallatin County: Bozeman, Belgrade, and Manhattan. Although these areas fall within the unincorporated portion of Gallatin County, the three donuts are currently under the planning jurisdiction of their respective city/county planning boards.

Lot: A plot of land within a subdivision (major or minor).

Major subdivision*: a piece of land divided into 6 or more lots.

Minor subdivision*: a piece of land divided into 5 or fewer lots, subject to less stringent local review standards than a major subdivision.

Parcel: a plot of land described by COS or deed that is not part of a subdivision.

Plat: a graphical representation of a subdivision showing the division of land into lots, parcels, blocks, streets, alleys, or other divisions and dedications.

Tract: any contiguous piece of land described as a single entity in Gallatin County records.

*In Montana, the definition of “subdivision” is standardized throughout the state. In Wyoming and Idaho, each county defines “subdivision” individually.

Private Land Conservation Options and Incentives

Federal Estate Taxes: As of January 1, 1998, landowners can exempt the first \$1.3 million of net worth from their estates. Landowners will further receive an enhanced estate tax benefit if their land is in a perpetual conservation easement and is within 25 miles of a national park, wilderness area, or metropolitan area. For lands under a conservation easement donated to a land trust by the landowner or executor, estates will be able to exclude 40% of the property’s value from the estate.

Money for Land Purchase and Easement: Numerous federal, state and private sources exist offering financial incentives and assistance for employing many of the alternatives listed here. Detailing them

here is outside the scope of this report, but information is available from the resources listed in Appendix 3.

Conservation Easements: A voluntary contract between a land owner and a quasi-public agency for agreed-upon land protection. Contract includes reserved development rights, specified uses, time frame (may be permanent). Income tax and inheritance tax benefits, but usually have to endow the easement.

Cluster Land Use: Concentrating development on a portion of property in exchange for management of the remainder of the property in open space.

Transfer of Development Rights: Development rights from districts identified for management are available for purchase and use within districts identified for development. Districts identified for management have restricted development. Districts identified for development may use purchased development rights to build at higher densities than normally allowed by zoning or other management techniques.

Purchase of Development Rights: The purchase of the right to develop from specified parcels. The price of the rights is the diminution in the market value of the land as a result of the removal of the development rights. The remaining value of the land is the open space value.

Land Banking: A public body purchases land, designating some of it for permanent resource use, selling or leasing it with restrictions on use, and selling or leasing other areas for urban development. The public acts as a developer, constructs infrastructure and then covers costs by selling the land. Public ownership allows designation of future use and sale of the land with appropriate restrictions. Could not only prohibit development but also provide sufficient sites for necessary urban development in locations that would be the least disruptive to protected parcels.

Master Plans: Adopted goals, policies and objectives regarding importance of agricultural/open space land use and its relationship to all other aspects of the plan: transportation, housing, public facilities, economic and social issues. An organized way to identify good agricultural/open space land, and set growth and protection goals. In most areas the plan in itself is not legally binding, but serves as the basis for land use regulation like zoning and subdivision.

Zoning: Uniform regulations governing land use for specific geographic areas. Government approved and enforced.

Urban growth boundary: A defined region that determines the geographic limit of growth. Technique to control the amount, location and type of development, discourage sprawl and promote more compact development that is cheaper to service.

Sources:

Glick, Dennis, et al. 1998. Incentives for Conserving Open Lands in Greater Yellowstone. Greater Yellowstone Coalition, Environmental Defense Fund, and World Wildlife Fund. Bozeman, Montana.

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APPENDIX 2: ALTERNATIVE METHODS FOR MEASURING DEVELOPMENT TRENDS

Several potential indicators of rural (lands outside of municipal boundaries) residential development were considered before the number of domestic water wells permits or logs (for Wyoming and Montana, respectively) or individual septic system permits (for Idaho) were chosen.

One possibility was using *electricity hook-ups*. Gallatin County abandoned this technique for three reasons. One, there was a data gap in 1995 when the county changed the data collection system. Second, it was found that there may be more than one electricity connection per household, for example if someone runs a business out of their home, thus new homes could be double-counted. Third, the database which contains this information does not segregate municipal from non-municipal homes, thus one could not determine which new developments were occurring outside city limits, and which were within municipal boundaries. One planner tried to separate the municipal from non-municipal electricity hook-ups using building permits, but this technique, too, had questionable accuracy due to less than ideal building permit compliance. Electricity hook-ups may be a more accurate indicator of development in other counties, and could be used to verify information obtained through other indicators. However, due to limited time and resources, electricity hook-ups were not used for this analysis.

