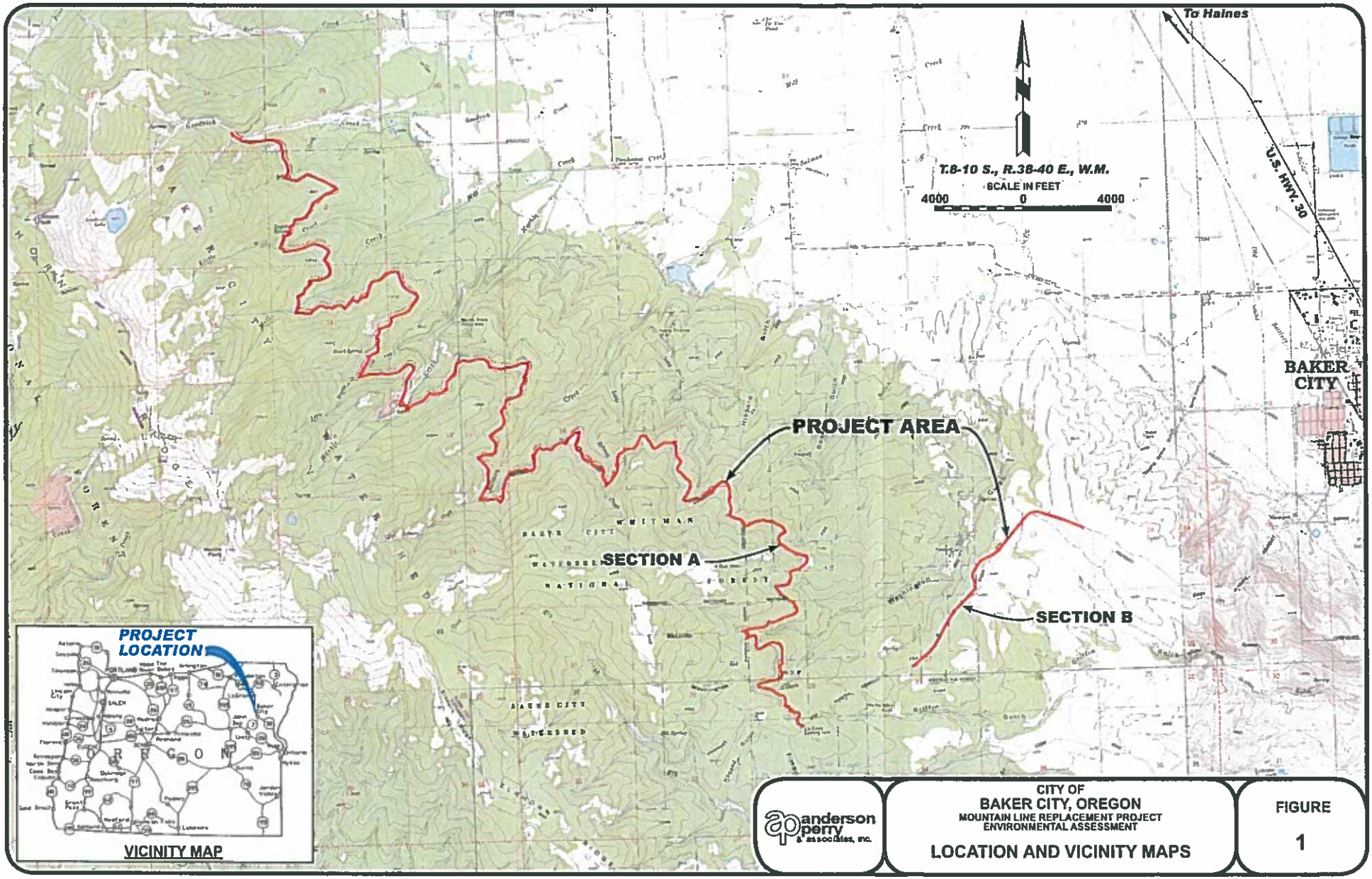


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CITY OF
BAKER CITY, OREGON
MOUNTAIN LINE REPLACEMENT PROJECT
ENVIRONMENTAL ASSESSMENT

