POWELL AIRPORT WATER SUPPLY LEVEL I STUDY

EXECUTIVE SUMMARY
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Submitted To:
WYOMING WATER DEVELOPMENT COMMISSION

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EXECUTIVE SUMMARY
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1.1 Introduction

Scope of Services

GDA Engineers was retained by the Wyoming Water Development Commission (WWDC) to conduct the Powell Airport Water Supply Level I Study. GDA Engineers has teamed with Engineering Associates (EA) due to their familiarity with the public water systems in the Powell Valley including the North End Water Users System. EA has also been directly involved in the day-to-day management of the Northwest Rural Water District (NRWD) since the early 1990’s. Geotechnical services for the review of any potential ground water sources are being provided by Pilch Engineering.

Level I studies are preliminary analyses and comparison of development alternatives. The typical Level I Study shall identify or provide the following:

- Development options;
- Potential project beneficiaries and the benefits each option could provide;
- Factors that could impair or prohibit the development of any identified option including legal constraints;
- An analysis of water rights including identification of conflicting prior rights;
- Option comparisons based on physical and legal water availability, technical, economic, legal and environmental considerations; and
- A review of the sponsor’s methods for financing the operation, maintenance, and replacement of the existing water supply.

Level I studies shall be performed in sufficient detail to identify projects or project options, if any, that should be pursued.

The airport is currently served with a two-inch line that is approximately two and a half (2.5) miles long. The water is pumped from a North End Water Users tank, located at the base of the Polecat Bench, approximately 500 vertical feet to a 1,000 gallon cistern that serves as the storage for the airport. The two-inch line extends an additional three (3) miles to the north of the airport to the Two Dot Ranch water storage tank. The system lacks the necessary pressure to meet the current needs of the facility, including fire suppression; one building and eight hangers have no access to water unless it is hauled. The City of Powell has also considered locating an industrial park in the area as will be indicated on the latest Master Plan for Powell Airport. Generally there is a concern for supplying water to the existing terminal, buildings, hangars, and a future industrial park.

This reconnaissance Level I Study considered options for supplying water to the airport and the potential developments in the area. The City of Powell has commissioned GDA Engineers (under separate contract) to prepare a Master Plan for the airport and the city is considering inclusion of an industrial park at the airport.

Included within the scope of work are the following items:

Task 1 – Scoping and Project Meetings

Task 2 – Review of Existing Information
Executive Summary

Powell Airport Water Supply Level I Study

Task 3 – Land Use Planning and Zoning

Task 4 – Service Area and Demand Projections

Task 5 – Source Water Supply Alternatives

North End Water Users (wells)
Encore Energy (Formerly Howell Petroleum) – Elk Basin
Northwest Rural Water District (NRWD) - O’Donnell Service Area
Northwest Rural Water District (NRWD) - Garland Service Area
Northwest Rural Water District (NRWD) - Shoshone Municipal Pipeline (SMP)
City of Powell Water System
Ground Water
Surface Water

Task 6 – Conceptual Designs, Operation and Maintenance

Task 7 – Permits, Agreements, Environmental Compliance Needs

Task 8 – Preliminary Cost Estimates

Task 9 – Selection of Preferred Alternative(s)

Task 10 – Funding Alternatives

Task 11 – Draft, Final and Executive Summary Reports

Task 12 – Report Presentations

Domestic Water Demand Summary

Industrial usage: 190,500 gpd = 132 gpm = ADD
Hangars & Miscellaneous Structures: 28,658 gpd = 20 gpm = ADD

Average Day Demand: 219,160 gpd = 152 gpm
Maximum Day Demand: 2.72 x ADD = 2.72 x 219,160 = 596,000 gpd = 414 gpm
Peak Hour Demand = 1.5 x MDD = 1.5 x 596,000 = 894,000 gpd = 621 gpm

Note that these demand calculations do not include additional taps that may or may not occur along the route of the proposed waterline for North End Water Users. The existing North End Water Users system serves a population of approximately 500 persons and 204 service taps. If North End Users were to connect to the proposed airport water system it would add 140 gpd per capita to the Average Day Demand or a total of 70,000 gallons per day.

<table>
<thead>
<tr>
<th>TABLE 1 WATER DEMAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Day Demand</td>
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<tr>
<td>219,160 gpd</td>
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<tr>
<td>152 gpm</td>
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</tbody>
</table>
Fire Flow Requirements

The largest proposed hangar at Powell Airport as indicated on the referenced Master Plan is approximately 22,500 square feet. The largest industrial building that could be constructed is approximately 59,000 square feet. The aircraft hangars would have a Building Code Use & Occupancy Classification of either Group S-1 or S-2 for buildings with moderate-hazard storage or low-hazard storage. The industrial buildings would have a Building Code Use & Occupancy Classification of Group F-1 or F-2 for factory and industrial. The Building Code Construction Type for these structures would be Type I or Type II, basically indicating non-combustible construction materials with some exceptions.

The 1994 Uniform Fire Code, Division III, Fire Protection, Table A-III-A-1 indicates that a Type I structure up to 22,700 square feet in size would require a Fire Flow of 1,500 gpm for a two hour duration at a minimum pressure of 20 psi. This table also indicates that a Type I structure up to 59,000 square feet in size would require a Fire Flow of 2,500 gpm for 2 hour duration at a minimum pressure of 20 psi.

Based on these requirements it would be conservative to design the Fire Flow System for 2,500 gpm for two (2) hour duration at a minimum pressure of 20 psi. The average spacing of fire hydrants for this flow requirement is 450 feet. The maximum distance from any point on street frontage to a hydrant is 225 feet. The fire flow requirements would necessitate construction of a water storage tank at the airport.

Storage requirements were calculated according to the Wyoming Department of Environmental Quality's Water Quality Rules and Regulations Chapter XII. This manual requires system storage capacity equal to the average daily demand plus fire storage.

