State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF DRINKING WATER
Kenneth H. Bousfield, P.E.
Director

DRINKING WATER BOARD MEETING
EMEERGENCY TELECONFERENCE MEETING
August 4, 2016 – 11:00 am

PARTICIPANT CALL-IN INFORMATION:
Phone No.: 1-877-820-7831
Participant Passcode: 878776#

Ken Bousfield's Cell Phone #: (801) 674-2557

1. Call to Order – Chairman Hansen

2. Roll Call – Ken Bousfield

3. Financial Assistance Committee Report
   A. SRF Applications
      i. STATE:
         a) Henrieville Town

4. Next Board Meeting:

   Date: Tuesday, August 30, 2016
   Time: 1:30 pm
   Place: Davis Conference Center – Zephyr Room
   1651 North 700 West
   Layton, Utah 84041

5. Adjourn

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Dana Powers, Office of Human Resources, at: (801) 499-2117, TDD (801) 903-3978, at least five working days prior to the scheduled meeting.

Henrieville Town
Presented to the Drinking Water Board
August 4, 2016

DRINKING WATER BOARD
BOARD PACKET FOR CONSTRUCTION LOAN

APPLICANT'S REQUEST:

Henrieville Town is requesting $690,000 in financial assistance to install 34,000 feet of 6-inch diameter HDPE transmission line, build a new water turnout, reconstruct the source water collection box, install a low water level alarm at the storage tank, and perform a hydrogeologic and source evaluation. Total project cost is estimated at $696,000 and the Town is contributing $6,000.

STAFF COMMENTS:

Henrieville Town has a population of 230 with 113 residential connections. On June 24, 2016 the town suffered a complete water outage. Investigations identified an airlock in the well source (a horizontal well into the mountainside) as well as potential airlocks in the transmission line as the cause of the low flow to the storage tanks. When flow from the well was restored at least one air release valve was blown from the transmission line and several other valves were identified as severely corroded and inoperable. A brief outline of the project and the emergency facing Henrieville Town is attached to this evaluation.

The local MAGI for Henrievelle Town is $33,983, which is 81% of the State MAGI. The current average water bill is approximately $36.15 per month, which is 1.28% of local MAGI. This average monthly water bill includes a $5.00 per month irrigation water fee. With a full loan of $690,000 at 2.26% interest for 20 years, the Town would need to increase their average water bill to approximately $73.05 per connection, which is 2.58% of the local MAGI. Based on this evaluation Henrieville Town qualifies for additional subsidization.

Financial evaluations for the Henrieville Town project are presented in the table below.

	Total Assistance	Grant	Loan	Interest Rate	Term	Avg. Water Bill	% Local MAGI
1	$690,000	$0	$690,000	2.26%	20	$73.05	2.58%
2	$690,000	$345,000	$345,000	1.00%	20	$50.79	1.79%
3	$690,000	$345,000	$345,000	1.00%	30	$45.73	1.61%

STAFF RECOMMENDATION:

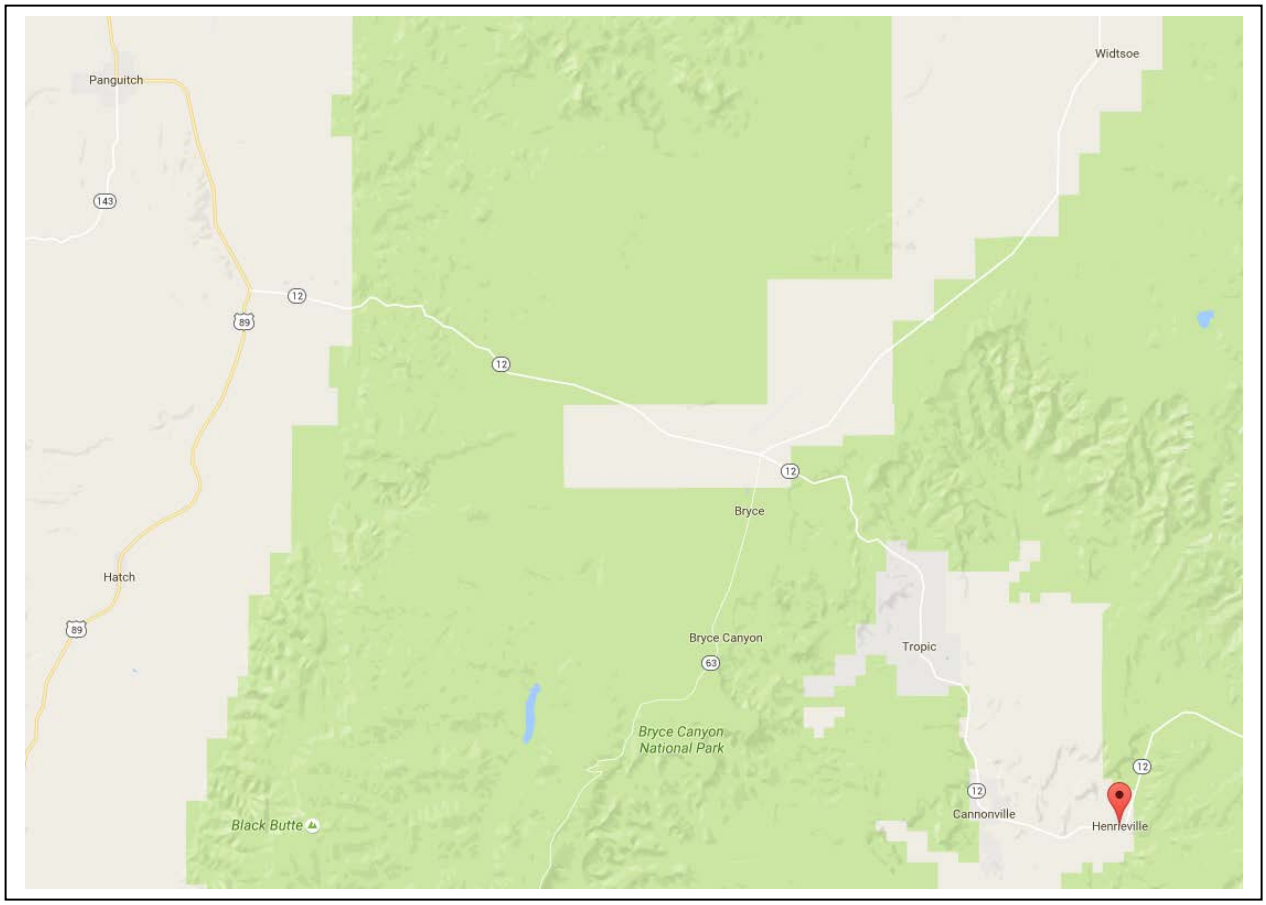
Due to the emergency nature of the project the Financial Assistance Committee did not review this project.

Staff recommends that the Drinking Water Board authorize a $345,000 construction loan at 1.0% interest for 30 years and a $345,000 construction grant to Henrieville Town to complete emergency replacement of the Town's transmission line and other

necessary construction to resolve the emergency situation as well as conduct a hydrogeologic and source water assessment to meet the Town's source water capacity needs.

APPLICANT'S LOCATION

Henrieville Town is located in Garfield County approximately 32 miles southeast of Panguitch.



PROJECT DESCRIPTION

The project consists of installing 34,000 feet of 6-inch diameter HDPE transmission line, building a new water turnout, reconstructing the source water collection box, installing a low water level alarm at the storage tank, and performing a hydrogeologic and source evaluation.

POPULATION GROWTH

According to the application, Henrieville Town expects to grow at an average annual rate of change of approximately 4.0% over the next 20 years. Projected populations and number of connections are shown in the table below:

Year	Population	Connections
2020	250	120
2025	270	125
2030	300	130
2035	330	135
2040	360	140

IMPLEMENTATION SCHEDULE:

DWB Funding Authorization:	Aug 2016
Complete Design:	Sep 2016
Plan Approval:	Oct 2016
Advertise for Bids:	Oct 2016
Begin Construction:	Nov 2016
Complete Construction:	Jan 2017
Receive Operating Permit:	Jan 2017

COST ESTIMATE:

Legal – Bonding, Admin	$8,000
Engineering- Plan, Design, CMS	$104,000
Construction	$532,000
Contingency	$52,000
Total Project Cost	**$696,000**

COST ALLOCATION:

The cost allocation proposed for the project is shown below:

Funding Source	Cost Sharing	Percent of Project
DWB Loan (0%, 30-yr)	$345,000	49.6%
DWB Grant	$345,000	49.6%
Self-Contribution	$6,000	0.8%

ESTIMATED ANNUAL COST OF WATER SERVICE:

Operation and Maintenance	$12,950
Annual Irrigation Fee	$60
Existing DW Debt Service	$25,250
New DDW Debt Service (1.0%, 30 yrs):	$13,368
DDW Debt Reserve (10%):	$1,337
Replacement Reserve Account (5%):	$2,326
Annual Cost/ERC:	$548.77
Monthly Cost/ERC:	$45.73
Cost as % MAGI:	1.61%

CONTACT INFORMATION:

APPLICANT:	Henrieville Culinary Water System 70 West Main Henrieville, Utah 84736 435-679-8581
PRESIDING OFFICIAL & CONTACT PERSON:	Dave Roberts Mayor 70 West Main Henrieville, Utah 84736 435-679-8581 henrievilletown@scinternet.net
RECORDER:	Marie Jagger 435-679-8581
CONSULTING ENGINEER:	Carson DeMille Jones & DeMille Engineering 1535 S 100 W Richfield, UT 84701 435-896-8266 carson@jonesanddemille.com
FINANCIAL CONSULTANT:	n/a
CITY ATTORNEY:	n/a
BOND ATTORNEY:	n/a

