BRS ENGINEERING
TECHNICAL MEMORANDUM
June 18, 2003

Opportunities to Enhance and Protect Water Quality

This memorandum summarizes opportunities to enhance and protect water quality in the Wind/Big Horn Basin (WBHB). Refer also to; Chapter 1, Tab 3, "Institutional Considerations and Constraints"; Chapter 2, Tab 9, "Environmental and Recreational Use"; and Chapter 3, Tab 17, "Ground Water Availability".

This memorandum contains the following sections:

Section 1 – Introduction

The purpose of this memorandum is to identify on-going water quality related issues and programs within the Basin. This includes both surface and ground water quality.

Since the passage of the 1973 Environmental Quality Act, the State of Wyoming has empowered the Water Quality Division of the Department of Environmental Quality with the authority to promulgate surface and ground water standards and regulations, and to protect water quality through the agency's permitting and enforcement processes. The Wind River Reservation has a similar department of environmental quality. The state and tribal programs must comply with a variety federal regulations including the Clean Water Act, Safe Drinking Water Act, and others.

Ground water quality, availability, and usage are discussed in Chapter 3, Tab 17, and "Ground Water Availability". Currently no ground water protection or ground water control areas are designated within the Basin, however, two areas in the Basin have been identified for potential ground water protection due to high use.

For surface water WDEQ/WQD and tribal WQD have classified streams and water bodies within the basin in accordance with EPA's 303 regulations and have created a 303 (d) listing of impaired streams. The Wyoming 303 (d) listing of impaired streams and water bodies for the Basin is provided in Appendix B, Chapter 2, Tab 9, "Environmental and Recreational Use".

Watershed planning, sponsored by the WWDC, is in progress for the Popo Agie watershed and is proposed for 2003 funding for the Kirby Creek watershed. Watershed planning is also conducted within areas dominated by federal lands by federal land management agencies such as the BLM and US Forest Service under their own programs.

Section 2 – Inter-Agency Considerations

Ten of Wyoming's thirty-four Conservation Districts are located in the Wind River, Big Horn and Clarks Fork basin. They are the Powell Clarks Fork, Shoshone, Cody, South Big Horn, Meeteetse, Washakie County, Hot Springs County, Dubois Crowheart, Lower Wind River, and Popo Agie Conservation Districts. These conservation districts conduct a variety of programs, which are designed to minimize agricultural related impacts to the environment and water quality.

The US Department of Agriculture has a number of programs administered by its Natural Resources Conservation Service (NRCS). The Wind River, Big Horn and Clarks Fork basins are administered through a single NRCS district office located in Worland. NRCS initiatives related to water quality and environmental protection include; the Wildlife Habitat Incentive Program (WHIP), the Environmental Quality Incentive Program (EQIP), the Conservation Resource Program (CRP), and the Wetlands Reserve Program (WRP).

Other considerations within the Basin include; Yellowstone National Park; Wyoming's only Congressionally designated "Wild and Scenic River", a twenty-mile stretch of the Clarks Fork river near Cody; the Wind River Indian Reservation; the presence of glaciers in the Wind River mountains whose drainage is tributary to the Basin; and federal land ownership of some 70% of the basin.

Examples of inter-agency cooperation with respect to water quality protection and/or enhancement include; cooperative water quality sampling and analysis relative to 303 (d) by the WQDE/WQD and various Conservation Districts, and WWDC sponsored watershed-planning studies sponsored by Conservation Districted with participation by NRCS, BLM, and/or others. Appendix A provides a listing of programs and agencies which are involved with surface and/or ground water quality.

Section 3 – Water Quality Impairments and Special Considerations

Waters are declared "impaired" when they fail to support their designated uses after full implementation of the National Pollution Discharge Elimination System permits and "best management practices." Under the Clean Water Act, every state must update its "303(d)" list of impaired waters every two years after reviewing "all readily available data and information." Appendix B, Chapter 2, Tab 9, "Environmental and Recreational Use", provides listing information on water bodies in the WBHB that are considered quality impaired under section 303(d) of the Clean Water Act.

