INTRODUCTION

To satisfy NRS540.121 through 540.151, on behalf of the McGill-Ruth Consolidated Water and Sewer General Improvement District, the following plan is submitted to the Division of Water Resources.

McGill currently operates two groundwater wells for their potable water system. Ruth operates a spring that gravity feeds into Ruth and has a booster station that pumps water from Ely as a back-up water source. McGill and Ruth are remote locations where response time for repairs and replacement of specialized equipment can take weeks. In McGill, there is no stand-by power on the wellhead although emergency storage is available in the two 750,000-gallon water storage tanks. In Ruth, there is no stand-by power, and there is 750,000 gallons in storage. Groundwater levels in the Steptoe Basin have been steadily declining due to drought conditions.

This conservation plan should identify specific measures that would reduce water consumption and not adversely affect the quality of life. Water conservation is a vital aspect of any water system in an arid climate where water resources are limited and drought cycles last for 7 to 10 years. Water conservation also prolongs the life of water system facilities by reducing stresses on groundwater aquifers, reducing chemical and electrical demands at pumping stations, reducing pump run times, and allowing room for growth by reducing the commitment to storage, pumping and water rights.

Developing water conservation strategies include planning objectives that will assist the Towns of McGill and Ruth when implementing a proposed program. They include:

- Public education;
- Adopting specific conservation measures and enforcing those measures;
- Management of water;
- Drought contingency plan.

I. Public Education

A. Provide public workshops to discuss:

1. Irrigation management and products
2. Watering schedules
3. Drought resistant plants
4. Water saving fixtures
5. Audit program

II. Conservation Measures

A. Water rates
B. Codes and Ordinances

III. System Management

A. Meter testing and replacement
B. Leaks and system repairs
C. Non-potable water implementation

IV. Drought Contingency Plan

A. Restrict irrigation and planting
B. Limit outdoor watering to non-turf areas
C. Increase water restriction times
D. Implement incentives for conserving water

PUBLIC EDUCATION

- Irrigation Management would include listing of irrigation equipment such as drip systems and sprinklers with proper heads to avoid overshoot and reduce evaporation. Information about winterizing irrigation systems would be included. Avoiding watering on windy days will also prevent wasting water.

- McGill and Ruth already have watering schedules that incorporate assigning watering days based on odd-even address numbering during summer months. Watering between 1:00 pm and 5:00 pm is prohibited because much of the water does not reach the root system due to evapotranspiration. Watering in the early morning and early evening reduces the effects of evapotranspiration and potentially watering when it is windy. The program is voluntary.

- Drought Resistant plants include listing of turf alternatives, water-efficient landscaping through proper plant selection and xeriscape.

- Water Saving Fixtures would include a listing of household fixtures that operate with lower water demands than older fixtures such as low-flush toilets, shower heads, garbage disposals, washing machines and dish washers. Any new fixtures installed during remodeling should consider low demand fixtures. Incentives to replace older fixtures could result in rebates to water customers.

- Auditing programs will include water usage review for each service and maintain records of high water users including commercial customers. Water usage audits would also identify sprinkler irrigation run-times and outdoor watering habits. Landscaping could be evaluated as well. Vehicle washing would also be noted. Door hangers would be left at individual residences informing them of their water usage and any violations or potential violations based on their water usage for each month. USEPA teaching materials would be distributed to schools grades K through 12.

CONSERVATION MEASURES FOR 750 CUSTOMERS (1,650 PEOPLE)

- Water Rates in McGill and Ruth are based on metered rates for residential use, and commercial use. Water use above the monthly maximum of 15,000 gallons for residences includes payment of an additional $ 1.25 cents per 1,000 gallons. Water use decreased recently when water meters were used in billing. In 2007 McGill and Ruth installed radio read meters and started billing by use. The current residential water rates are $ 29.00 base rate and an additional $ 1.25 per thousand gallons over 15,000 gallons per month. This rate provides incentive to conserve. Lowering the minimum gallons that are included in the base rate to at most 10,000 gallons per month (and preferably lower) will decrease usage even more. Lowering the minimum at least 5,000 gallons per month per customer is predicted to reduce usage for 1/4 of the users (750 / 4 = 188 users) about 50% or 2,500 gallons a month. 188 customers at 2,500 gallons a month save 0.47 million gallons per month or 5.64 million gallons per year. That's saving about 9.4 gallons per person per day.