The storage required for the calculated ADD domestic usage for the airport plus the fire flow requirement is 519,160 gallons. It would be our recommendation to design for a 550,000 gallon storage tank, if potable and fire suppression were included in one tank. This tank would also serve as storage for potable water demands at the airport. A typical tank would measure 42 feet in diameter and 55 feet in height (569,682 gallons). A pump recirculation/mixing system located at the storage tank would also be recommended to prevent stagnant water from accumulating in the tank and to prevent freezing of water during the winter months. An additional booster pump would be required from the proposed storage tank to potential airport users to provide sufficient pressure and volumes for treated water and fire suppression purposes. A stand alone fire suppression storage tank would have a volume of 300,000 gallons with an estimated cost of $375,000.

An alternate to constructing a 550,000 gallon storage tank (domestic + fire storage) would be to construct a 250,000 gallon storage tank for only the potable water needs of the future airport build out. This tank could be tied into the NEWU System which already has three (3) storage tanks with an existing combined capacity of 200,000 gallons. This scenario would increase pressure and volume to the existing NEWU's however it is ultimately contingent on NEWU's and the airport being annexed into the NRWD supply system. If industrial development was created at the airport a new 300,000 gallon storage tank could be constructed to meet fire storage requirements. All cost estimates included in this report are based on construction of the 250,000 gallon potable water storage tank (total estimated cost of $350,000).
Existing Water Supply

The North End Water Users (NEWU) System includes an above ground 50,000 gallon water tank known as the Stutzman Tank, located on the east side of State Highway 295 at the base of Polecat Bench. The water source for the NEWU System is from three (3) wells; only one of which is currently being utilized. A two inch waterline and twin pump booster station conveys and lifts water to the top of Polecat Bench and the airport, a distance of approximately 2.56 miles over a vertical distance of 495 feet. The two inch (2”) waterline extends northerly of the airport for a distance of approximately 2.9 miles to the Two Dot Cattle Ranch where the water line fills an above ground 50,000 gallon water tank. The ranch has a contract for water usage with NEWU from November to April of each year and uses 1.5 to 2 million gallons of water yearly. The airport is currently provided with treated water from a tap from the Two Dot Ranch line located on the east side of the airport. This tap includes a meter and wet well cistern. The water pressure at the airport is minimal and pumps need to be replaced at least every two (2) years due to sediment and silt that is carried through the NEWU System. The cistern is checked for chlorine levels every month.

Potential Sources of Water Supply

North End Water Users

The North End Water Users (NEWU) system is located in a basin to the north of Powell. The service area encompasses approximately 28 square miles and is generally agricultural. Residences are typically farm houses located near a road and are spaced up to a mile apart. The North End system supplies only water for domestic purposes to residences. Fire protection is not provided by the North End system. Alternative sources of water such as canals are used for crop irrigation and livestock watering. The system serves a population of approximately 500 people and 204 service taps. The system service area is located totally within the unincorporated area of Park County and shown in Appendix I of the Final Study.

The water source for the NEWU system is three (3) wells. Well No. 1 is 40 feet deep and has a capacity of 250 gallons per minute and was placed in service in 1965 and includes two 50,000 gallon storage tanks (Stutzman Tank and See Tank) and approximately 50 miles of gravity-fed pipeline. Booster pumps were installed to provide adequate pressure for residences located at higher elevations. Residences located at lower elevations required pressure reducing valves (PRV’s) to reduce pressure to acceptable levels. Well No. 2 is 50 feet deep and produces 300 gallons per minute and was added in 1976. Well No. 3 is 65 feet deep and produces 300 gallons per minute and was added in 1982 along with additional piping and the 100,000 gallon Faxon storage tank. Existing storage requirements are regulated by Wyoming Department of Environmental Quality’s Water Quality Rules and Regulations Chapter 12, Section 13. This manual requires system storage capacity equal to the average daily demand plus fire storage for a community the size of North End (between 50,000 to 500,000 gallons per day). Since North End does not provide fire storage to its customers, the storage must be equal to the average daily demand. The average daily demand for the system is 70,000 gallons per day with summer demand equal to 150,000 gallons per day. The existing storage of 200,000 gallons is more than adequate to comply with these regulations. The booster pumps included in the original system were taken out of service due to the high maintenance costs associated with them. The system uses telemetry to monitor the pumps and tanks.

Water wells are located 1.5 miles west of Powell on Road 11. The sites for these wells were chosen because of the high quality water produced by the coarse-grained Quaternary terrace deposits in the area. Water obtained from the North End wells comes from the only potable aquifer in the North End service area. Other
aquifers that are accessed at points of higher elevation around the system produce water that is not drinkable. Wells No. 1 and No. 2 are housed within the same building and are located approximately 1,000 feet south of Well No. 3. Also constructed with the wells were chlorination and pumping facilities to fill the storage tanks. Currently only one well is being utilized to supply water to the NEWU system due to high nitrate counts exceeding 10 ppm in the remaining two wells, and therefore, the one well is running at capacity nearly 16 hours per day during the peak season.

The North End Water Users system has approximately 14 miles of transmission pipeline. This includes pipes running from the wells to each of the three storage tanks. The transmission pipelines consist mainly of 4-inch PVC pipe with some 6-inch PVC pipe. There is a distinct lack of transmission piping running east of the Stutzman tank. Water conveyed to the east through small distribution piping has been the source of low pressure problems at the east end of the system even though the majority of that side of the system has more than adequate static pressure.

Utilizing the NEWU system for future airport water usage is not a viable alternative at this time. If NEWU were to join the Northwest Rural Water District (NRWD) at a later date this option would become viable.

Engineering Associates prepared a privately funded study for the North End Water Users to provide an assessment of, and recommend improvements to, system components including water supply, treatment, transmission, and distribution. This study was presented at a public meeting on December 12, 2009. It would appear that the best approach for NEWU would be to be annexed into the Northwest Rural Water District (NRWD), which would essentially be a takeover or sale of assets, according to Tod Stutzman, President of the NEWU Board. This would require an upgrade to the transmission piping system since most of the existing pipes are four-inch PVC pipe, with some six-inch PVC pipe. Existing two-inch and four-inch PVC pipes within Lane 7 and Road 9 (Highway 295) could be upgraded to eight–inch PVC pipes. These transmission pipes could then be extended north to the airport. All of this is contingent on annexation of the NEWU system into the NRWD.

