

## Dry Redwater Rural Water Phase I Summary and Proposed Alternatives

- A) Introduction
- B) Potential Intake / Treatment / Supply Location
  - a. Devil's Creek
  - b. Rock Creek
  - c. Missouri River
    - i. Intake / Water Treatment Plant
    - ii. Purchase Water From Tribe
    - iii. Purchase Water From and Participate in Upgrade of Wolf Point Water Treatment Plant
- C) Pipeline models based on the three water treatment plant locations and connection to Fort Peck Reservation system
- D) Current signups and municipality information

	Population	Equivalent Service Connections*
a. Jordan .....	353	210
b. Circle .....	593	390
c. Richey .....	180	110
d. Lambert .....	155	80
e. Rural Users .....	685	460
f. Pasture Taps .....	<u>150</u>	<u>750</u>
<b>TOTAL POPULATION SERVED .....</b>	<b>2116</b>	
<b>TOTAL EQUIVALENT USERS .....</b>		<b>2000</b>

\*Number of water service connections, 1 pasture tap = 5 service connections, based on average daily flow method

- E) Capital Costs – Each Alternative
  - a. Devil's Creek \$64,124,600.00
  - b. Rock Creek / Bear Creek \$61,834,600.00
  - c. Missouri River – WTP \$62,690,500.00
  - d. Missouri River – Buy water \$59,476,600.00

F) Water Use

I. Quantity Demand

H1) Human Population Signed Up	= 1966
H2) Average Daily Water Demand	= 125 gallons
H3) Total Average Daily Demand	= 245,750 gpd
A1) Pasture Taps Signed Up	= 150
A2) Average Daily Water Use / Tap	= 1000 gallons
A3) Total Average Daily Water Use	= 150,000 gallons
T1) Total Average Daily Demand	= 395,750 gpd
Total Average Daily Use	= 400,000 gpd

II. Production Requirements

- a. Water Treatment Plant Capacity 800 gpm
- b. Average Daily Demand 400,000 gallons
- c. Maximum Daily Demand 1,000,000 gallons
- d. Average Annual Usage 146,000,000 gallons

G) Water Treatment Operational Cost / Maintenance / Replacement Costs (OMR)

a. Salaries / Taxes	
3 Full Time / 2 Part Time	\$156,000.00
b. Chemicals	\$ 91,250.00
c. Electrical Costs – WTP/Intake	\$173,000.00
d. Replacement Budget	\$ 50,000.00
e. Miscellaneous Supplies, testing, etc.	<u>\$ 75,000.00</u>
TOTAL OPERATIONAL COST	\$545,250.00

H) Pipeline / Pump Station Operational Cost / Maintenance / Replacement Costs (OMR)

a. Salaries (additional man)	\$ 40,000.00
b. Equipment Use (pickup, backhoe)	\$ 40,000.00
c. Electrical Costs	\$ 55,000.00
d. Miscellaneous	\$ 50,000.00
e. Replacement Budget	<u>\$ 20,000.00</u>
TOTAL OPERATIONAL COST	\$205,000.00

I) Pipeline / Pump Station Operational Cost / Maintenance / Replacement Costs (OMR) (if water purchased from Fort Peck Tribes)

a. Salaries (2 Full Time / 2 Part Time)	\$115,000.00
b. Equipment Use	\$ 40,000.00
c. Electrical Cost	\$149,500.00
d. Miscellaneous	\$ 50,000.00
e. Replacement Budget	<u>\$ 50,000.00</u>
TOTAL OPERATIONAL COST	\$404,500.00

J) Cost of Water From Tribe (preliminary cost provided by Tom Escarsaca – FPT)

a. \$2.00 / 1000 gallons @ 146,000,000 =	\$292,000.00
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K) Financial Models

a. Capital Cost Models	
i. 75% Federal Grant	
ii. 12½% State Grant	
iii. 12½% Loan (40 years at 4½%)	
b. Operation / Maintenance / Replacement Costs	
i. Stand Alone Water Treatment Plant / Intakes OMR	\$750,250.00 (G+H)
ii. Purchase Water / Operate System OMR	\$696,500.00 (I+J)

System	Capital Cost	Loan	Debt Service*	OMR	Average Cost/User/Month
a. Devils Creek	\$64,124,600.00	\$8,105,575.00	\$475,600.00	\$750,250.00	\$51.08 / month
b. Rock Creek	\$61,834,600.00	\$7,729,325.00	\$458,675.00	\$750,250.00	\$50.38 / month
c. Missouri WTP	\$62,690,500.00	\$7,836,312.00	\$465,000.00	\$750,250.00	\$50.64 / month
d. Missouri-Ft. Peck	\$59,476,600.00	\$7,434,575.00	\$441,200.00	\$696,500.00	\$47.40 / month

\*10% Loan Reserve Amount Included

L) Impact of Additional Users – The distribution system as modeled can easily add 15% more users without significant cost change. 15% more is 300 users.

	2000 Equivalent Users	2300 Equivalent Users
Devil's Creek	\$51.08	\$44.42
Rock Creek	\$50.38	\$43.81
Missouri – WTP	\$50.64	\$44.04
Missouri – Ft. Peck	\$47.40	\$41.22

M) Preliminary Estimate Monthly User Costs

A. Residential / Rural Household using 6000 gallons per month would be

- a. Devil's Creek = \$51.08
- b. Rock Creek = \$50.38
- c. Missouri – WTP = \$50.64
- d. Missouri – Ft. Peck = \$49.49

B. A pasture tap using 30,400 gallons per month would be

- a. Devil's Creek = \$255.40
- b. Rock Creek = \$251.90
- c. Missouri – WTP = \$253.20
- d. Missouri – Ft. Peck = \$247.45

N) Potential Coal Facility Considerations and Committee Recommendations

A proposed coal fired power plan is being considered in an area known as Nelson Creek near Circle. The final location of this facility, whether it will be a wet or a dry process and what their final water demands will be are not known at this time. We do know that if the facility is built, a large water demand will be realized initially to serve the construction workforce needed by develop the facility.

The potential power plant location along the Big Dry Dam of Fort Peck Lake increase the feasibility of options *B*, *C*, and *D* because the large initial user base would be located in an area of the Dry Redwater Rural Water System that would:

- a) be constructed first
- b) already have a large diameter pipeline segment required
- c) provide a concentrated customer base to start providing income to the system while the remaining pipeline are being installed to other areas

The committee further evaluated the remaining options and determined that option *C* would be less feasible than options *B* and *D* due to capital costs and the non-centralized location of the water treatment facility in regards to the overall rural water system and the potential for the coal development.

The two options that will be studied further will be the Rock Creek/Bear Creek water treatment plant (option *B*) and the option to purchase water from the Fort Peck Tribal System (option *D*).

O) Phase II Considerations

The next phase will involve:

- A) a further refinement of the capital costs by evaluating updated user signups
- B) a refinement of the user costs in terms of fixed, variable and existing user shared and/or avoided costs
- C) an analysis of the cost benefit ratio on specific pipeline segments and types of delivery pressures used
- D) develop a model of the effects of increased water quality and resulting weight gain on livestock and the cost/benefit ratio as a tool for ranchers
- E) conduct community and rural user informational meetings
- F) keep as current as possible on the status of the coal facility development
- G) explore right of way issues
- H) solicit agency comments for environmental assessment
- I) draft preliminary engineering report