

Laramie County Aquifer Protection Plan Proposed and Presented to the Laramie County Commissioners for Consideration

By Charles A. "Skip" Eshelman

Preamble

The purpose of the Laramie County Aquifer Protection Plan is to protect the precious water resources that lay beneath the boundaries of its namesake. The State of Wyoming has not moved in this direction, and in fact, may be politically prevented from drawing such a line in the proverbial sand. In the rush to diversify Wyoming's economy, our most important resource, water, is vulnerable to misuse and pollution.

The plan does not preclude acceptable development and economic diversity, but provides a means of flagging, or screening for activity that would damage this water resource. This document would serve as a tool empowering the county commissioners to distinguish between uses that threaten the aquifers, and therefore impede their progress, and those that do not effect the aquifers of Laramie County, other than withdrawing water from below the surface as permitted by the Wyoming State Engineer's Office.

Albany County's plan was approved June 18th, 2002, and serves as the basis for the Laramie County plan. The principle aquifers and geology are different, but the goal remains the same; to identify activities that pose a threat to the water resources below the surface.

Dedication

I am exposing myself to criticism and condemnation, but the effort and courage to present this document is nothing compared to what the Laniers have demonstrated in their fight to protect Laramie County's aquifers and related recharge areas in recent years.

They are my heroes; facing off with municipal and state pundits, rejecting the complacency of nearly all elected officials, teaching themselves the dynamics of aquifers and the mechanics of municipal waste operations, and accepting every threat and road block as a challenge during their fight to save this valuable and irreplaceable resource. The challenge now is for the Laramie County Commissioners to rise to the occasion; to help determine our future and protect our resources in honor and recognition of Peggy and Brent Lanier's efforts.

I also want to dedicate this plan to the memory of John "Jack" Hayes, and future generations. He was an environmentalist, when that term meant something.

Introduction

Over 8200 domestic wells are permitted by the Wyoming State Engineer in Laramie County, and the number is increasing dramatically with rural development growth. Cheyenne utilizes 33 wells, pumping approximately 1.3 billion gallons per year, and plans to drill more wells in the near future. This well water is in addition to the mountain water captured along the continental divide, and piped from reservoirs to the municipality. All other county municipalities depend 100 percent on well water. The most extensive and developed ground water resources in Laramie County are mined from the Tertiary Aquifer which comprises the Ogallala (0-330' thick), the Arikaree (0-450' thick), and the White River (0-500' thick) formations.

The Tertiary Aquifer was derived from detritus shed off the Laramie Range during several episodes of regional uplift, erosion, burial, and exhumation of the Rocky Mountain states between 40 million and 5 million years ago. It consists of discontinuous, inter-bedded sandstones, silt stones, clay stones, lime stones, and conglomerates.¹

The entire county serves as the recharge area for the aquifers. A copy of "Wyoming Ground Water Vulnerability Assessment Handbook", volume 1, Appendix E6, Laramie County Aquifers Sensitivity is attached for further examination. Also attached is "Wyoming Ground Water Vulnerability Assessment Handbook", volume 1: Background, Model Development, and Aquifer Sensitivity Analysis" from which the Laramie County portion was generated. Both of these publications can also be obtained from Wyoming Department of Environmental Quality.

"Geology and Ground-Water Resources of Laramie County Wyoming", Geological Survey Water-Supply Paper 1834 by Marlin E. Lowry and Marvin A. Crist is attached in its entirety except for maps. This publication should further define Laramie County's geology and hydrologic components. It is no longer in print.

A hydrologist and engineer working for a department within Wyoming State government suggested the inclusion of well construction standards, and another thought wellhead protection guidance should be attached for a comprehensive document. Both are included as well as various Environmental Protection Agency and USGS publications related to aquifers.

The Albany County Board of County Commissioners and the city of Laramie is acknowledged for pioneering the efforts to protect local aquifers in the State of Wyoming.

The Albany County plan has been in effect for several years and is attached for reference.

It is further proposed that this plan be known as the Hayes-Lanier Plan.

¹ Water Tale, Wyoming State Engineer Office communications, Volume 1, Issue 6, page 3, Lisa Lindeman

Editor's note: Skip Eshelman is a free-lance writer who has been offering his column, "Eyes on the Horizon, Nose in the Wind," through the Cheyenne Herald for three years. He regularly attends meetings in the rural areas of Laramie County and writes on many of the issues of concern to those residents. He alerted county residents to the southeast of Cheyenne that a landfill was coming their way and they were able to prevent the unwanted neighbor. He has taken a special interest in the future availability of water via the aquifers supplying Laramie County residents and has developed an "Aquifer Protection Plan." It is printed on this and the following page for Herald readers edification and education.