Additional upgrading of transmission lines within the NEWU system would most likely be required; however this approach would certainly benefit all NEWU’s and cut their dependence on well water. This approach would also be beneficial for the airport and is considered in the NRWD-O’Donnell Alternative discussed in the Study. For the NEWU to qualify for assistance from either the WWDC or from the Wyoming State Land Investment Board, they would be required to form a new district or join an existing district.

Northwest Rural Water District (NRWD)

The Northwest Rural Water District (NRWD) was formed under the laws of the State of Wyoming and is a governmental subdivision of the State of Wyoming and is a body corporate with all the powers of a public or quasi-municipal corporation. It is governed by a Board of Directors elected by the resident landowners of the District. The purpose of the District is to deliver treated domestic water to rural areas having no other source of quality water in areas around Cody, Powell, Lovell, Deaver and Frannie.

The Powell Airport could potentially be provided a sufficient water supply served by NRWD from either of the following two locations:
**O’Donnell Service Area Alternative**

This water system was placed in service in 1994 and connects to the Shoshone Municipal Pipeline (SMP) at the unincorporated community of Ralston. The system delivers water to areas west, south and east of Powell. There is adequate pressure in SMP to deliver water to storage tanks which are located on a ridge high enough above the system to provide sufficient pressure. This system was designed to serve 326 customers and is currently serving 299 customers. The system was also designed to deliver 260 GPM into the North End Water Users System at the intersection of Road 12 and Lane 8.

The O’Donnell System has three (3) 35,000 gallon, ten foot (10’) diameter buried fiberglass water storage tanks located in the hills near Road 12 and Lane 8 northwesterly of the City of Powell.

The total approximate length of piping for this alternative is 10.45 miles (55,163 L.F.) from the source to the proposed storage tank and the difference in elevation from source to the tank is approximately 552 feet, the tank being at the higher elevation. The difference in elevation from the proposed booster station and the tank is approximately 706 feet. The height of the storage tank at the airport would be 55 feet (for fire suppression purposes). The total dynamic design head for the proposed booster pump is 831.6 feet.

Additional piping, fire hydrants and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves and fire hydrants would be required for any future industrial development and/or airport hangars.

This alternative is identified as B-1 in Appendix D. This alternative could serve approximately 60 customers within the North End Water Users service area along the route to the airport.

**Garland Service Area Alternative**

The Garland System has two existing 35,000 gallon, twelve foot (12’) buried fiberglass water storage tanks located 0.5 miles east of State Highway 114 and 0.4 mile north of Lane 5.

The total approximate length of piping for this alternative is 7.94 miles (41,903 L.F.) and the difference in elevation from source to the proposed storage tank is approximately 583 feet, the airport being at the higher elevation. The difference in elevation from the proposed pump station to the airport is approximately 589 feet. The height of the storage tank at the airport would be 55 feet.

Additional piping, fire hydrants and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves and fire hydrants would be required for any future industrial development and/or airport hangars.

This alternative is identified as B-2 in Appendix D. This alternative could serve approximately 22 customers within the North End Water Users service area along the route to the Airport.
Shoshone Municipal Pipeline (SMP)

Shoshone Municipal Pipeline (SMP) has 70.2 miles of treated water pipeline and delivered 1 billion gallons of water to the seven participating agencies during 2007 – Cody, Powell, Byron, Lovell, Frannie, Deaver, and the Northwest Rural Water District’s nine service areas. The pipeline delivers treated water from the water treatment plant at the foot of Cedar Mountain, just west of Cody. Participating water districts include Heart Mountain, O’Donnell, South Fork, Deaver/Frannie, Lovell Rural, Sage Creek, North Cody and Cooper Lane. It is anticipated that SMP will be highly considered to provide a water supply to the Powell Airport.

Shoshone Municipal Pipeline has 9,725 acre feet of storage in Buffalo Bill Reservoir and the stored water is supplied to the water treatment plant via 3.7 miles of 36 inch steel pipeline from the Bureau of Reclamation’s spirit Mountain Energy Dissipation Structure above their power plant in the Shoshone Canyon.

The minimum required flow rate to obtain a tap on the main pipeline is two hundred (200) gpm. All Service connections require a Service Connection Building containing SCADA telemetry, flow meter, flow control valves, and backflow prevention as specified by SMP. A minimum of twenty-four (24) hours storage at design flow must be constructed for the area that the new Service Connection will serve. This would equate to a storage volume of approximately 225,000 gallons (or three 75,000 gallon tanks) for the proposed airport demand. It is anticipated that the proposed airport water system would be owned and operated by NRWD.

SMP North Alternative

This potential water source would originate from a tap of the eight inch (8”) Shoshone Municipal Pipeline (Segment B) near State Highway 114 and Lane 1, northeast of Powell. This reach of the SMP, located 2 miles north of SMP Pressure Control Station #6 (1.95 miles south of Lane 1 along Highway 114) and Deaver/Frannie is currently designed for 30 household taps per the current SMP Agreement and no water storage is available on the system for this area. Currently, only 19 household taps have been provided from the SMP for Deaver and Frannie. This portion of the SMP has a water pressure of only 51 p.s.i. Agreements would have to be modified if this source of water to the airport is considered. A service connection building, which would include a booster pump (Pump Station #1), would be required at the point of connection.

The total approximate length of piping for this alternative is 5.18 miles (27,350 L.F.) and the difference in elevation from the connection point to the proposed storage tank is approximately 824 feet, the tank being at the higher elevation. The height of the storage tank at the airport would be 55 feet. Water pressure calculations for this alternative are included in the study.

Additional piping, fire hydrants, and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves, and fire hydrants would be required for any future industrial development and/or airport hangars.