  Codes and Ordinances are already established to enhance and support conservation efforts and allow enforcement of penalties to water wasters. Public involvement to promote a volunteer "overhaul" of existing landscapes with more drought-resistant vegetation should be accomplished. High elevation and dry conditions enhance evaporation in Ruth and McGill. The U.S. Soil Conservation Service considers 30 inches (2.5 feet) a year of water used per square foot for a lawn in this area. This considers the inefficiencies of most sprinkler systems, etc. If ¼ of the users (188 users) were to convert 200 square feet from lawn to low water using landscaping, it would save at least 2 feet a year per square foot or 400 cubic feet per year per participating customer or 3,000 gallons per participating customer per year. That's 0.564 million gallons per year, or 0.9 gallons per person per day.

- Replacement of older household fixtures should be accomplished. Incentives relating to water bills and rebates relating to replacement of older fixtures would also be considered. Low income will restrict replacement of fixtures by most customers. Consider 10% of the customers (75 customers) conserving 5 gallons per day by replacing fixtures. That's 375 gallons a day or 1.37 million gallons a year, or 2.2 gallons per person per day.

SYSTEM MANAGEMENT

- Meter Testing and/or Replacement would be required. Each service is currently metered in McGill and Ruth. Testing of existing meters can be accomplished with a meter testing kit that can be attached to an outside hose bib. The flow through the existing meter is then compared to the flow through the calibrated test meter. All meters that are deemed inaccurate or non-functioning should be replaced. A meter replacement program could target ten percent of the active meters each year to reduce initial costs, and insure that meters are tested and/or replaced at least every ten years.

- Leaks and System Repairs help reduce water demands on pumping. A system leak detection program has never been implemented. Leaks are fixed once they are visible. Public safety and safety to work crews is essential in identifying leaks as soon as possible. Public and private service interruption as well as contamination issues are also of importance. If a service line leak is observed, the entire service line from the main to the meter should be replaced as services are prone to repeated leaks. A log of leaks including location, size, type, date and extent of repairs should be maintained to identify potential areas within the system that may be susceptible to major repairs.

DROUGHT CONTINGENCY PLANNING

- Restrictions on Irrigation and Planting would be imposed to reduce outdoor water consumption. Planting of new turf or installing new landscaping would be prohibited. Restrictions would be enforced to maintain system viability.

- Limiting Outdoor Watering to Non-Turf areas would be imposed to maintain potable water system viability by restricting the amount of water utilized for outdoor watering. Limited hand watering and drip systems would be permitted.

- Water Restriction Times would be increased from 1:00 to 5:00 pm to 10:00 am to 7:00 pm. Enforcement of penalties for water wasting would be increased.

- Implementation of Incentives for conserving water would be initiated. Incentives could include reduced water bills associated with the amount of water being conserved. Rebates could be offered for modifying landscaping, installing low-flow toilets and shower heads, installing water-saving dishwashers and washing machines and other measures of conservation the utility may deem appropriate. Fixture units would have to qualify based on an approved list. A rebate application form would have to be developed by the utility administrative personnel.

SUMMARY

Public education and enforcement of ordinances are critical in developing an effective water conservation plan. Posted signs, flyers, notification on billing statements, billing incentives and rebates and workshops with schools and the public will provide advance preparation for drought conditions and facilitate public participation.

Water metering and a conservation inclined rate structure have been found to be the most effective method to conserve water in Ruth and McGill where the income of most residents is below the State average. Metering is conservation mandatory or else the customer pays higher bills. Lower income people can't afford higher bills so they conserve. Conservation measures other than metering are predicted to have less success.