Laramie County Aquifer Protection Plan

Otherwise Known As

The Hayes-Lanier Plan

The Aquifer Protection Overlay Plan

A. Findings.

Approximately 25% of the City of Cheyenne's municipal water supply and 100% of the water of over eight thousand rural residences comes from wells in the Tertiary Aquifer. Three levels of this aquifer: The Ogallala, the Arikaree, and the White River are vulnerable to contamination for these reasons:

- 1) Major points of withdrawal (municipal, industrial, and domestic wells) are in close proximity to an industrial waste injection system for disposing of hazardous fluids, and Cheyenne's municipal landfill;
- 2) Aquifer Sensitivity in Laramie County is highest along the perennial streams, and medium to high for nearly the entire county;
- 3) The BOPU plans to mine more water through additional wells in the area where the city intends to construct another landfill;
- 4) As far back as 1964, the United States Geological Survey recommended against locating the city of Cheyenne's refuse site at its present location, due to the sensitivity of the area and municipal wells. Forty-one years later problems are occurring with leakages. Much of the site does not have a liner.
- 5) Trichloroethylene (TCE) plumes have already spread from missile silos eastward, and reside under F.E. Warren Air Force base, demonstrating how water travels underground, and the very fragile nature of aquifers in general. This substance is showing up in the city's water supply wells. The problem serves as a wake up call to the vulnerability of the resource.

B. Aquifer Protection Overlay Plan Established.

- 1) There is established within the unincorporated area of Laramie County an aquifer protection overlay plan (APO plan). The APO plan is effective outside all municipality corporate limits of Laramie County.
- 2) Initial delineation of the APO zone shall be as described by the Hayes-Lanier Plan and approved by the Board of County Commissioners. Copies of the illustrations which accompany the Hayes-Lanier Plan shall be kept in appropriate county offices. Property shall be excluded in the APO plan if, in the opinion of the planner or designee, the aquifers are not vulnerable based upon geologic evidence. If such a determination is made, the APO plan shall be amended accordingly.
- 3) Any aggrieved person who believes that all or part of a parcel of property included in the APO plan should not be included, may request that the Planner or designee re-determine whether the property is correctly included. Re-determination shall not be made except upon clear and convincing evidence. Evidence based upon opinion alone, without sound geologic field control is unacceptable. Before making a decision, the county may submit the evidence to qualified professionals for analysis, and may obtain independent evidence bearing upon the question. Costs of professional consultation to the county shall be reimbursed to the county by the aggrieved person.
- 4) Any person aggrieved in fact by an administrative decision under this section may appeal the decision to the Planning and Zoning Commission for review and recommendation to the Board of County Commissioners for determination.

**Laramie County Aquifer Protection Plan (conclusion)
The Resolution**

To safeguard our aquifers, wells, and springs which provide: 24% of Cheyenne's water, 100% of Albin's, Burn's, Carpenter's and Pine Bluff's water, and 100% of the rural residents supply today, and ensure availability to future generations, the Board of County Commissioners adopts the following resolution:

C. Allowed and Prohibited Uses.

- 1) Within the APO plan, the underlying zoning classification shall control all aspects of the property's zoning except that no property may be used for any use prohibited in subsection 3.C. below.
- 2) For the purposes of this regulation, "Hazardous material" means (i) any hazardous substances as identified in 40CFR302.4 and listed therein at Table 302.4; (ii) any hazardous waste as defined in Wyoming Law including, but not limited to, the Wyoming Department of Environmental Quality hazardous waste rules and regulations as may be amended from time to time; (iii) any pesticide as defined in Wyoming law; or (iv) any oil or petroleum.
- 3) Each prohibited activity listed in Column 1 of the table below in this section is prohibited in the APO plan.

D. Setbacks from vulnerable features.

1. Vulnerable features in the numerous formations are:
 - a. Faults and fracture zones which intercept the ground surface and have apertures of greater than one centimeter. Fractures may extend as far as 150 feet from the fault trace.
 - b. Folds which extend to the ground surface.
 - c. Exposed bedrock.
 - d. Bedrock not overlain by a sufficient thickness of low-permeability materials to prevent the effective downward mitigation of contaminants into the aquifer.
 - e. Defined drainages.
 - f. Shallow depth to ground water, defined as any location where no effective confining layer is present over the water-bearing strata containing the Tertiary Aquifers, and the depth to water is less than 70 feet (Note: A good example of this is in the city of Cheyenne, where water is at the surface in many locations).
2. No person shall install, maintain, or use any on-site wastewater treatment system or wastewater storage system, or any private connection to a public wastewater system within 100 feet of a vulnerable feature in the numerous formations.
3. Within the APO plan, no permit shall be issued for any wastewater system until the applicant demonstrates to the Planner or designee, that there are no vulnerable features in the numerous formations within 100 feet of any point of the proposed system. Proof shall be at least the signed and stamped written opinion of a Wyoming licensed professional engineer, or Wyoming licensed professional geologist. The Planner or designee may review independently obtained evidence and records in arriving at a decision under this subsection. If material not supplied by the applicant is used in the decision, the applicant shall be given notice of the material used and the opportunity to comment on it before a final decision is reached. Aggrieved parties may appeal the decision to the Board of County Commissioners.