This alternative is identified as C-1 in Appendix D. This alternative could serve six (6) customers along Lane 1.
**SMP South Alternative**

This potential water source would originate from a tap of the ten inch (10”) Shoshone Municipal Pipeline (Segment B), 0.77 miles south of Pressure Control Station #6 on the west side of State Highway 114, northeast of Powell. This portion of the SMP has a water pressure of 121 p.s.i. Agreements would have to be modified with SMP if this source of water to the airport is considered.

The total approximate length of piping for this alternative is 6.83 miles (36,070 L.F.) and the difference in elevation from the connection point to the proposed storage tank is approximately 651 feet, the tank being at the higher elevation. The height of the storage tank at the airport would be 55 feet. The total dynamic design head for the booster pump is 679.6 feet. Water pressure calculations for this alternative are included in Appendix P of the Final Study.

Additional piping, fire hydrants and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves and fire hydrants would be required for any future industrial development and/or airport hangars.

This alternative is identified as C-2 in Appendix D. This alternative could serve approximately twelve (12) customers within the North End Water Users Service area.

**City of Powell**

The City of Powell’s water system is a sound, adequately sized system, drawing water from the Shoshone Municipal Pipeline (SMP). The City has two elevated storage tanks, one on the east side with 500,000 gallon capacity, and one on the west side with 500,000 gallon capacity. The city obtains 750,000 gallons of water per day from the SMP which equates to 273.75 million gallons of water per year. If the City of Powell were to allow North End Water Users (NEWU) to hook up they would require that a master meter with back-flow prevention would be installed in a building at the connection site to the North End Users System. The city would also require approval from SMP for the City of Powell to provide service. The city would allow taps into any future waterline to the airport from North End Water Users upon city council approval and an agreement contract. The tap fee for each customer would be $1,080 and the basic monthly fee would be $31. This potential water source would originate from the City of Powell waterline system on the north side of the City from one of two possible locations.

**City of Powell East Alternative**

The first location for a potential source of water would be to tie into the existing 12 inch water line located 500 feet south of the intersection of Road 8 and Lane 8.

The total length of the pipeline for this alternative would be 8.49 miles (44,809 L.F.) and the difference in elevation between the connection point and the proposed storage tank is approximately 719 feet, the tank being at the higher elevation. The difference in elevation from the proposed pump station and the airport is 730 feet. The height of the storage tank at the airport would be 55 feet. The total dynamic design head for the booster pump is 930.4 feet.
Additional piping, fire hydrants, and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves, and fire hydrants would be required for any future industrial development and/or airport hangars.

This alternative is identified as D-1 in Appendix D. This alternative could serve approximately 41 customers within the North End Water Users service area along the route to the airport. The City of Powell would charge each customer tap fees and monthly user fees.

City of Powell West Alternative

A second location for a potential source of water would be to tie into the existing 12 inch waterline at the intersection of Road 10 and 7th Street.

The total approximate length of pipeline for this alternative from the connection point to the proposed storage tank would be 8.90 miles (46,972 L.F.) and the difference 9 feet, the tank being at the higher elevation. The height of the storage tank at the airport would be 55 feet. The difference in elevation from the proposed pump to the airport is 701 feet. The total dynamic design head for the booster pump is 837.3 feet.

Additional piping, fire hydrants, and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves, and fire hydrants would be required for any future industrial development and/or airport hangars.

This alternative is identified as D-2 in Appendix D. This alternative could serve approximately 44 customers within the North End Water Users service area along the route to the Airport. The City of Powell would charge each customer tap fees and monthly user fees.

Encore Energy Elk Basin Operations (Formerly Howell Petroleum)

Encore Energy Partners LP operates a natural gas processing plant at the Elk Basin Oil Field, Big Horn Basin in northern Wyoming 8.7 miles north of the Powell Airport along Highway 295. The water supply system for the Encore operations is privately owned and currently supplies potable and raw water for oil field employee's needs, seal water for several pump stations, and cooling water for the gas production plant. The raw water source for the plant is an infiltration gallery and pumping station located adjacent to the Clark’s Fork of the Yellowstone River. The total appropriation of water from the Clark’s Fork is two cubic feet per second which is equivalent to 900 gallons per minute. The raw water from the tank is routed to a treatment system consisting of a small booster pump followed by a series of two cartridge filters meeting the requirements of SWTR 2 – Alternative Filtration Technology using Bag/Cartridge (B/C) Filters. The treated water is then stored in a 63,000 gallon storage tank near the raw water storage tank. There are approximately 75 users of the potable water which includes primarily employees and contractors of Encore Energy at their Operations Facilities.

The supply pressure at the service point of the two inch line is 30 p.s.i. at a flow rate of 30 gpm. To maintain 30 p.s.i. at this flow rate a booster pump and pressure tank was required.
The total distance from the existing Encore Energy 16,000 gallon storage tank to the proposed storage tank at Powell Airport is 9.73 miles (51,374 feet) and the difference in elevation is 129 feet, the tank being at the higher elevation. A booster pump and storage tank would be required at the location of the existing Encore Energy storage tank.

Additional piping, fire hydrants, and a booster pump would be required to extend the treated waterlines from the proposed storage tank, located near the airport’s easterly boundary to the airport (approximately 750 feet) and additional piping, valves, and fire hydrants would be required for any future industrial development and/or airport hangars.

According to Wyoming Department of Environmental Quality (DEQ), Encore Energy is required to comply with the EPA’s Long Term 2 Enhanced Surface Water Treatment Rule in order to achieve 5.5 log removal of cryptosporidium. The primary focus of the evaluation is the addition of ultraviolet light treatment (UV) systems.

This alternative is identified as E in Appendix D. Joint Agreements between Encore Energy and The City of Powell would be required for use of this privately owned water system.

Mr. Patrick M. Navratil, Environmental Compliance Supervisor with Encore Energy Partners Operating, LLC has indicated to William Harris, GDA Engineers via telephone conversation that Encore Energy would not be interested in sharing their private water source for a public water system for the airport, as they have just enough treated and or raw water for their own needs.