Building permits pose other problems, as well. Not all counties require building permits outside municipal boundaries. In Gallatin County, for example, there are no county-wide requirements for building permits, although one planner admitted that instituting such a regulation would be the best tool the county could use to monitor subdivision growth (Johnson, pers comm. 1998). Such data would facilitate distinguishing the difference between single-family homes, duplexes, and commercial buildings. However, no such regulation is currently proposed.

Another option considered was the number of *septic hook-up* permits. Madison County collected this data as one indicator of development activity. However, not all permits represent new construction. Some cover replacement systems, while others pertain to non-residential construction. Furthermore, a portion of new septic systems are never permitted. (Madison County 1998). However, as will be discussed later, septic permits proved to be a more reliable indicator of development trends in Idaho than well permits.

The U.S. Bureau of Census, Census of Population and Housing, monitors new housing units, providing one more method for assessing long-term trends. However, a comprehensive census report only comes out every 10 years, limiting the information obtainable for shorter-term building trends. In addition, such counts do not include homes that are not the owner's primary dwelling, and so may underestimate the amount of new units being built. Furthermore, this information, and other parameters related to housing development monitored by census, is often determined according to census unit, which may or may not correspond to political boundaries. New housing units inside versus outside of municipal boundaries is somewhat discernable, as the Census of Population and Housing does monitor water and sewage disposal systems by housing units on community, individual, and "other" systems. However, in most cases this data are only updated every 10 years. As most development has occurred during the 1990s, it will not reflect in 1990 census data.

Using remote sensing maps, aerial photos, or other forms of satellite imagery was another option considered. Such information is readily available. However, this option is expensive and required expertise unavailable at the time of this analysis.

APPENDIX 3: CONTACTS

This document would not have been possible without the help of the following organizations and individuals. All contributed data, technical information, and/or critical evaluation of this study.

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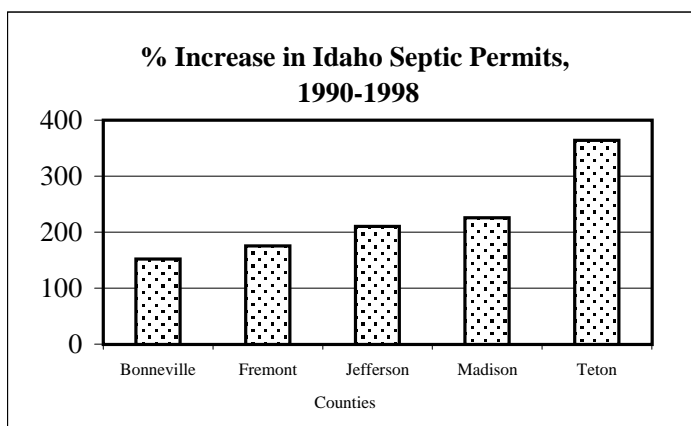
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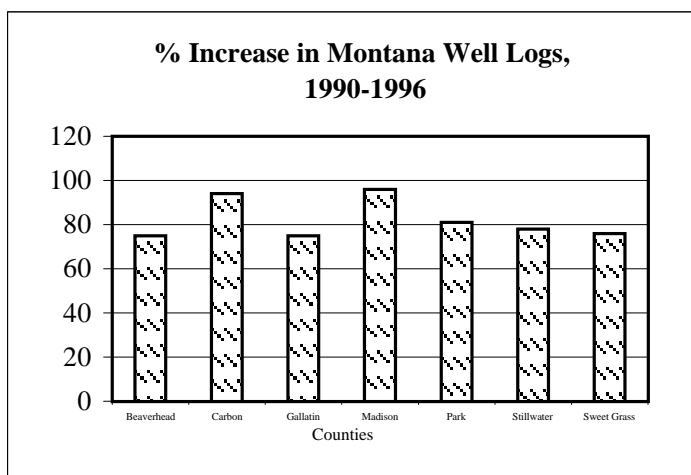
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APPENDIX 4: PERCENT INCREASE IN DEVELOPMENT IN GYE COUNTIES

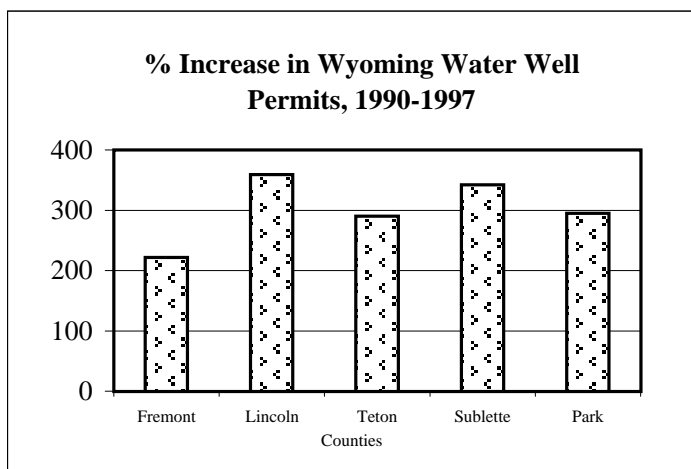


Note: Clark County excluded because permits only increased to 91 permits in 1998.