The 2002, 303 (d) listing, includes 19 reaches of impaired streams within the Wind River, Bid Horn, and Clarks Fork river basins. Of the impaired reaches 16 are related to levels of fecal coliform. The remaining three reaches, all along the Clarks Fork, are impaired due to elevated metal concentrations. The 303 (d) listing also includes thirteen threatened waterbodies. One of the impairments is related to loss of habitat and the other twelve are threatened due to fecal coliform.

Section 4 - Summary

As discussed in Chapter 3, Tab 17, "Ground Water Availability", two areas in the Basin have been identified for potential ground water protection due to high use. These are the Upper Wind River aquifer in the vicinity of Riverton and the Madison/Big Horn aquifer within the Paintrock Anticline near Hyattville.

Surface water quality impairments are due primarily due to elevated levels of fecal coliform. The source of contamination in all cases is listed as unknown. One aspect of current watershed improvement planning projects is to reduce the concentrations of livestock in stream floodplains and wetland areas. If this current livestock use is contributing to the elevated levels of fecal coliform, the planned watershed improvements should reduce the fecal coliform levels. Current watershed planning also focuses on the reduction of erosion and associated contribution of sediment to the Total Maximum Daily Loads (TMDL) of the streams. In addition, various land management agencies (BLM, US Forest Service, National Park Service), the Wind River Indian Reservation, conservancy districts, and agencies such as NRCS each have programs relative to watershed improvement which will in turn improve surface water quality.

Water Quality Programs

Program	Implementing Agency	Authority	Type	Program Description
NPDES	DEQ/WDQ	EQA Article 3 Chapter 2, 4,7,10,18	SW PS	Any discharge to surface waters of the state requires a permit to discharge. Each permitted discharge must meet effluent limitations within the TDML allocations and maintain the use of the receiving water body. http://deq.state.wy.us/wqd.htm
Permit to Construct	DEQ/WDQ	EQA Article 3 Chapter 3, 5, 11, 12, 15, 20, 21	SW GW PS	Any public water supply system or any facility capable of causing or contributing to pollution is required to obtain a permit to construct prior to commencing construction.
Nonpoint Source Management and Control	DEQ/WDQ	EQA Article 3 Section 319 of CWA	SW GW NPS	The state nonpoint source control program is a voluntary and incentive based program. The program seeks to control through education and encouragement of Best Management Practices, including demonstration, information and education, and restoration projects. Assesments and demonstration projects are selected for funding by Wyoming Nonpoint Source Task Force. The NPS Program manages Wyoming's allocations provided as grants by Section 319 and 205(j) of the Clean Water Act. The Nonpoint Source Management Plan is available at http://deq.state.wy.us/wqd/.htm
Water Quality Assesments & Impaired Surface Water Bodies	DEQ/WDQ	EQA Article 3, S. 305(b) & 303(d) of CWA	SW GW NPS PS	Section 305(b) of the Clean Water Act requires each state to asses and report on the quality of waters on a 2 year frequency. Section 303(d) requires each state every two years to list water bodies which are water quality impaired or threatened. This report and list are available at http://deq.state.wy.us/wqd/wtrshedpg.htm
Surface Water Monitoring	DEQ/WDQ	EQA Article 3	SW PS NPS	The WQD is progressing toward a more comprehensive monitoring and assessment program. In 1996, the Legislature passed a credible data law requiring the WDQ to ensure all scientifically valid data be used. This credible data law has significantly increased monitoring of surface water in Wyoming. Monitoring efforts by WDQ to comply with the credible data law are contained in the 305(b) report.
404 Permit	US Army Corps of Engineers	Clean Water Act	SW PS NPS	A permit is required from the Army Corps of Engineers to discharge dredge or fill material into navigable waters.
401 Certifications	DEQ/WDQ	EQA Article 3	SW PS NPS	Any application for a Army Corp of Engineers 404 degree and fill permit requires a certification from WQD that the dredge or fill will comply with all the requirements of Sections 301,302,303,306 & 307 of the Clean Water Act.
Spill Program	DEQ/WDQ	EQA Article 3 Chapter 4	SW GW PS	Any person owning or having control over oil or a hazardous substance, which after release, enters or threatens to enter waters of the state shall take action to stop and contain the release, notify WDQ, correct the cause, clean up the release and dispose of the waste in an acceptable manner.
Source Water Protection	DEQ/WDQ	EQA Article 3	SW GW	Wyoming has developed a voluntary source water protection program as required by each state under Section 1453 of the SDWA. Source water assessment involves four steps: delineate the area which contributes water to the well or surface water intake: inventory of potential sources of contamination; complete an analysis of the susceptibility of the well or intake to contamination from the previous inventory; and draft up a report summarizing the findings.