<table>
<thead>
<tr>
<th>TABLE 2 SUMMARY OF PIPED WATER SOURCES</th>
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<tbody>
<tr>
<td>Alternative</td>
</tr>
<tr>
<td>NRWD - O’Donnell Alt. B-1</td>
</tr>
<tr>
<td>NRWD – Garland Alt B-2</td>
</tr>
<tr>
<td>Shoshone Municipal Pipeline Alt. C-1</td>
</tr>
<tr>
<td>Shoshone Municipal Pipeline Alt. C-2</td>
</tr>
<tr>
<td>City of Powell East Alt. D-1</td>
</tr>
<tr>
<td>City of Powell West Alt. D-2</td>
</tr>
<tr>
<td>Elk Basin (Encore Energy) Alt. E</td>
</tr>
<tr>
<td>NRWD\NEWU Alt. F</td>
</tr>
</tbody>
</table>

* Users indicated are potential North End Water Users or others (total number indicated in parenthesis) that could benefit by connection to an improved treated water source, plus 64 future industrial and private hangar users at the airport. Alternate F assumes that NEWU system and the airport users would be annexed into the NRWD.

The location of each of the potential alternative piped sources of water described above is shown in Appendix D.
Preliminary Cost Estimates

Engineering News Record (ENR) has been publishing a Construction Cost Index (ENRCCI) on a monthly basis for over 50 years. The December 2009 value of this index was 8641. The index increased 90 points from December 2008 to December 2009. The index rate only increased 92 points from January 2009 to December 2009 (less than 1.1%); however this was during a deep world wide recession. Construction costs that are included in this Study have been adjusted for 2010 dollars.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Total Length – Source to Airport (Linear Feet)</th>
<th>Elevation Delta – Source to Airport</th>
<th>Total Pump Dynamic Head (Feet)</th>
<th>Total Project Cost</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt. B1: NRWD-O’Donnell</td>
<td>55,545</td>
<td>492</td>
<td>881.6</td>
<td>$5,837,618</td>
<td>Requires 2.07 miles of easements</td>
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<tr>
<td>Alt. B-2: NRWD-Garland</td>
<td>42,653</td>
<td>583</td>
<td>806.5</td>
<td>$4,749,274</td>
<td>Requires 2.07 miles of easements</td>
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<tr>
<td>Alt. C-1: Shoshone Municipal Pipeline</td>
<td>10,930</td>
<td>818</td>
<td>198.7 Pump #1 762.7 Pump #2</td>
<td>$4,543,974</td>
<td>Requires 3.97 miles of easements across BLM, B-REC &amp; private land</td>
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<td>Alt. C-2: Shoshone Municipal Pipeline</td>
<td>36,820</td>
<td>645</td>
<td>726.8</td>
<td>$4,961,417</td>
<td>Requires 4.5 miles of easements across B-REC &amp; private land</td>
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<td>Alt. D-1: City of Powell-Easterly</td>
<td>45,559</td>
<td>713</td>
<td>930.4</td>
<td>$4,995,006</td>
<td>Requires 2.07 miles of easements</td>
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<tr>
<td>Alt. D-2: City of Powell-Westerly</td>
<td>47,722</td>
<td>653</td>
<td>884.4</td>
<td>$5,176,670</td>
<td>Requires 2.07 miles of easements</td>
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<tr>
<td>Alt. F: NRWD/City of Powell</td>
<td>10,930</td>
<td>502</td>
<td>545</td>
<td>$1,754,637</td>
<td>Requires 2.07 miles of easements</td>
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</tbody>
</table>

Detailed Preliminary Cost Estimates for each of the above alternates are included in Appendix K of the Final Study. Detailed Preliminary Cost Estimates for Alternate F is included as Appendix A in this Executive Summary.

Cost estimates do not include extending waterlines from the proposed potable water storage tank to future or existing airport hangars, buildings or industrial developments or costs associated with fire hydrants, booster pump, valves, fire suppression storage tanks or appurtenances for future airport development. All costs include construction of a 250,000 gallon potable water storage tank at the airport. The cost to construct a separate fire suppression tank for the airport would be approximately $375,000.

Selection of Preferred Alternative

Based on the consensus of the Sponsor, WWDC and Consultants at the working session meeting held at the City of Powell on October 27, 2009 the preferred alternative for water supply to the airport was the NRWD – O’Donnell Alternative B-2. The primary reasons for selecting this alternative were the relatively lower cost per tap and the higher number of potential users in the NEWU system. This alternative is the most costly; however the tap cost per
month is relatively low due to the total number of potential customers (46 from NEWU and 64 from the airport). This alternative would be very attractive if the NEWU system were to be annexed into the NRWD. Transmission lines within NEWU system could be upgraded within Lane 7 and Road 9 to satisfy the NEWU system and the airports requirements. The total number of NEWU customers along the route of this alternative is 46 and the total projected cost per tap per month for each user is $29.06, based on the Funding Scenario C. Funding Scenario C assumes a 2% loan amount from USDA/RD, a 67% grant amount from either WWDC or EDA, and a 31% grant amount from USDA/RD. The total Project Cost for each of the piped alternatives ranges from $1.75 million to $5.84 million. The Total Monthly Tap Fee for each of the piped alternatives ranges from $12.53 to $31.97, based on Funding Scenario C.

On December 12, 2009, NEWU hosted a public meeting that all users on the NEWU system were invited to attend (75 North End Customers attended this meeting). Engineering Associates gave a presentation from their recent study of alternatives for replacing or improving the NEWU water supply. Representatives from NRWD and SMP were also there to provide comments and answer questions. The consensus of attendees was to encourage the NEWU Board of Directors to proceed with negotiations directed at joining the NEWU system to NRWD and begin receiving potable water from that entity. The monthly base rate for new North End Users (204 existing taps), if they elected to merge with NRWD, would be $39.90. NRWD would take over complete control of the system and any of North End’s existing debts. NRWD would be willing to repair/replace North End’s aging water lines. The complete system takeover could be completed within six months to a year, according to Dossie Overfield, District Manager for NRWD. North End customers must sign a petition for inclusion into the NRWD and then the Park County Commissioners must agree to the takeover.