Source: District 7 Health Department, Idaho Falls, Idaho



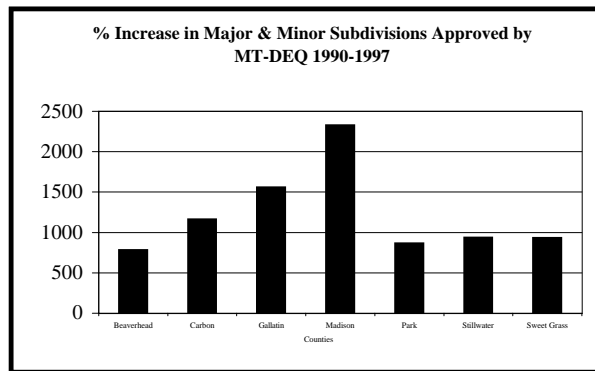
Source: Montana Bureau of Geology & Mines, Butte, Montana



Source: Wyoming State Engineer's Office, Cheyenne, WY

| |
|---|
| Bear Lake, Idaho |
| % Increase in Acres Developed, 1991-1997: 225% |
| % Increase in Building Permits Issued for Homes & Cabins, 1991-1998: 321% |
| Fremont County, Idaho |
| % Increase in Acres Subdivided, 1990-1996: 131% |
| Island Park Planning Area: 278% |
| South Fremont Planning Area: 39% |
| North Fremont Planning Area: 30% |
| Teton County, Idaho |
| % Increase in Acres Developed: 100% |

| |
|---|
| Fremont County, Wyoming |
| % Increase in Small Wastewater Permits, 1990-Oct. 1998: 48% |
| Lincoln County, Wyoming |
| % Increase in New Homes 1990-1998 in Star Valley: 1394% |
| Park County, Wyoming |
| % Increase in Subdivision Lots Created, 1991-1997: 14% |
| % Increase in New Housing Units, 1990-1997: 75% |
| Sublette County, Wyoming |
| % Increase in New Houses 1990-1998: 63% |
| Teton County, Wyoming |
| % Increase in Building Permits, 1990-1998: 81% |



Source: MT DEQ, Helena, Montana

| |
|--|
| Beaverhead County, Montana |
| % Increase in New Septic Permits Issued, 1992-1998: 987% |
| % Increase in Major & Minor Subdivisions Approved, 1990-1998: 779% |
| (note that majority of these are minor subdivisions) |
| Carbon County, Montana |
| % Increase in Septic Permits Issued, 1990-1998: 47% |
| Gallatin County, Montana |
| % Increase in Acres of Tracts Divided, 1993-1998: 523% |
| Stillwater County, Montana |
| % Increase in COS & Subdivisions Approved, 1990-1997: 80% |

APPENDIX 5: MONTANA SUBDIVISION REGULATIONS

Montana Subdivision and Platting Act (MSPA)

MSPA was originally enacted in 1973, requiring local governments to adopt and enforce local subdivision regulations, and to review and decide on development proposals that would divide land into parcels of less than 160 acres, construct one or more condominiums, or provide multiple spaces for mobile homes or recreational camping vehicles. Local governments must incorporate specific procedures under which a proposed subdivision must be reviewed. For example, to approve a subdivision, local officials must issue written findings that consider the effect the development would have on agricultural, the natural environment, wildlife and wildlife habitat, local services, and the public health and safety. In addition, local governments that have adopted a comprehensive plan may review a subdivision to ensure that it conforms to the plan. The MSPA further requires developers of subdivisions with 6 or more lots (a “major subdivision”) to prepare an environmental assessment, and a public hearing must be held during the preliminary review process.

In 1993, this act was revised to eliminate some of the major loopholes allowing parcels to be subdivided for development without any review process. Prior to the 1993 amendment, these loopholes allowed 90% or more of the land divisions in Montana to legally escape local review. The most significant 1993 amendment was changing the definition of “subdivision” from a division of land creating one or more parcels containing less than **20** acres to a division of land creating one or more parcels containing less than **160** acres. Other changes included deleting the occasional sale exemption, restricting the use of the family conveyance exemption, and amending the primary subdivision review criteria. The effect of these amendments was to require the review of many land divisions that were previously unregulated. However, due to a 1975 court ruling, certificates of survey are exempt from planning board review.

