EXECUTIVE SUMMARY
NORTH UINTA WATER SUPPLY PROJECT
LEVEL II FEASIBILITY STUDY
BEAR RIVER, WYOMING

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Prepared For:
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EXECUTIVE SUMMARY

TriHydro Corporation, under contract to the Wyoming Water Development Commission (WWDC), conducted this Level II Feasibility Study with our sub-consultant, Forsgren Associates, Inc., of Evanston, Wyoming. The WWDC authorized the Level II study to determine the feasibility of developing a groundwater supply of sufficient quantity and quality for public drinking water purposes for the North Uinta County Improvement and Service District (NUCISD), located in the newly incorporated Town of Bear River, Wyoming.

The Town of Bear River is a rural community located approximately 10 miles north of Evanston, Wyoming. The only public water system in the Town of Bear River is the Deer Mountain Ranches Subdivision, which is identified by the U.S Environmental Protection Agency (USEPA) as Public Water System (PWS) #WY5601019. The Deer Mountain system serves a population of approximately 180 people through 56 connections. This public water system serves approximately one-quarter of the population of the Town of Bear River (560 people).

Based on water system records, average daily water use is approximately 83 gallons per capita per day. During early 2002, the water system was supplied by three wells, which yield water from the Eocene age Wasatch Formation. The three existing water supply wells (Deer Mountain #1, Deer Mountain #2, and Deer Mountain #5) for the system had a combined pumping capacity of approximately 80 gallons per minute in early 2002.

The location of the test well was selected based on the hydrogeologic investigation of the area conducted during 1999 and 2000 under the Level I Water Supply Master Plan Study. The results of this investigation are presented in a document entitled "Hydrogeologic Report, North Uinta County Improvement and Service District, Water Supply Master Plan, Uinta County, Wyoming, February 4, 2000," by TriHydro Corporation. This document is included as an appendix in the "North Uinta County Improvement and Service District, Water Supply Master Plan, Level I Study, September 2000," submitted to the WWDC by Forsgren Associates, Inc., Evanston, Wyoming.

Based on results of Level I Master Plan Study, WWDC approved commencement of Level II, Phase I well construction and aquifer testing activities in 2001. The objectives of the Level II, Phase I drilling program were to:

- Determine the depth, thickness, and geologic character of the productive aquifer underlying the selected test well site;
- Determine depth to groundwater and aquifer thickness and to construct a potential public water system supply well at the selected site;
- Conduct aquifer tests to determine the hydraulic character and estimate the production capabilities of the aquifer penetrated at the selected well site; and
- Estimate the quality of groundwater available from the aquifer(s).
These Phase I objectives were accomplished through execution of the following tasks:

1. Construction of one test well, designated the Deer Mountain #6 Well;
2. Well development;
3. Aquifer testing; and
4. Water quality testing.

The Deer Mountain #6 Well was constructed, developed, and tested from February to April 2002. The test well was completed to a depth of 544 feet in the Eocene age Wasatch Formation. The Wasatch Formation is composed of interbedded claystone, siltstone, mudstone, sandstone, conglomeratic sandstone, conglomerate, and with minor volcanic ash beds and non-marine limestone beds. The well is located in the southeast quarter of the southwest quarter of Section 2, Township 16 North, Range 121 West, Unita County, Wyoming (Figure 1).

Results of the aquifer testing and water quality evaluations indicated that it is feasible to use the well as a public water supply. The data collected during aquifer testing of the well suggest that development of the aquifer at withdrawals up to 100 gallons per minute may be achievable without adversely declining groundwater levels. With respect to groundwater quality, results of laboratory analyses indicate that groundwater from the aquifer penetrated by the Deer Mountain #6 Well meets USEPA's criteria for use as a public water supply.

During early 2002, the condition of one of the Town's existing water supply wells, the Deer Mountain #5 Well, deteriorated. Accordingly, connection of the Deer Mountain #6 Well to the water system was determined to be a top priority for the Town of Bear River. During the summer and fall of 2002, the Deer Mountain #6 Well was connected to the existing Deer Mountain Ranches public water system via a new water transmission pipeline constructed with emergency funding provided by the Wyoming State Loan and Investment Board. The new transmission pipeline consists of 6-inch diameter, high-density polyethylene (HDPE) pipe with a length of approximately 1.5 miles. The new water transmission pipeline was installed from the new well to the Town's existing water storage tanks (Figure 1).

Martin Ranch Wells

In addition to the scope of the Level II Study, the Town of Bear River requested and the WWDC approved a short-term, limited aquifer testing of two former public water supply wells on the Martin Ranch. During the early 1980's, these two wells (PCC#1 and PCC#2) were used as public water supply wells for a construction man-camp. The current identity of the two wells is unknown by their "PCC#1" and "PCC#2" well designations. For the purposes of this investigation, the wells were designated as the "South Martin Well" and the "North Martin Well." The two wells are located approximately 2.5 miles northeast of the Deer Mountain #6 Well location. The location of the Martin Ranch wells is shown on Figure 2.

A short-term, constant rate discharge test was conducted at the South Martin Well for six hours on April 18, 2002, at a pumping rate of approximately 100 gallons per minute. The North Martin Well was used as an observation well. One water quality sample was collected and
Figure 1: Project Location and Vicinity Map, North Uinta Water Supply Project, Uinta County, Wyoming
Figure 2: Location Map, Martin Ranch Wells, Uinta County, Wyoming
analyzed for selected constituents/parameters. The analytical results show the water quality is generally within the drinking water standards of the USEPA and State of Wyoming, except for detected levels of iron, manganese, and total dissolved solids. These three constituents are classified as secondary drinking water standards by the USEPA and the groundwater in this area is therefore considered potentially satisfactory for use as a public water supply.

The water produced from the two wells is apparently sourced from the Fowkes Formation aquifer, near the mouth of Fowkes Canyon. The two existing wells on the Martin Ranch are not completed to currently acceptable standards for use as a public water supply. The construction of a new well (or wells) is highly recommended, if the groundwater of this area is to be used as a public water supply.

Level III Recommendations

It is recommended that this project proceed to Level III design and construction. Furthermore, the Town of Bear River has requested Level III WWDC funding to cover additional costs incurred in connecting the new well (Deer Mountain #6) into the Town system and a proposed 400,000-gallon buried concrete storage tank. According to Wyoming Department of Environmental Quality, Water Quality Division – Chapter XII Rules and Regulations, the Town has sufficient groundwater source capacity with the new well for the current population, but needs additional storage capacity. The proposed 400,000-gallon tank upgrade addresses the Town's existing/future needs and provides for potential regional capacity at a key location in keeping with the concept of a regional public water system in this area of northern Uinta County.