On January 19, 2010 a public meeting was held to present the findings of the Level I Study. Although no one from the public attended this meeting it was the consensus of the consultants, sponsor representatives, and WWDC that the preferred alternative for water supply to the airport would be in conjunction with the annexation of NEWU customers, the airport property, and the Two Dot Ranch service into the NRWD system. The NRWD service area does not need to be contiguous property. The construction of a potable water supply storage tank at the airport and the inter-tie of the NEWU’s/NRWD system would benefit all parties and would allow for expansion of service within the existing NEWU’s area.

It would appear that coordinating efforts with NRWD in upgrading the North End Users piping system with providing a source of potable water supply for the airport would be the “preferred alternative”. The City of Powell and NRWD would have to enter an agreement for providing water supply to the airport with the intent on the system being owned and operated by NRWD. An upgraded piping system would have to be extended northwest 2.07 miles from the north end of the NEWU’s system to the airport and the airport would be required to be annexed into the NRWD service area. Since the Two Dot Ranch (located north of the airport) also receives their water from a single service from the NEWU system they should also be included in the annexation into the NRWD service area for the single service to their storage tank.

Funding Alternatives

We have researched the available data base for funding alternatives for the design and construction of the treated water supply facilities for the Powell Municipal Airport and have concluded that the project would qualify for funding with any of the following agencies:
• ARRA: American Recovery and Reinvestment Act
The USDA Rural Development is implementing the American Recovery and Reinvestment Act of 2009 (ARRA). The ARRA provides approximately $3.7 billion in loans and grants for rural water and wastewater infrastructure through the existing USDA Rural Development Water and Waste Disposal (WWD) loan and grant program. The WWD provides loans, grants, loan guarantees and technical assistance for public small water systems serving 3,300 service connections or less or providing service to a population of 10,000 or less. Funds are available under this authority through September 30, 2010. ARRA loans are available at 0% interest rate and with principal forgiveness. The maximum loan amount is $10 million.

• JPA: Joint Powers Act
The State Loan & Investment Board (SLIB) can only award Joint Powers Act loans for facilities that generate revenue and the revenue must be sufficient to service the debt and represent prudent use of state funds. Loan terms of up to 40 years are available, depending on the life of the project. The interest rate for JPA loans is 5.06% through December 31, 2009. In January of each year the State Treasurer's Office will calculate the five year average that will provide the next annual interest rate for the JPL loans. Maximum loan amount is $5,000,000.

• Wyoming Department of Transportation – Aeronautics Commission
The Wyoming Aeronautics Commission (WAC) provides state funding for construction, development and improvement of Wyoming airport facilities that generate user fees with the following exception; loans shall not be extended for fuel system and/or fuel tank removal. The funding for loans is provided by the Wyoming Permanent Mineral Trust Fund and cannot exceed an aggregate of $10 million. Wyoming counties, cities and town and joint powers boards specifically involved in providing governing authority over airports shall be eligible to apply for loans. The interest rate for loans is currently five percent (5%) per annum and the term of repayment for loans shall not exceed twenty (20) years.

• WBC: Wyoming Business Council
The Wyoming Business Council (WBC) administers the Council's Community Development Block Grant (CDBG) program, which are designed to provide better resources to Wyoming counties and incorporated cities and towns. The CDBG program is a federally funded pass-through grant program from the US Department of Housing and Urban Development (HUD), and provides communities with grant awards for Public Infrastructure Grants, Public Facility Grants from $300,000 to $500,000. The goal for CDBG Grants is to provide for the creation and retention of permanent primary jobs that are above the current average wage, and aid in the diversification of the Wyoming economy. In order for CDBG funds to be used for any economic development projects wishing to be funded under the national objective of benefit to low and moderate income persons, it must be documented that no fewer than 51 percent of the jobs to created will be given to individuals form low to moderate income households.

• U.S. Department of Commerce Economic Development Administration
The Economic Development Administration (EDA) administers seven (7) economic development programs and awards funds allocated for these programs on a competitive basis. EDA evaluates each application package on the basis of its conformance with the investment policy guidelines, funding priority considerations, and eligibility requirements identified in the applicable Federal Funding Opportunity (FFO) announcement. One of the development programs is for Public Works and Economic Development Program which helps support the construction of essential public infrastructure and facilities necessary to generate or retain private sector jobs and investments, attract private sector capital, and promote regional competitiveness, including investments
that expand and upgrade infrastructure to attract new industry, support technology-led development, redevelop brownfield sites, and provide eco-industrial development.

- **USDA/RD: USDA Rural Development**
  USDA Rural Development makes direct loans and grants to build or improve essential public use facilities such as water and sewer facilities, storm sewers and solid waste facilities. Loans can be used for construction and non-construction costs including land, equipment, engineer services, legal services, capitalized interest, and initial operating funds. Public municipalities are eligible for funding, however projects may only benefit rural areas or incorporated communities of up to 10,000 population. The current population of the city of Powell is 5,373. Funding may be obtained through Rural Development only when the applicant is unable to secure funding from other sources at reasonable rates and terms. There is no maximum dollar amount and the amount loaned is usually determined by the amount needed to meet applicant’s needs and its ability to handle the repayment schedule. Interest rates vary depending upon the median household income of the service area. Lowest rate available is 4.5% with a maximum term of 40 years, State Statute, or the useful life, whichever is less. Areas with median household incomes above $37,769 are not grant eligible. The 2007 median household income in City of Powell was $36,983. Rural Development’s maximum grant consideration is 75% of eligible project costs where the median household income of service area is below $30,215 or 45% of eligible project costs where the median household income is between $30,215 and $37,769. The applicant must submit an Environmental Report, in accordance with the format prescribed by Rural Development. Funding is on a first come, first serve basis with priority to low income communities; to communities with populations of less than 5,500, and for projects necessary to meet established health or sanitary standards.