DRINKING WATER BOARD FINANCIAL ASSISTANCE EVALUATION

SYSTEM NAME: Henrieville Town
COUNTY: Garfield
PROJECT DESCRIPTION: transmission line

FUNDING SOURCE: State SRF

50 % Loan & 50 % Grant

ESTIMATED POPULATION:	230	NO. OF CONNECTIONS:	113 *	SYSTEM RATING:	APPROVED
CURRENT AVG WATER BILL:	$36.15 *			PROJECT TOTAL:	$696,000
CURRENT % OF AGI:	1.28%	FINANCIAL PTS:	28	LOAN AMOUNT:	$345,000
ESTIMATED MEDIAN AGI:	$33,983			GRANT AMOUNT:	$345,000
STATE AGI:	$41,923			TOTAL REQUEST:	$690,000
SYSTEM % OF STATE AGI:	81%				

	@ ZERO % RATE 0%	@ RBBI MKT RATE 3.06%		AFTER REPAYMENT PENALTY & POINTS 1.00%
SYSTEM				
ASSUMED LENGTH OF DEBT, YRS:	30	30		30
ASSUMED NET EFFECTIVE INT. RATE:	0.00%	3.06%		1.00%
REQUIRED DEBT SERVICE:	$11,500.00	$17,738.43		$13,368.10
*PARTIAL COVERAGE (15%):	$0.00	$2,660.76		$0.00
*ADD. COVERAGE AND RESERVE (10%):	$1,150.00	$1,773.84		$1,336.81
ANNUAL NEW DEBT PER CONNECTION:	$111.95	$196.22		$130.13
O & M + FUNDED DEPRECIATION:	$12,950.00	$12,950.00		$12,950.00
OTHER DEBT + COVERAGE:	$25,250.00	$25,250.00		$25,250.00
REPLACEMENT RESERVE ACCOUNT:	$2,232.50	$0.00		$2,325.90
ANNUAL EXPENSES PER CONNECTION:	$357.81	$338.05		$358.64
TOTAL SYSTEM EXPENSES	$53,082.50	$60,373.04		$55,230.81
TAX REVENUE:	$0.00	$0.00		$0.00
RESIDENCE				
MONTHLY NEEDED WATER BILL:	$44.15	$49.52		$45.73
% OF ADJUSTED GROSS INCOME:	1.56%	1.75%		1.61%

* Equivalent Residential Connections

R309-700-5

Henrieville Town
Garfield
August 2, 2016

TABLE 2
FINANCIAL CONSIDERATIONS

		POINTS	
1. COST EFFECTIVENESS RATIO (SELECT ONE)			
A. Project cost $0 to $500 per benefitting connection		16	
B. $501 to $1,500		14	
C. $1,501 to $2,000		11	
D. $2,001 to $3,000		8	
E. $3,001 to $5,000		4	
F. $5,001 to $10,000		1	X
G. Over $10,000		0	
	$6,159		
2. CURRENT LOCAL MEDIAN ADJUSTED GROSS INCOME (AGI) (SELECT ONE)			
A. Less than 70% of State Median AGI		19	
B. 71 to 80% of State Median AGI		16	
C. 81 to 95% of State Median AGI		13	X
D. 96 to 110% of State Median AGI		9	
E. 111 to 130% of State Median AGI		6	
E. 131 to 150% of State Median AGI		3	
F. Greater than 150% of State Median AGI		0	
	81%		
3. PROJECT FUNDING CONTRIBUTED BY APPLICANT (SELECT ONE)			
a. Greater than 25% of project funds		17	
b. 15 to 25% of project funds		14	
c. 10 to 15% of project funds		11	
c. 5 to 10% of project funds		8	
d. 2 to 5% of project funds		4	
e. Less than 2% of project funds		0	X
	0.9%		
4. ABILITY TO REPAY LOAN			
4. WATER BILL (INCLUDING TAXES) AFTER PROJECT IS BUILT RELATIVE TO LOCAL MEDIAN ADJUSTED GROSS INCOME (SELECT ONE)			
a. Greater than 2.50% of local median AGI		16	
b. 2.01 to 2.50% of local median AGI		12	
c. 1.51 to 2.00% of local median AGI		8	X
d. 1.01 to 1.50% of local median AGI		3	
e. 0 to 1.00% of local median AGI		0	
	1.62%		
5. SPECIAL INCENTIVE POINTS Applicant: (Mark all that apply)			
A. has a replacement fund receiving annual deposits of 5% of the system's drinking water budget been established, and has already accumulated a minimum of 10% of said annual DW budget in this reserve fund.		5	
B. Has a replacement fund equal to at least 15% or 20% of annual DW budget.		5	
C. Is creating or enhancing a regionalization plan		16	
D. Has a rate structure encouraging conservation		6	X
TOTAL POINTS FOR FINANCIAL NEED		28	
TOTAL POSSIBLE POINTS FOR FINANCIAL NEED		100	