Wellhead Protection Program	DEQ/WDQ	EQA Article 3	GW	Wyoming has developed and received approval from EPA endorsing its wellhead protection program developed pursuant to Section 1428 of the SDWA. The program is voluntary and allows public water supply systems to protect groundwater sources of supply.
Abandoned Mines	DEQ/AML	Article 12	PS NPS SW GW	The abandoned mines program accomplishes reclamation of eligible properties adversely affected by mining prior to August 3, 1977. For those AML Projects located within or proximate to surface drainages, surface water quality is generally enhanced
Landfills & Hazardous Wastes	DEQ/SHWD	EQA Article 5	PS SW GW	The SHWD has primacy of the federal RCRA program regulating hazardous waste generators and transporters, hazardous waste treatment, storage and disposal facility operators, and hazardous waste corrective actions.
Superfund Sites	US EPA	CERCLA		EPA regulates superfund sites in Wyoming.
Well Construction & Abandonment	WY State Engineer (SEO)	SEO Regulation	PS GW	The state engineer has regulations requiring adequate design, construction and abandonment of wells to protect groundwater resources.
Underground Storage Tanks	DEQ/WDQ	EQA Article 14	PS SW GW	Wyoming has primacy of the federal RCRA program regulating underground storage tanks(UST)).
Underground Injection Control Wells	DEQ/WDQ	EQA Article 3 Chapters 13 & 16	PS GW	Any person who construct, installs, or operates a Class I,IV, or V underground injection control well must first obtain a permit from the DEQ/WQD. Class I wells are deep injection wells that discharge into Class VI groundwater formation and include hazardous waste wells of which there are none in Wyoming. Commercial Class II wells are regulated as a Class I well. Class IV wells inject hazardous waste into shallow aquifers and are prohibited. Class V wells are wells, other than the other 4 classifications, injecting into or above underground sources of drinking water such as drain fields, air conditioning return wells, dry wells,etc.
	DEQ/LQD	Article 4		Any person injecting into a class III well must obtain a permit or license from DEQ/WQD. A class III well injects into or above drinking water for the purpose of extracting minerals. The most common in situ mining wells in Wyoming are uranium and soda ash.
	OGCC	W.S. 30-5-101 thru 305		Any person injecting into a noncommercial class II well is required to obtain a permit from the Wyoming Oil and Gas Conservation Commission. Class II wells inject fluids which are brought to the surface in connection with natural gas storage and operations or conventional oil and gas production, fluids for enhanced recovery of oil or natural gas and for storage of hydrocarbons.
State Pesticide Management Plan (SMP)	WY Dept. of Agriculture	W.S. 35-7-350 thru 374	NPS SW GW	The Department of Agriculture has developed a SMP directed at the production of water resources from the application of pesticides. The SMP program has received EPA approval.
SMP GW Monitoring	WY Dept. of Agriculture	W.S. 35-7-350 thru 374	GW	Utilizing pesticide registration fees and funding from 319 grants, the USGS has been contracted to conduct a state-wide assessment of the contamination of groundwater caused by pesticides. Of the counties completed at the time of this report, no levels above drinking water maximum contaminant levels have been found. Monitoring results can be accessed at http://wy.water.usgs.gov/projects/pests/index.htm

Mines	DEQ/LQD	EQA Article 4	PS NPS SW GW	License or permits are required for any mining operation or operation by which solid minerals are intended to be extracted from the earth. This includes surface and underground mining. The extraction of sand, gravel, dirt, scoria, limestone, dolomite, shale, ballast, or feldspar by a landowner for noncommercial use does not require a permit nor does an area of less than 10 surface acres under certain conditions.