- **DWSRF: Drinking Water State Revolving Fund**
  Eligible applicants to the DWSRF Program are state agencies, counties, municipalities, joint powers boards, and other entities constituting a political subdivision under the laws of the state. Eligible projects include most drinking water source, treatment, transmission, storage, and distribution projects for a public water system or that create a new public water system. The loan term can be up to 20 years and the interest rate is 2.5%. A 0.5% origination fee is collected at loan closing. Loan repayment must begin within one year after the substantial completion date of the project. The loan application needs to begin the SRF loan application process at least six to twelve months prior to bidding out the project.

By enacting W.S. 16-1-302, the Wyoming State Legislature authorized the use of water development account funds to provide 50% of the state’s matching fund requirements for the Federal Drinking Water State Revolving Loan Fund (DWSRF) program. The DWSRF program may be used to fund improvements to water treatment systems and to finance measures that address other Safe Drinking Water Act compliance issues. This program is not included in the annual Omnibus Water Bill considered by the Legislature. Water Development Program funds are appropriated automatically by statute to match 10% of the federal capitalization grant.

- **WWDC: Wyoming Water Development Commission**
  The Wyoming Water Development Program was established in 1975 to promote the optimal development of the state’s human, industrial, mineral, agricultural, water and recreational resources. The program provides, through a commission, procedures and policies for the planning, selection, financing, construction, acquisition, and operation of projects. This can include projects for the conservation, storing, distribution and use of water, necessary in the public interest to develop and preserve Wyoming’s water and related land resources. The Wyoming Water Development Program receives funding from severance tax distributions. Water Development Account I is utilized for new development projects. Applications for funding for projects new to the WWD
program must serve twenty (20) or more municipal/domestic water taps with individual meters for each tap or 2,000 or more water righted acres. The maximum grant shall be seventy-five percent (75%) for proposed Level III projects. In order to obtain the maximum grant, the sponsors must demonstrate to the WWDC that the maximum grant is warranted due to severe financial hardship. The typical grant shall be sixty-seven percent (67%) for proposed Level III projects. In order to obtain the typical grant, the sponsors must demonstrate to the WWDC that they have taken steps or are willing to take steps to make their water supply systems financially self-supporting. The statutes allow the WWDC to recommend that the payment of interest and principal be deferred up to five (5) years after substantial completion of the project. Statutory guidelines establish a minimum rate of four percent (4%) for program loans. The WWDC is currently using a rate of 4% in its financing plans.

- OSLI: Office of State Lands and Investments (formerly the Farm Loan Board)
The Grants and Loan Section of the OSLI is responsible for the administration and coordination of numerous statutory programs under the auspices of the State Land and Investment Board which provides capital construction and infrastructure development assistance in the form of loans and grants to cities, counties, school districts, and other political subdivisions of the state. The objectives of this agency are to work with grant and loan applicants to give them the greatest benefit for the funds available with the least amount of “red tape” and to provide for the health, safety, and welfare of Wyoming citizens by providing necessary public infrastructure throughout the state. The Government Grants and Loan programs can be used for public water and sewer projects; the following grants and loans are administered by the OSLI:
  - Mineral Royalty Grants (MRG)
  - Joint Powers Act Loan Program (JPA)
  - Drinking Water State Revolving fund (DWSRF)
  - Wyoming Water Development (WWD)
  - Business Ready Communities and Loan Program (BRC)
  - USDA Rural Development Water Environmental Programs (RD WEP)
  - Wyoming Housing Infrastructure Program (WHIP)

The most favorable loan/grant scenario appears to be Scenario C, attached to this Executive Summary as Appendix C. Scenario C assumes a 67% grant of funds from either WWDC or EDA, a 31% grant of funds from USDA/RD, and a loan of 2% from USDA/RD. The loan amount would be based on 4.5% interest rate over 40 years. If NEWU were to join NRWD, as described in Section 3.9 Task 9 of the Final Report, the cost for upgrading the existing NEWU piping system would be borne by NRWD. Costs for extending main water lines from the north end of the NEWU’s system to the airport along with the construction of a pumping station and a domestic storage tank may have to be provided by the City of Powell for an estimated cost of $1.75 million. Additional costs would be incurred for extending the water piping system from the storage tank to the proposed development at the airport and also for the construction of a fire suppression storage tank.

Assuming that there would be 64 potential airport users, based on development of the airport property for commercial and industrial usage, the costs for debt service, operation & maintenance and replacement would be $12.53 per month as per the attached Alternate F (Appendix B). This scenario also assumes that the storage facility constructed at the airport would only be for domestic water usage in lieu of fire suppression. The existing NRWD charge per customer is $39.90 per month. Assuming that NRWD proceeds with the annexation of the NEWU’s system, the Airport Property and Two Dot Ranch service it would be reasonable to assume that NRWD would be the Sponsor for Applications of grant
funding from WWDC and/or USDA/RD for the upgrading of the NEWU piping system and also for the extension of water service to the airport. The City of Powell would apply for funding for the extension of transmission lines to the airport, storage tanks and pumping station in a pre-application request, prior to the WWDC funding request. It may be possible to go directly to a Level III WWDC Study, skipping the normal Level II Study, contingent on approval from WWDC.
## APPENDIX A PRELIMINARY CONSTRUCTION/ENGINEERING COST ESTIMATE ALTERNATE F

**POWELL AIRPORT WATER SUPPLY LEVEL I STUDY**

**PRELIMINARY CONSTRUCTION/ENGINEERING COST ESTIMATE**

Powell Municipal Airport, Wyoming

Preliminary Construction Cost Estimate

<table>
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<tr>
<th>Item Number</th>
<th>Bid Item Description</th>
<th>Total Quantity</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>WWDC Eligible Cost</th>
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### 2010 Construction Cost Sub-Total (CCS #1)