LOCATION AND VICINITY MAPS

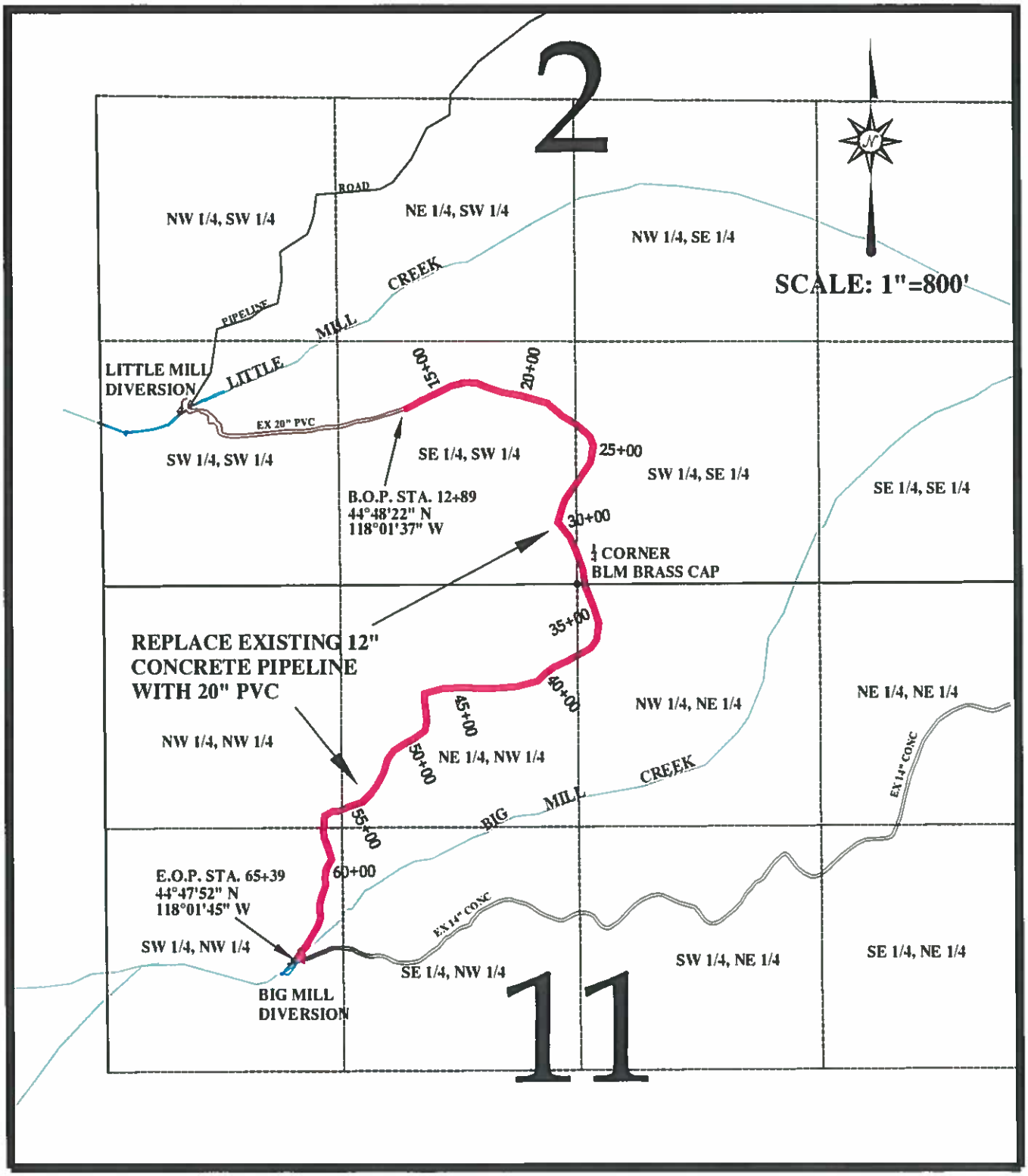
FIGURE
1

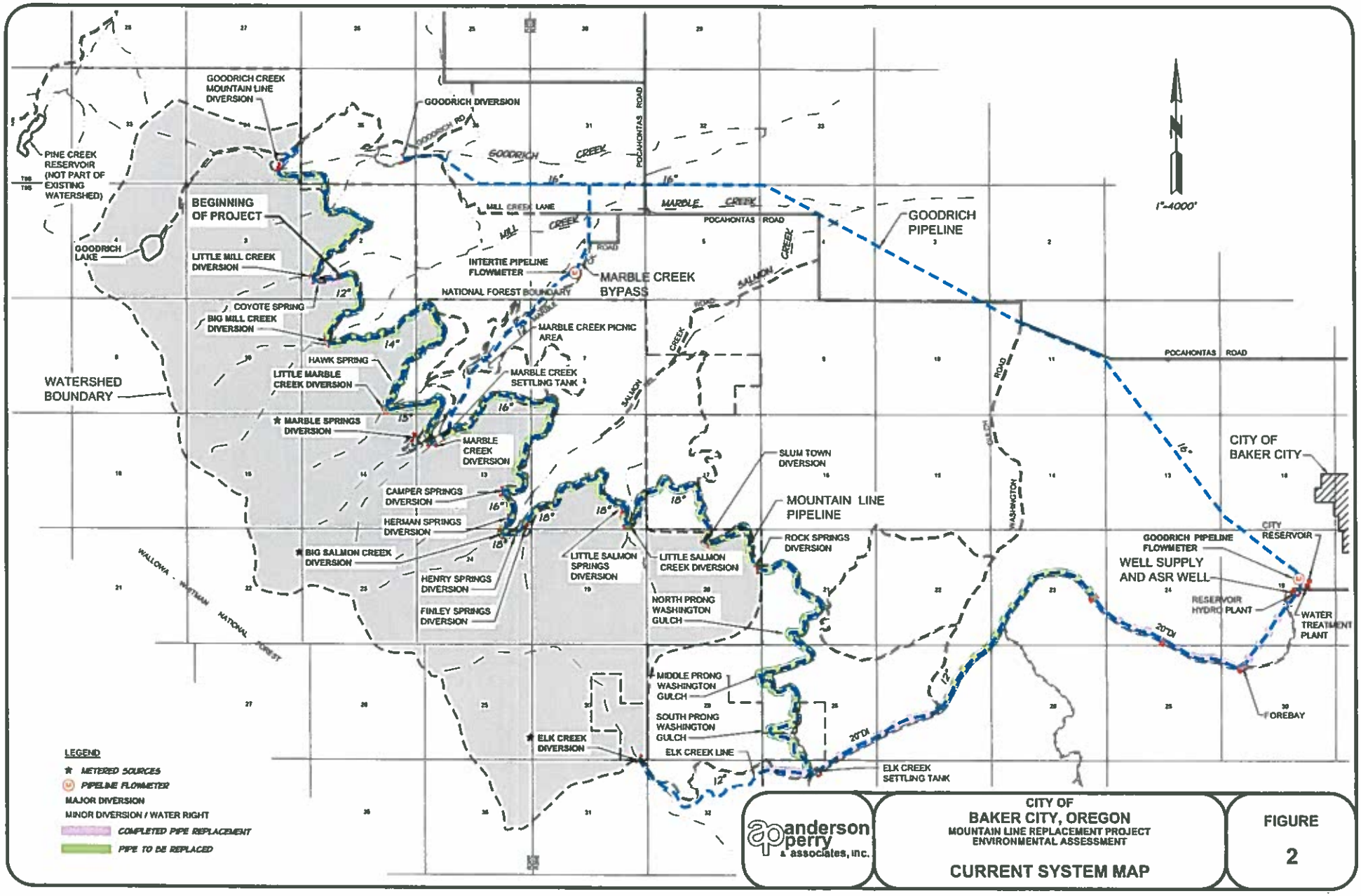
Job# 781-4 Oct. 16, 2015 lbauer

# BAKER CITY WATERSHED

## PROPOSED MOUNTAIN LINE REPLACEMENT (STA 12+89 TO STA 65+39)

LOCATED IN PORTIONS OF SE $\frac{1}{4}$ OF SW $\frac{1}{4}$ & SW $\frac{1}{4}$ OF SE $\frac{1}{4}$ OF SEC. 2 AND NW $\frac{1}{4}$ OF NE $\frac{1}{4}$, NE $\frac{1}{4}$ OF NW $\frac{1}{4}$, NW $\frac{1}{4}$ OF NW $\frac{1}{4}$, & SW $\frac{1}{4}$ OF NW $\frac{1}{4}$ OF SEC. 11, T. 9 S., R. 38 E., W.M.
BAKER COUNTY, OREGON



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CITY OF
**BAKER CITY, OREGON**
MOUNTAIN LINE REPLACEMENT PROJECT
ENVIRONMENTAL ASSESSMENT

**CURRENT SYSTEM MAP**

FIGURE
2

Q:\BAKER\701-44 BakerMtnLineEA\dwg\CurrentSystemMap-Fish.dwg, rep proj as fig 2, 12/13/2013 4:43:36 PM, pmcpherson

anderson perry & associates, inc.