Henrieville Town

PROPOSED BOND REPAYMENT SCHEDULE

50 % Loan & 50 % Grant

PRINCIPAL	$345,000.00	ANTICIPATED CLOSING DATE	01-Nov-16
INTEREST	1.00%	FIRST P&I PAYMENT DUE	01-Jan-18
TERM	30	REVENUE BOND	
NOMIN. PAYMENT	$13,368.10	GRANT AMOUNT:	$345,000.00

YEAR	BEGINNING BALANCE	DATE OF PAYMENT	PAYMENT		PRINCIPAL	INTEREST	ENDING BALANCE	PAYM NO.
2017	$345,000.00		$575.00	*	$0.00	$575.00	$345,000.00	0
2018	$345,000.00		$13,450.00		$10,000.00	$3,450.00	$335,000.00	1
2019	$335,000.00		$13,350.00		$10,000.00	$3,350.00	$325,000.00	2
2020	$325,000.00		$13,250.00		$10,000.00	$3,250.00	$315,000.00	3
2021	$315,000.00		$13,150.00		$10,000.00	$3,150.00	$305,000.00	4
2022	$305,000.00		$13,050.00		$10,000.00	$3,050.00	$295,000.00	5
2023	$295,000.00		$12,950.00		$10,000.00	$2,950.00	$285,000.00	6
2024	$285,000.00		$13,850.00		$11,000.00	$2,850.00	$274,000.00	7
2025	$274,000.00		$13,740.00		$11,000.00	$2,740.00	$263,000.00	8
2026	$263,000.00		$13,630.00		$11,000.00	$2,630.00	$252,000.00	9
2027	$252,000.00		$13,520.00		$11,000.00	$2,520.00	$241,000.00	10
2028	$241,000.00		$13,410.00		$11,000.00	$2,410.00	$230,000.00	11
2029	$230,000.00		$13,300.00		$11,000.00	$2,300.00	$219,000.00	12
2030	$219,000.00		$13,190.00		$11,000.00	$2,190.00	$208,000.00	13
2031	$208,000.00		$13,080.00		$11,000.00	$2,080.00	$197,000.00	14
2032	$197,000.00		$12,970.00		$11,000.00	$1,970.00	$186,000.00	15
2033	$186,000.00		$13,860.00		$12,000.00	$1,860.00	$174,000.00	16
2034	$174,000.00		$13,740.00		$12,000.00	$1,740.00	$162,000.00	17
2035	$162,000.00		$13,620.00		$12,000.00	$1,620.00	$150,000.00	18
2036	$150,000.00		$13,500.00		$12,000.00	$1,500.00	$138,000.00	19
2037	$138,000.00		$13,380.00		$12,000.00	$1,380.00	$126,000.00	20
2038	$126,000.00		$13,260.00		$12,000.00	$1,260.00	$114,000.00	21
2039	$114,000.00		$13,140.00		$12,000.00	$1,140.00	$102,000.00	22
2040	$102,000.00		$13,020.00		$12,000.00	$1,020.00	$90,000.00	23
2041	$90,000.00		$12,900.00		$12,000.00	$900.00	$78,000.00	24
2042	$78,000.00		$13,780.00		$13,000.00	$780.00	$65,000.00	25
2043	$65,000.00		$13,650.00		$13,000.00	$650.00	$52,000.00	26
2044	$52,000.00		$13,520.00		$13,000.00	$520.00	$39,000.00	27
2045	$39,000.00		$13,390.00		$13,000.00	$390.00	$26,000.00	28
2046	$26,000.00		$13,260.00		$13,000.00	$260.00	$13,000.00	29
2047	$13,000.00		$13,130.00		$13,000.00	$130.00	$0.00	30
			$401,615.00		$345,000.00	$56,615.00		

*Interest Only Payment

Henrieville Town

DWB Loan Terms		
Local Share (total):	$	6,000
Other Agency Funding:	$	-
DWB Grant Amount:	$	345,000
DWB Loan Amount:	$	345,000
DWB Loan Term:		30
DWB Loan Interest:		**1.00%**
DWB Loan Payment:	$	13,368

DW Expenses (Estimated)		
Proposed Facility Capital Cost:	$	696,000
Existing Facility O&M Expense:	$	12,950
Proposed Facility O&M Expense:	$	12,950
O&M Inflation Factor:		**1.0%**
Existing Debt Service:	$	20,200