Montana Sanitation in Subdivisions Act (MSIS)

MSSA was first passed in 1961, and was amended in 1973 to require land developers to have water and sewer plans reviewed and approved by the Department of Environmental Quality on parcels less than 20 acres in size. Since its original passage, the act has been amended to include DEQ review of water, sewer, solid waste, and drainage in all subdivisions, and most land divisions, that are exempt from local government review.

The types of developments subject to sanitation review under the MSIS parallel those required to be reviewed under the MSPA with one major addition: parcels that are exempt from local government review under MSPA through use of exemptions still are subject to sanitation approval under MSIS.

Sources:

Noel, Jon, et al. *A Handbook on Local Land Use Regulation*. August 1994. Montana Department of Commerce, Local Government Assistant Division, Community Technical Assistance Program, Helena, Montana.

Richard, Jim E., et al. *A Primer: Subdivision Review Under the Montana Subdivision and Platting Act*, 2nd edition. July 1996. Montana Department of Commerce, Local Government Assistant Division, Community Technical Assistance Program, Helena, Montana.

APPENDIX 6: CURRENT RESEARCH AND RESOURCES AVAILABLE FOR MONITORING HABITAT STATUS & TRENDS ON PRIVATE LANDS

There are numerous research efforts currently underway, or recently completed, monitoring land use trends, including rural residential development, and wildlife habitat in the Greater Yellowstone Ecosystem and beyond. These projects are testament to the wealth of resources – skills, technology, and interest – available to monitor habitat trends in the GYE. Such efforts can serve as models for expanded efforts to address current and future private lands development trends in the GYE. Below are brief descriptions of some of these projects, though this may not include all of the programs currently underway relevant to habitat monitoring in the GYE.

Greater Yellowstone Area Data Clearinghouse (GYADC)

The GYADC is a digital clearinghouse being coordinated by the Geographic Information and Analysis Center (GIAC) at Montana State University (MSU) with the goal of providing public access to ecological and spatial data layers of the Greater Yellowstone Ecosystem. GYADC functions as a detailed catalog service with support for links to spatial data and browse graphics, from which users can directly download data. One component of this initiative is the County Outreach Project, through which experts at Montana State University and the University of Wyoming assist local governments with improving their GIS capabilities and facilitate data sharing. GYADC can be found at the following internet site: <http://www.mrc.montana.edu/gyadc>. In an offshoot of this project, GIAC is collaborating with Gallatin County, Montana, on their National Spatial Data Infrastructure (NSDI) Community Demonstration Project. This community-federal partnership will support the acquisition of tools to guide comprehensive land use policy and decision making in Gallatin County. GIAC's role in this project is to describe changes in the last 30 years in Gallatin County. 12 maps have already been produced, including septic systems, travel times from Bozeman city center, wells, land cover, developed land, population density, and agricultural land. For more information, visit the web site listed above, or call Dale Beland, Gallatin County (406) 582-3130, or Paul Dressler, Department of the Interior, (202) 208-3024.

GAP Analyses

GAP analyses have been completed, or are near completion, in Montana, Wyoming, and Idaho. Through GAP projects, each state houses a database of geologic, hydrologic, and ecological spatial data, available to the public over the internet. Database contents vary by state, and can be accessed through the state world wide web sites.

Idaho Construction Reports

The state of Idaho contracts with an economist to annually produce the *Idaho Construction Report*, which quantifies trends in total new residential units by city, area, and regional levels (Matthews 1998).

Missoula Measures: Leading Indicators of Environmental Health throughout Missoula County

In 1997, a consortium of private and public interests from the local, county, state, and federal levels collaborated to assess the environmental health of Missoula County, both over the short- and long-term. A series of indicators were jointly chosen to measure habitat, water quality, air quality, flora, and wildlife.

Montana Cadastral Database Project

The Montana Department of Administration (Information Services Division) in collaboration with numerous state, federal, local, and private agencies, is mapping both public and private land parcels, including ownership, for every county in the state. Once this is complete, data will be publicly accessible over the internet. In addition, the project is also administering financial assistance to counties with existing parcel mapping and GIS capabilities to help them standardize and correct their databases to make

them consistent with the Cadastral Project. Gallatin County is among one of the Yellowstone counties which have acquired project funds to map high-density subdivision areas of the county.