engineering | surveying | natural resources

City of Baker City, Oregon
Job No. 779-49

**Process**

The flow test took place between Friday July 23 and Tuesday July 27, 2010. All water sources were turned out, except Little Mill Creek, Mill Creek, Little Marble Creek, Marble Springs, and Salmon Creek. During the flow test, no flow entered the City Reservoir, except that from the above sources.

Three of the sources (Little Mill, Mill Creek, and Little Marble) are monitored by level loggers. An empirical formula based on field measurements was used to translate the level logger readings into a corresponding head over the inlet weir. The water elevation at each of these sources is automatically logged once a day. The other two sources (Marble Springs and Salmon Creek) are metered.

July 23rd the flow at each of the five incoming sources was recorded, and the totalizer readings were recorded at the two metered sources. Four days later on July 27th the flows at each of the sources was measured again and the totalizer readings were recorded at the two metered sources.

Total flows into the reservoir were recorded over the same time period for comparison. The flows recorded were an average of the flow rate over the previous 24-hour period in units of millions of gallons per day (MGD).

**Summary**

See the table and two graphs on page 2 for a summary of the flow measurements during the test. More detailed flow information for each source is on the following pages. The average water loss over the four day period was 18%.

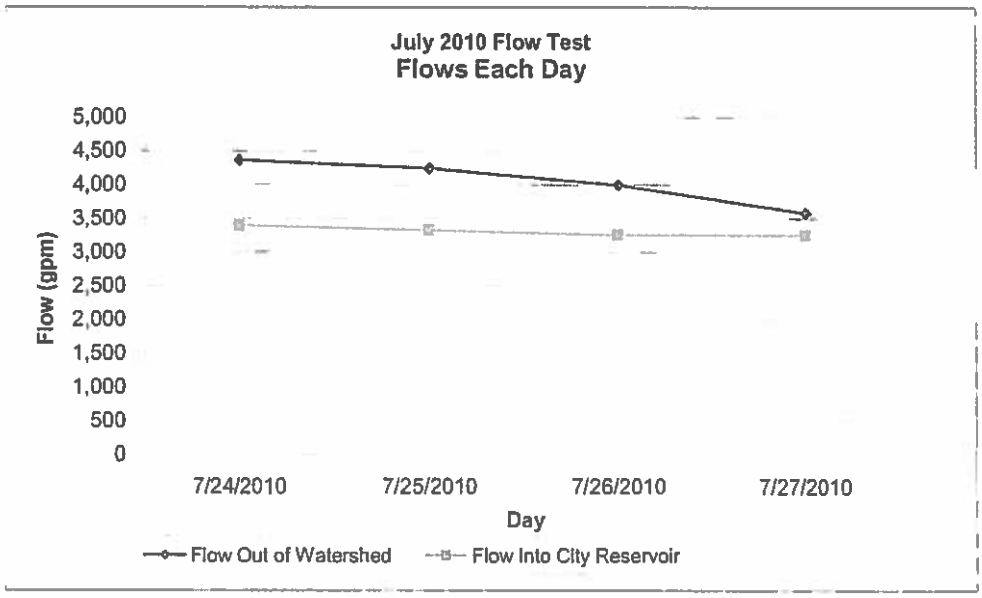
Note that Elk Creek is another important source that enters the reservoir through the series of mountain pipelines. It was not included in this test due to a broken flow meter.