DW Revenue Sources (Projected)		
Beginning Cash:	$	-
Existing Customers (ERC):		113
Projected Growth Rate:		**1.0%**
Impact Fee/Connection Fee:	$	1,250
Current Monthly User Charge:	$	31.15
Needed Average Monthly User Charge:	$	40.73

DW Revenue Projections

Yr	Growth Rate (%)	Annual Growth (ERC)	Total Users (ERC)	User Charge Revenue	Impact Fee Revenue	Property Tax Revenue	Total Revenue	DWB Loan Repayment	DWB Loan Reserves	Remaining Principal	Principal Payment	Interest Payment	Existing DW Debt Service	O&M Expenses	Total Expenses	Debt Service Ratio
0	1.0%	1	113	42,240	1,250	-	43,490	-	-	345,000	-	-	20,200	12,950	33,150	-
1	1.0%	1	114	55,720	1,250	-	56,970	**13,450**	**1,337**	335,000	10,000	3,450	20,200	12,950	47,937	1.31
2	1.0%	1	115	56,208	1,250	-	57,458	**13,350**	**1,337**	325,000	10,000	3,350	20,200	13,080	47,966	1.32
3	1.0%	1	116	56,697	1,250	-	57,947	**13,250**	**1,337**	315,000	10,000	3,250	20,200	13,210	47,997	1.34
4	1.0%	2	118	57,675	2,500	-	60,175	**13,150**	**1,337**	305,000	10,000	3,150	20,200	13,342	48,029	1.40
5	1.0%	1	119	58,163	1,250	-	59,413	**13,050**	**1,337**	295,000	10,000	3,050	20,200	13,476	48,063	1.38
6	1.0%	1	120	58,652	1,250	-	59,902	**12,950**	**1,337**	285,000	10,000	2,950	20,200	13,611	48,097	1.40
7	1.0%	1	121	59,141	1,250	-	60,391	**13,850**	**1,337**	274,000	11,000	2,850	20,200	13,747	49,133	1.37
8	1.0%	1	122	59,630	1,250	-	60,880	**13,740**	**1,337**	263,000	11,000	2,740	20,200	13,884	49,161	1.38
9	1.0%	2	124	60,607	2,500	-	63,107	**13,630**	**1,337**	252,000	11,000	2,630	20,200	14,023	49,190	1.45
10	1.0%	1	125	61,096	1,250	-	62,346	**13,520**	**1,337**	241,000	11,000	2,520	20,200	14,163	49,220	1.43
11	1.0%	1	126	61,585	1,250	-	62,835	**13,410**		230,000	11,000	2,410	20,200	14,305	47,915	1.44
12	1.0%	1	127	62,074	1,250	-	63,324	**13,300**		219,000	11,000	2,300	20,200	14,448	47,948	1.46
13	1.0%	2	129	63,051	2,500	-	65,551	**13,190**		208,000	11,000	2,190	20,200	14,592	47,982	1.53
14	1.0%	1	130	63,540	1,250	-	64,790	**13,080**		197,000	11,000	2,080	20,200	14,738	48,018	1.50
15	1.0%	1	131	64,029	1,250	-	65,279	**12,970**		186,000	11,000	1,970	20,200	14,886	48,056	1.52
16	1.0%	2	133	65,006	2,500	-	67,506	**13,860**		174,000	12,000	1,860	20,200	15,035	49,095	1.54
17	1.0%	1	134	65,495	1,250	-	66,745	**13,740**		162,000	12,000	1,740	20,200	15,185	49,125	1.52
18	1.0%	1	135	65,984	1,250	-	67,234	**13,620**		150,000	12,000	1,620	20,200	15,337	49,157	1.53
19	1.0%	2	137	66,961	2,500	-	69,461	**13,500**		138,000	12,000	1,500	20,200	15,490	49,190	1.60
20	1.0%	1	138	67,450	1,250	-	68,700	**13,380**		126,000	12,000	1,380	20,200	15,645	49,225	1.58
21	1.0%	1	139	67,939	1,250	-	69,189	**13,260**		114,000	12,000	1,260	20,200	15,801	49,261	1.60
22	1.0%	2	141	68,916	2,500	-	71,416	**13,140**		102,000	12,000	1,140	20,200	15,959	49,299	1.66
23	1.0%	1	142	69,405	1,250	-	70,655	**13,020**		90,000	12,000	1,020	20,200	16,119	49,339	1.64
24	1.0%	1	143	69,894	1,250	-	71,144	**12,900**		78,000	12,000	900	20,200	16,280	49,380	1.66
25	1.0%	2	145	70,871	2,500	-	73,371	**13,780**		65,000	13,000	780	20,200	16,443	50,423	1.68
26	1.0%	1	146	71,360	1,250	-	72,610	**13,650**		52,000	13,000	650	20,200	16,607	50,457	1.65
27	1.0%	2	148	72,338	2,500	-	74,838	**13,520**		39,000	13,000	520	20,200	16,774	50,494	1.72
28	1.0%	1	149	72,826	1,250	-	74,076	**13,390**		26,000	13,000	390	20,200	16,941	50,531	1.70
29	1.0%	2	151	73,804	2,500	-	76,304	**13,260**		13,000	13,000	260	20,200	17,111	50,571	1.77
30	1.0%	1	152	74,293	1,250	-	75,543	**13,130**		-	13,000	130	20,200	17,282	50,612	1.75
									Total Paid in Debt Service =		219,000	48,990				