Montana Natural Resources Information Service (NRIS)

NRIS has an extensive database of digital data layers available over the internet for GIS mapping. NRIS also creates maps that are housed at the Montana State Library. Among the maps produced is one showing parcels protected by conservation easements, though this data set is not complete.

University Research

Lessons for Landscape Management: The Effects of Natural Disturbance and Human Activities on Landscape Pattern in the Greater Yellowstone Ecosystem, led by a consortium of researchers at Montana State University. The project has numerous goals, but the ones most relevant from the perspective of private land use trends is determining trends in land allocation and human population density from 1850 – present across their study area, and evaluating patterns of association with environmental gradients. They also plan to reconstruct disturbance patterns (including rural residential development) for a subset of the study area from 1750 to the present. (Hansen et al., 1998).

County Research

The following counties have aggregated residential development data: Stillwater (with a map current as of 1995), Gallatin (with 1997 subdivision map), and Madison (with 1997 subdivision map) counties in Montana; Fremont and Park counties, Wyoming; and Fremont County, Idaho (with a 1998 subdivision map). Teton county, Wyoming, has undertaken a comprehensive inventory of the county's wildlife and scenic resources, and provided details in a county master plan on how to protect these amenities while allowing for continued county growth. These additional counties have some data available (i.e. in a database), either as direct subdivision data or other indicators such as building or septic permits, but have not yet completed development trend analyses: Sublette county, Wyoming; and Teton County, Idaho.

Private Organization Research

Greater Yellowstone Coalition (GYC): GYC has quantified population growth trends in the GYE counties, has looked at subdivision trends in Bonneville and Teton counties, Idaho, Gallatin, Madison, and Park counties Montana, and Park County, Wyoming, as well as gathered some data for additional counties. In addition, GYC is producing GIS maps of subdivided lands in selected GYE counties and areas, including the Yellowstone River Corridor, Teton County, Idaho, and Park County, Montana (Souvigny and Glick, pers. comm. 1998).

Rocky Mountain Elk Foundation (RMEF): RMEF, in conjunction with Geodata Services, Inc., has spearheaded a 2-year, multi-agency effort to digitally map the status of North America elk habitat. The project, entitled "The Status of Elk Habitat," consists of GIS maps with the following data layers: elk habitat (e.g., summer and winter range); topography; habitat limiting factors (e.g., domestic livestock, habitat succession/maturation, urban sprawl, public land habitat availability, timber harvest impacts, depredation, limited private land access, artificial feeding, recreation, habitat conversion), hydrography, major state and federal highways, major towns and cities, state, provincial, county, and ocean boundaries, and elk management units. These data are available to project cooperators on compact disc, and come in conjunction with the necessary viewing software, copyright information, and documentation for the project. For more information, contact the Kirk Horn at the RMEF at (406)523-4500 or rmef@rmef.org.

Jackson Hole Conservation Alliance: The Alliance plans to compile information about the amount, jurisdiction, and status of lands and natural resources in an approximately 50-mile section of the Snake River riparian corridor from Moran, Wyoming to the South Park bridge on Highway 89 and the 3.5 mile section of the Gros Ventre River from the Highway 89 bridge to its junction with the Snake River.

APPENDIX 7: ORGANIZATIONS AND INDIVIDUALS WHO REVIEWED DRAFT REPORT

The organizations and individuals listed below reviewed this study to assess the factual accuracy of the data, trends, and conclusions reported. Their review does not constitute an endorsement of the views expressed in this report unless explicitly noted in the text.

Montana

Brown Bear Resources, Inc.

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Bozeman, Montana

Randy Johnson, Senior Planner

Greater Yellowstone Coalition

Dennis Glick, Associate Program Director

Madison County Planning Office

Virginia City, Montana

Doris Fischer, Consulting Planner

Montana Bureau of Mines and Geology

Tom Patton, Hydrogeologist & Program Manager

Montana Department of Environmental Quality

Subdivisions Section

Dennis McKenna

Park County Environmental Council

Jim Barrett, Executive Director

Sonoran Institute

Ben Alexander, Program Associate

Stillwater County Planning Office

Columbus, Montana

Linda Lang, Planner

Sweet Grass County Planning Department

Big Timber, Montana

Candi Steward, City-County Planner

Idaho

Idaho Department of Environmental Quality

Mark Deitrich, Associate Engineer and Sheryl Hill,

Senior Water Quality Analyst

Fremont County Planning and Zoning

St. Anthony, Idaho

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Teton County Planning and Zoning Department

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U.S. Forest Service

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