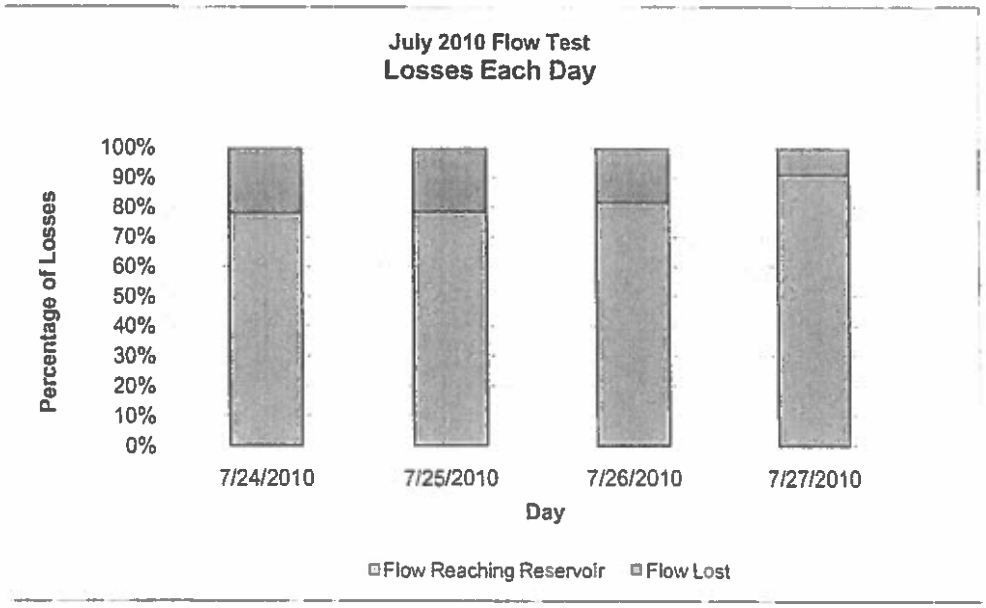
**Contents**

**Summary of Flow Measurements**

| | Total Flow Out of Watershed, $Q_{out}$ (gpm) | Total Flow Into City Reservoir, $Q_{in}$ (gpm) | Total Flow Into City Reservoir, $Q_{in}$ (MGD) | Total System Losses (gpm) | Percentage of System Losses |
|---|---|---|---|---|---|
| 7/23/2010 | 4,529 | | | | |
| 7/24/2010 | 4,369 | 3,403 | 4.9 | 966 | 22% |
| 7/25/2010 | 4,248 | 3,333 | 4.8 | 914 | 22% |
| 7/26/2010 | 4,001 | 3,264 | 4.7 | 737 | 18% |
| 7/27/2010 | 3,588 | 3,264 | 4.7 | 324 | 9% |

For test, total flow out of watershed only includes Little Mill, Mill Creek, Little Marble, Marble Springs, and Salmon Creek **Average 18%**