DRINKING WATER BOARD FINANCIAL ASSISTANCE EVALUATION

SYSTEM NAME: Henrieville Town
COUNTY: Garfield
PROJECT DESCRIPTION: transmission line

FUNDING SOURCE: State SRF

100 % Loan & 0 % Grant

ESTIMATED POPULATION:	230		NO. OF CONNECTIONS:	113 *	SYSTEM RATING:	APPROVED
CURRENT AVG WATER BILL:	$36.15 *				PROJECT TOTAL:	$696,000
CURRENT % OF AGI:	1.28%		FINANCIAL PTS:	36	LOAN AMOUNT:	$690,000
ESTIMATED MEDIAN AGI:	$33,983				GRANT AMOUNT:	$0
STATE AGI:	$41,923				TOTAL REQUEST:	$690,000
SYSTEM % OF STATE AGI:	81%					

	@ ZERO % RATE	@ RBBI MKT RATE		AFTER REPAYMENT PENALTY & POINTS
	0%	3.06%		2.26%
SYSTEM				
ASSUMED LENGTH OF DEBT, YRS:	20	20		20
ASSUMED NET EFFECTIVE INT. RATE:	0.00%	3.06%		2.26%
REQUIRED DEBT SERVICE:	$34,500.00	$46,636.50		$43,264.31
*PARTIAL COVERAGE (15%):	$5,175.00	$6,995.47		$6,489.65
*ADD. COVERAGE AND RESERVE (10%):	$3,450.00	$4,663.65		$4,326.43
ANNUAL NEW DEBT PER CONNECTION:	$381.64	$515.89		$478.59
O & M + FUNDED DEPRECIATION:	$12,950.00	$12,950.00		$12,950.00
OTHER DEBT + COVERAGE:	$25,250.00	$25,250.00		$25,250.00
REPLACEMENT RESERVE ACCOUNT:	$0.00	$0.00		$0.00
ANNUAL EXPENSES PER CONNECTION:	$338.05	$338.05		$338.05
TOTAL SYSTEM EXPENSES	$81,325.00	$96,495.62		$92,280.39
TAX REVENUE:	$0.00	$0.00		$0.00
RESIDENCE				
MONTHLY NEEDED WATER BILL:	$64.97	$76.16		$73.05
% OF ADJUSTED GROSS INCOME:	2.29%	2.69%		2.58%

* Equivalent Residential Connections

DRINKING WATER BOARD FINANCIAL ASSISTANCE EVALUATION

SYSTEM NAME: Henrieville Town
COUNTY: Garfield
PROJECT DESCRIPTION: transmission line

FUNDING SOURCE: State SRF

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SYSTEM % OF STATE AGI:	81%					

	@ ZERO % RATE	@ RBBI MKT RATE		AFTER REPAYMENT PENALTY & POINTS
	0%	3.06%		1.00%
SYSTEM				
ASSUMED LENGTH OF DEBT, YRS:	20	20		20
ASSUMED NET EFFECTIVE INT. RATE:	0.00%	3.06%		1.00%
REQUIRED DEBT SERVICE:	$17,250.00	$23,318.25		$19,118.28
*PARTIAL COVERAGE (15%):	$2,587.50	$3,497.74		$2,867.74
*ADD. COVERAGE AND RESERVE (10%):	$1,725.00	$2,331.82		$1,911.83
ANNUAL NEW DEBT PER CONNECTION:	$190.82	$257.95		$211.49
O & M + FUNDED DEPRECIATION:	$12,950.00	$12,950.00		$12,950.00
OTHER DEBT + COVERAGE:	$25,250.00	$25,250.00		$25,250.00
REPLACEMENT RESERVE ACCOUNT:	$0.00	$0.00		$0.00
ANNUAL EXPENSES PER CONNECTION:	$338.05	$338.05		$338.05
TOTAL SYSTEM EXPENSES	$59,762.50	$67,347.81		$62,097.85
TAX REVENUE:	$0.00	$0.00		$0.00
RESIDENCE				
MONTHLY NEEDED WATER BILL:	$49.07	$54.67		$50.79
% OF ADJUSTED GROSS INCOME:	1.73%	1.93%		1.79%

* Equivalent Residential Connections

PROJECT DESCRIPTION

Henrieville Town is applying for emergency funding to the Division of Drinking Water (DDW) to repair issues with its culinary water system including a low water supply, provide improvements to restore normal flows, and to provide an additional water source. A massive leak was discovered and repaired, but did not fully resolve the issues involved. The issues with the system have caused health issues for the citizens of Henrieville requiring a boil order for all citizens, as well as a low-water supply which needs to be addressed. An additional water source is required which will entail a hydrogeologic and source evaluation be completed.