- Preparation of Final Designs & Specifications (10% of CCS1)
  - $122,702
- Permitting & Mitigation (1.5% of CCS1)
  - $18,405
- Legal Fees (2% of CCS1)
  - $24,540
- Acquisition of Access & Rights Of Way (1.5% of CCS1)
  - $18,405
- Sub-Total Engineering Costs
  - $184,053
- Contingency (10%)
  - $18,405
- Total Pre-Construction Costs (PCC)
  - $202,458

### Construction Cost Subtotal #1 (CCS#1)

- $1,227,019

### Construction Administration & Inspection Costs (CCS#1 x 10%)

- $122,702

### Construction Cost Subtotal #2 (CCS#2)

- $1,349,721

### Contingency (CCS#2 x 15%)

- $202,458

### 2010 Total Construction Cost (TCC)

- $1,552,179

### 2010 Total Project Cost (Pre-Construction + Total Construction Cost)

- $1,754,637
PAGE LEFT BLANK INTENTIONALLY
## APPENDIX B SCENARIO C COST ESTIMATE FOR ALTERNATIVE F

### POWELL AIRPORT WATER SUPPLY LEVEL I STUDY

NRWD/CITY OF POWELL ALTERNATIVE F

DEBT SERVICE, OPERATION & MAINTENANCE AND REPLACEMENT COSTS (SCENARIO C)

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<th>TOTAL COST (2010 DOLLARS)</th>
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<tr>
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<td>FINAL DESIGN &amp; SPECIFICATIONS (10%)</td>
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<td>PERMITTING AND MITIGATION (1.5%)</td>
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<td>LEGAL FEES (2%)</td>
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<td>ACQUISITION OF EASEMENTS &amp; R/W (1.5%)</td>
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<td>SUB-TOTAL ENGINEERING COSTS</td>
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<td>CONTRACT ADMINISTRATION &amp; INSPECTION (10%)</td>
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2010 TOTAL PROJECT COST (PCC + TCC) $1,754,637

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<tr>
<th>FUNDING AGENCY</th>
<th>PERCENTAGE OF TOTAL FUNDING</th>
<th>PERCENTAGE OF ELIGIBLE FUNDS</th>
<th>LOAN/GRANT AMOUNT</th>
<th>CAPITAL RECOVERY FACTOR</th>
<th>DEBT SERVICE PER YEAR</th>
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<td>DWSRF LOAN - 2.5% AT 20 YEARS</td>
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<td>67%</td>
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<td><strong>TOTALS</strong></td>
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<td>100%</td>
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<td>$1,907</td>
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<table>
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<tr>
<th>TOTAL TAPS</th>
<th>ANNUAL DEBT SERVICE PER TAP</th>
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<tr>
<td>64</td>
<td>$29.80</td>
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### TOTAL NUMBER OF TAPS (64) ARE ONLY FOR FUTURE AIRPORT USERS

**NOTES:**

This alternative assumes that NRWD and the City of Powell enters into an agreement for water service to the airport and that the NEUW's system is annexed into NRWD.

### SYSTEM LENGTH IN MILES: 2.07
### POWELL AIRPORT WATER SUPPLY LEVEL I STUDY COST SUMMARY – LOAN SCENARIO C

<table>
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<tr>
<th>ALTERNATIVE</th>
<th>TOTAL COST (Note 1)</th>
<th>LOAN AMOUNT SCENARIO C 2% (Note 2)</th>
<th>GRANT AMOUNT SCENARIO C 98% (Note 3)</th>
<th>TOTAL NUMBER OF TAPS</th>
<th>DEBT SERVICE PER MONTH PER TAP</th>
<th>O &amp; M COST PER MONTH PER TAP</th>
<th>REPLACEMENT COST PER MONTH PER TAP (Note 5)</th>
<th>TOTAL COST PER MONTH PER TAP (Note 6)</th>
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<td>NRWD – O’DONNELL B-1</td>
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<td>$1,719,545</td>
<td>*64</td>
<td>$2.48</td>
<td>$4.72</td>
<td>$5.33</td>
<td>$12.53</td>
</tr>
</tbody>
</table>

**NOTES:**

1. TOTAL COST INCLUDES CONSTRUCTION COSTS, DESIGN AND SPECIFICATIONS, CONTRACT ADMINISTRATION AND INSPECTION, PLUS CONTINGENCIES.
2. LOAN AMOUNT IS BASED ON USDA/RD 4.5% INTEREST LOAN RATE FOR 40 YEAR PERIOD (LOAN AMOUNT OF 2% OF TOTAL PROJECT COST)
3. GRANT AMOUNT BASED ON 67% FUNDING BY EITHER WWDC OR ECONOMIC DEVELOPMENT ADMINISTRATION (EDA) AND 31% FUNDING BY USDA/RD (GRANT AMOUNT OF 98% OF TOTAL PROJECT COST)
4. OPERATION AND MAINTENANCE (O & M) COSTS BASED ON $1,750 PER MILE OF PIPELINE (PER NRWD)
5. REPLACEMENT COST BASED ON 10% OF CONSTRUCTION COST OVER 30 YEAR LIFE
6. TOTAL COST PER MONTH PER TAP BASED ON SUM OF DEBT SERVICE, OPERATION & MAINTENANCE, AND REPLACEMENT COSTS
7. ALTERNATE F IS CONTINGENT ON AN AGREEMENT BETWEEN NRWD AND THE CITY OF POWELL FOR EXTENSION OF WATER MAINS FROM THE BASE OF POLE CAT BENCH TO THE AIRPORT. THE AIRPORT WOULD ALSO HAVE TO BE ANNEXED INTO THE NRWD.
8. THE 64 USERS INDICATED IN ALTERNATE F ARE FUTURE POWELL AIRPORT USERS.
9. IF NEWU CUSTOMERS WERE ANNEXED INTO THE NRWD, AND THE EXISTING WATER DISTRIBUTION SYSTEM WERE UPGRADED IT IS CONCEIVABLE THAT THE TOTAL NUMBER OF CUSTOMERS COULD BE INCREASED DUE TO VOLUME AND PRESSURE OF THE REVITALIZED WATER SYSTEM.
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