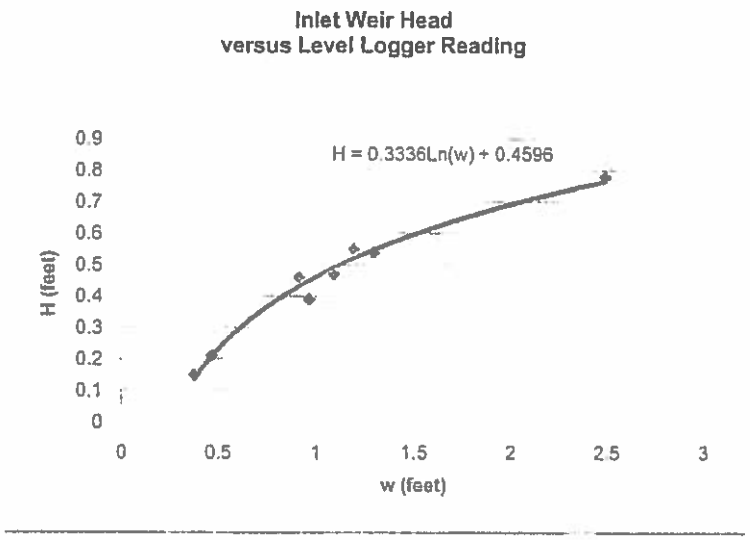



# LITTLE MILL- Source Flow Data

L = Inlet Weir Crest width (ft) = 1.43
H = 0.3336Ln(w) + 0.4596 (from plot below)

| | Level Reading, w (feet) | Head over Inlet Weir, H | Inlet Flow, Q (gpm) |
|---|---|---|---|
| 7/23/2010 | 1.30 | **0.54** | 784 |
| 7/24/2010 | 1.22 | **0.53** | 756 |
| 7/25/2010 | 1.15 | **0.51** | 716 |
| 7/26/2010 | 1.02 | **0.47** | 636 |
| 7/27/2010 | 0.97 | **0.39** | 492 |

Bold H values indicates they were measured, others were calculated

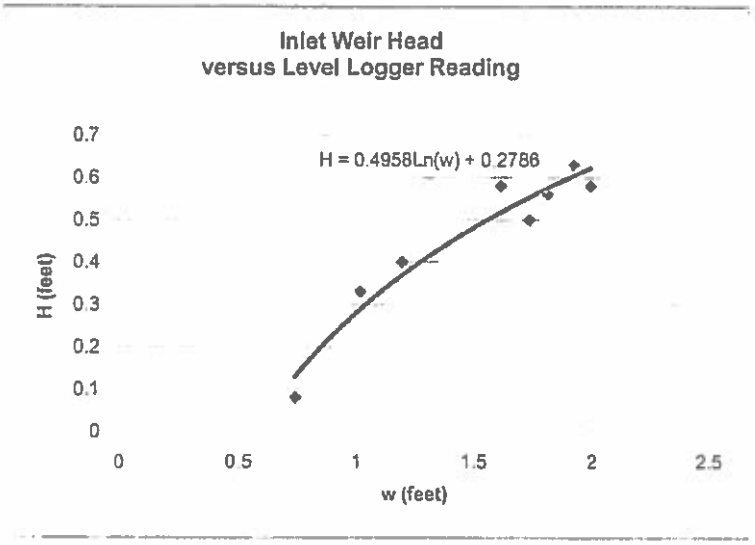


# MILL CREEK- Source Flow Data

L = Inlet Weir Crest width (ft) = 1.46
H = 0.4958Ln(w) + 0.2786 (from plot below)

| | Level Reading, w (feet) | Head over Inlet Weir, H | Inlet Flow, Q (gpm) |
|---|---|---|---|
| 7/23/2010 | 1.93 | **0.63** | 997 |
| 7/24/2010 | 1.97 | **0.61** | 964 |
| 7/25/2010 | 1.91 | **0.60** | 930 |
| 7/26/2010 | 1.69 | **0.54** | 799 |
| 7/27/2010 | 1.2 | **0.40** | 522 |