Contact Information:
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Henrieville Town
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Henrieville, UT 84736
435.679.8581

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Jones & DeMille Engineering
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Richfield, UT 84701
435.979.0266 (cell)
carson@jonesanddemille.com

Background

Henrieville Town currently has a population of approximately 230 residents with 113 water connections. Income from the 113 water connections equates to $42,240 per year with a water rate of $32 per month. The town has a debt service of $20,500 per year along with approximately $11,000 in operating expenses per year. This results in approximately $11,000 in operating income each year on the water system.

Henrieville Town's sole culinary water source has historically come from one general location located six to eight miles northeast of town. Water was originally obtained from a well located eight miles northeast of town, but was later deemed unfit for drinking water. A spring located two miles downstream from the well was also used for drinking water until a horizontal well was later drilled in the same area. Once the horizontal well was drilled, the spring dried up to only 7 gpm and the horizontal well became the sole source of drinking water.

Later, in 2004, a new horizontal well was drilled just north of the old horizontal well at which time the old well flows were significantly reduced. The old well was turned out of the system leaving the new horizontal well as the sole source of culinary water. The horizontal well typically flows at approximately 170 gpm and operates under gravity flow. The well is tied into a transmission line that is approximately 34,000 feet in length and terminates at the town's storage tanks where it is filtered to remove the excess iron. The 34,000 feet in pipe consists of both 4" diameter PVC piping with a pressure rating of 100 psi, and newer 6" diameter PVC pipe.

There are approximately 19 air valves located along the transmission line as well as one PRV station and a chlorinator. The chlorinator is located approximately one mile downstream from the wellhead and that is the point where the town regulates the flow that continues downstream to the town tanks. The 170 gpm is regulated down to approximately 70 gpm and treated with chlorine. The remaining 100 gpm is backed up in the transmission line and dumps out into the creek at the collection manhole located at the well/spring site.

Issue

On Friday, June 24, a local resident alerted Henrieville Town they were experiencing very low water pressure at their residence. Upon further inspection, the town found the water tanks were empty. Water was flowing into the tank, across the floor of the tank and right into the outflow piping. The outflow piping

was also pulling air. The flow meter located in the chlorinator building showed a flow of only 20 gpm. There is not a flow meter on the outflow side of the water tanks so the flows entering and leaving the tank were unknown. The town immediately alerted the citizens and issued a boil order to try and minimize the demand for water.

The following day, June 25, the town then went to the horizontal well to look for problems. First, the water was turned out at the nearest turnout downstream of the well and they found the flows were very limited. The town then discovered an air valve located immediately downstream of the well had been shut off since the time of construction in 2004. The air valve was opened and large amounts of air began pulling into the transmission line. This effort caused the flow rate to increase from 20 gpm to 32 gpm, but still didn't restore normal flows.

At this time, the well was suspected to possibly have plugging issues or recharge issues. Efforts were made to consult with a hydrogeologist as well as the original well driller to discuss possible solutions. Rural Water was contacted and asked to bring in a camera unit to inspect the well for possible issues. In order for the camera and vehicles to gain access to the well, the roadway had to be improved. This effort took the rest of the weekend to complete.

On Tuesday, June 28, Larry Rose Construction and Fletcher Drilling visited the well site to determine what efforts were needed to expose and access the well for the camera scheduled for the following day. While at the site, they opened up the transmission line turnout and found the well was flowing approximately 130 gpm or more. A possible air lock may have been cleared out over the past three days from when the air valve was opened, thus allowing for full flow from the well. They were able to eliminate the well as the culprit at that time and the camera inspection was immediately canceled.

The contractor spent the remainder of the day following the transmission line checking flows at each turnout. Flows at each turnout were at least 130 gpm, but, when they checked at the tank, flows into the tank were still extremely low. The contractor returned back to inspect the transmission line and a large leak was found approximately a half-mile upstream from the tanks. An air valve had broken off from the saddle and a water leak had caused massive land settling which would have made it difficult to see any leaking water. The contractor replaced approximately 400 feet of the transmission line and routed it around the large sink hole on June 29. Water was turned back into the pipeline and they found that flows into the tank were still lower than expected.

The transmission line is currently flowing approximately 40 gpm which is just over half of the town's water right of 70 gpm. It is still unknown what is causing the low flows through the transmission line at this time. However, the contractor did observe several air valves which were severely corroded which may be leading to air locks along the transmission line. There is also the possibility of an additional leak that may not have been discovered. The soils located along the transmission line are highly susceptible to collapse and settlement and have led to several line breaks over the years.