E. Design standards for on-site wastewater treatment systems.

1. Installation, design, repair, and removal of septic systems located within the APO plan must be in accordance with plans and specifications stipulated by the county health department or certified by a professional engineer registered to practice in the State of Wyoming. This resolution does not grant the right to install a septic system or small wastewater treatment system otherwise forbidden by county resolutions.

Documented pumping of septic tanks at intervals determined by the planner or designee, in very sensitive areas, will be required.

2. Each septic system and leach field within the APO plan shall be inspected by a person qualified by education or training to inspect small wastewater systems.
 - a. During installation before backfilling.
 - b. At least once each 5 years.

If upon inspection, a septic system is found not to be adequately designed or constructed to serve the use to which it is connected, without undue risk to the aquifer, it shall not be used for the disposal of wastewater until it is cleaned, repaired, or otherwise made to operate adequately, so as not to present an undue risk to the aquifer.

F. Pre-existing nonconforming uses.

Pre-existing nonconforming uses within the APO plan are subject to the terms of this resolution, and not to other general resolution provisions on pre-existing nonconforming uses.

1. A pre-existing nonconforming use is a use prohibited by this resolution, but which is in place upon property included in the APO plan as of the date the property was included in the APO plan. That date may be the effective date of this resolution, or the date a use becomes

nonconforming because of an amendment to this resolution.

Septic systems and other privately owned wastewater treatment systems are controlled exclusively under Section E above, and are not subject to these provisions on pre-existing nonconforming uses.

2. Pre-existing nonconforming uses may continue in the same location they were in when they became nonconforming uses (grand fathered), but shall not be expanded in size or scope.

The exception is expansion of the Cheyenne landfill at its present location. The Eastern Laramie County Landfill District successfully expanded the landfill north-east of Burns, demonstrating the feasibility and process.

Pre-existing nonconforming uses which are damaged may be repaired and resumed at the same location, size and scope, provided that after repairs are complete, best available control technology shall be in place to prevent contact between hazardous materials and the surface of the ground.

3. A pre-existing nonconforming use may be expanded under these conditions:
 - a. The expansion does not increase the hazard to the aquifer; or
 - b. Control technology built in to the expansion will prevent any increased risk to the aquifer because 1) Substitution is made of one hazardous material for another provided the substituted material is used for the same function and in equal or lesser amounts as the original material; 2) Substitution of equipment or process for equipment or process provided that the substituted equipment or process performs the same function as the original equipment or process, without increasing the storage volume of hazardous materials stored at the subject business or facility; 3) Expansion of wholesale or retail sales volume which increases the use of hazardous materials but which does not increase the storage capacity for hazardous materials; 4) Initiation at the subject facility or business of an activity that is not a prohibited activity; or
4. Every pre-existing nonconforming use shall:
 - a. Store hazardous material in an enclosed structure or under a roof which minimizes storm water entry to the containment area.
 - b. Provide floors within a structure where hazardous material is stored, coated to protect the surface of the floor from deterioration due to spillage of any such material. A structure which may be used for storage or transfer of hazardous material shall be protected from storm water run-on and ground water intrusion.
 - c. Store hazardous material within an impermeable containment area which is capable of containing at least the volume of the largest container of such hazardous material present in the area, or 10% of the total volume of all such containers in the area, whichever is larger, without overflow of released hazardous material from the containment area.
 - d. Store hazardous material in a manner that will prevent the contact of chemicals with any materials so as to create a hazard of fire, explosion, or generation of toxic substances.
 - e. Store hazardous materials only in a container that has been certified by a state or federal agency or American Society of Testing Materials as suitable for the transport or storage of the material.
 - f. Store all hazardous material in an area secured against entry by the public, except items offered for retail sale in their original unopened containers.
 - g. Not use, maintain, or install floor drains, dry wells, or other infiltration devices or appurtenances which allow the release of wastewater to the ground water.
 - h. Not discharge any substance or material to the ground in the APO plan unless the discharge is permitted by law.

These requirements are intended to supplement, and not to supersede, any other applicable requirements of federal, state, or local law.

The Planner or designee is authorized to promulgate rules and regulations under the Wyoming Administrative Procedure Act concerning the kind and amount of information which the owner of a pre-existing nonconforming use must provide to enable the Planner or designee to make an informed decision under this section. Appeals from the decision under this section shall be taken to the Board of County Commissioners.

G. New/Replacement Wells

All new and replacement wells must be constructed in a manner to assure sealing of the annulus space from land surface to 100 feet below the land surface.

H. Existing law on aquifer contamination unaffected.

The establishment of the APO plan, and the use of APO planned properties in accordance with this resolution, does not relieve any person from liability provided by law for contamination of the aquifer. This resolution does not supersede or modify the requirements of any federal, state, or local law which makes stricter requirements.

I. Severability.

The provisions of this resolution are severable. If any provision is declared to be invalid or unenforceable by any court of competent jurisdiction, those provisions not so declared shall remain in effect.

For a copy of a Prohibited Use and Examples Table, you can contact Skip Eshelman at 634-1026 or e-mail him at hexsigns@bresnan.net.