Approach/Scope of Work

Henrieville Town currently only has one source of culinary water and needs to obtain an additional source. There are several potential existing and new well sites that need to be researched to determine acceptability and feasibility. A hydrogeologic and source evaluation needs to be completed to determine the best course of action to pursue in obtaining an additional water source. Once this has been determined, the town will need to further pursue additional funding to develop a new source.

Due to the corrosive nature of the existing water source, collapsible soils, past line breaks and substandard 4" diameter piping, the transmission line with its associated air valves needs to be replaced. New 6" diameter HDPE piping is recommended as a replacement because of its flexibility and durability which will better handle the stresses and strains of soil movement and settlement. The replacement air valves will be plastic body valves with plastic vent piping to aid in corrosion resistance.

As previously mentioned, the flows passing through the chlorinator are currently regulated by back pressuring approximately one mile of pipeline. A new turnout located at the chlorinator needs to be constructed to allow for discharge at the chlorinator. This will allow the town to discharge the excess water back to the creek at the chlorinator site and avoid having to pressurize the transmission line.

The existing water tanks do not have an alarm system of any type to alert the town to low water levels in the tanks. To help aid in future emergencies and low water situations, a simple alarm system consisting of a flashing red light connected to a pressure transducer needs to be installed.

These proposed improvements are needed to be able to restore normal flows to the town and ensure future sustainability and longevity. Without immediate action taken, reduced flows to the town will continue. A cost estimate for these proposed improvements is attached for your reference. Pictures of the most recent line break are also attached for your reference.

Summary

Henrieville Town respectfully requests emergency assistance to address the issues and improvements required to provide safe drinking water to its citizens.

Owner Henrieville Town
Project Henrieville Town Culinary Water Improvements
Date July 1, 2016
PM CBD

Jones & DeMille Engineering
1-800-748-5275
www.jonesanddemille.com

PRELIMINARY OPINION OF PROBABLE COST

	ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1	Mobilization	1	LUMP	$ 35,000.00	$ 35,000.00
2	Remove and Replace Fence	100	L.F.	$ 12.00	$ 1,200.00
3	6-inch Dia HDPE Transmission Piping	34000	L.F.	$ 11.00	$ 374,000.00
4	6-inch Dia Gate Valve	5	Each	$ 1,500.00	$ 7,500.00
5	6-inch Dia Butterfly Valve	1	Each	$ 1,800.00	$ 1,800.00
6	6-inch Dia HDPE Chlorinator Turnout Piping	600	L.F.	$ 11.00	$ 6,600.00
7	1-inch Combination Air Vacuum Valve	22	Each	$ 1,800.00	$ 39,600.00
8	Drain Line Headwall	4	Each	$ 1,000.00	$ 4,000.00
9	Pipe Marker with Tracer Wire	7	Each	$ 150.00	$ 1,050.00
10	Reconstruct Collection Manhole	1	Each	$ 10,000.00	$ 10,000.00
11	Re-Route Spring Outlet	1	LUMP	$ 1,500.00	$ 1,500.00
12	Reservoir Low Water Alarm	1	LUMP	$ 2,000.00	$ 2,000.00
				Construction Subtotal	**$ 484,300.00**
13	Construction Contingency - 10%	1	Lump	$ 48,430.00	$ 48,000.00
				TOTAL PROBABLE CONSTRUCTION COST	**$ 532,000.00**
	EMERGENCY REPAIRS (PREVIOUSLY COMPLETED)				
1	Larry Rose Construction (Pipe Installation and Investigation)	1	Lump	$ 7,646.00	$ 7,646.00
2	Fletcher Drilling (Well and Pipeline investigation)	1	Lump	$ 500.00	$ 500.00
3	6" Dia. Transmission Piping	1	Lump	$ 3,468.16	$ 3,468.16
4	Emergency Water	1	Lump	$ 754.25	$ 754.25
5	Town Employee Workforce	1	Lump	$ 1,300.00	$ 1,300.00
6	Preliminary Engineering & Coordination	1	Lump	$ 2,300.00	$ 2,300.00
				Repairs Subtotal	$ 15,968.41
	ENGINEERING AND LEGAL PROFESSIONAL SERVICES				
1	Preconstruction Engineering	1	Lump	$ 37,000.00	$ 37,000.00
2	BLM Coordination	1	Lump	$ 5,000.00	$ 5,000.00
2	Hydrogeologic & Source Evaluation	1	Lump	$ 15,000.00	$ 15,000.00
3	Construction Administration	1	Hourly	$ 40,000.00	$ 40,000.00
3	Legal	1	Lump	$ 8,000.00	$ 8,000.00
				Engineering and Legal Professional Services Subtotal	**$ 105,000.00**

TOTAL PROBABLE PROJECT COST $ 653,000.00