Bold H values indicates they were measured, others were calculated

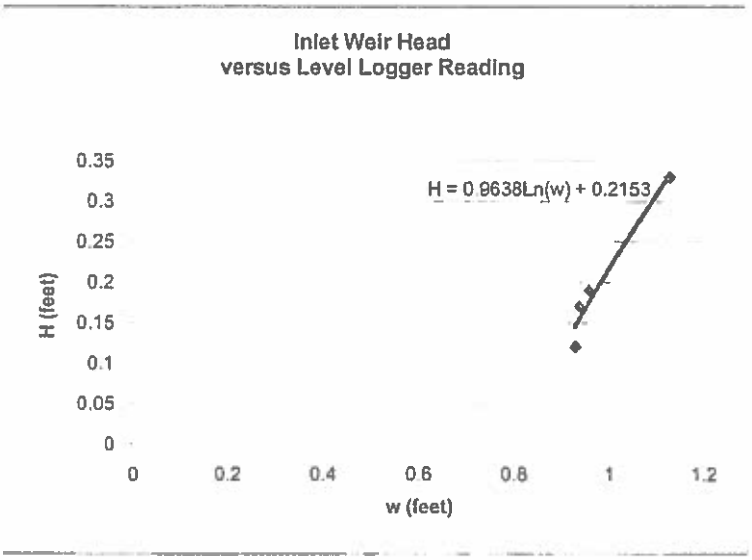


# LITTLE MARBLE- Source Flow Data

L = Inlet Weir Crest width (ft) = 1.44
H = 0.9638Ln(w) + 0.2153 (from plot below)

| | Level Reading, w (feet) | Head over Inlet Weir, H | Inlet Flow, Q (gpm) |
|---|---|---|---|
| 7/23/2010 | 0.94 | **0.17** | 147 |
| 7/24/2010 | 0.96 | 0.18 | 155 |
| 7/25/2010 | 0.95 | 0.17 | 142 |
| 7/26/2010 | 0.96 | 0.18 | 155 |
| 7/27/2010 | 0.96 | **0.19** | 174 |

Bold H values indicates they were measured, others were calculated



*Metered Sources*

## MARBLE SPRINGS- Source Flow Data

| | Flow Meter Reading, Q (gpm) | Totalizer Reading |
|---|---|---|
| 7/23/2010 | **1,800** | **226,264** |
| 7/24/2010 | 1,725 | |
| 7/25/2010 | 1,710 | |
| 7/26/2010 | 1,700 | |
| 7/27/2010 | **1,700** | **236,212** |
| *Average* | *1,727* | |

Bold H values indicates they were read, others are interpolated

Totalizer difference = 9,948,000 gallons
Average flow= 1,727 gpm

## SALMON CREEK- Source Flow Data

| | Flow Meter Reading, Q (gpm) | Totalizer Reading[1] |
|---|---|---|
| 7/23/2010 | **800** | **9,569** |
| 7/24/2010 | 770 | |
| 7/25/2010 | 750 | |
| 7/26/2010 | 710 | |
| 7/27/2010 | **700** | **9,983** |
| *Average* | *746* | |

Bold H values indicates they were read, others are interpolated

Totalizer difference = 414,000 gallons
Average flow= 72 gpm[1]

[1] Totalizer not accurately measuring flow, these numbers are not accurate. The totalizer was checked again on July 30th and reported a reading of 12,958 which results in an average flow rate of 690 gpm since July 27th. It was checked again on August 4th and reported a reading of 17,541 which results in an average flow rate of 640 gpm since July 30th. For the purposes of this flow test it is assumed that the meter was held open by a foreign object, or was not reading properly.

## ELK CREEK- Source Flow Data

The Elk Creek meter was broken at the time of this test. All flow was turned out so Elk Creek did not contribute any flow during the test.

Jeff Tomac
Wallowa Whitman Ranger District
PO Box 907
Baker City, OR 97814

Fred Warner Jr.
Commission Chair
fwarner@bakercounty.org

Tim L. Kerns
Commissioner
tkerns@bakercounty.org

Mark Bennett
Commissioner
mbennett@bakercounty.org

Mr. Tomac:

The Baker County Board of Commissioners would like to take this opportunity to comment on the proposal to authorize the reconstruction of the waterline currently providing service to the City of Baker City. We have reviewed the project scope and the purpose and need for the project.

Baker County has concluded that the decision to issue a temporary Special Use Authorization should be allowed for the following reasons:

1. The present Baker City water delivery system is old and in need of repair and reconstruction. This water supply is essential for the economic and social viability of Baker area citizens.
2. The water quality can be maintained in the watershed by using standard construction safeguards and methods.
3. Aquatic and fish habitat downstream should be unchanged by this project.
4. The landscape over the long-term will be maintained and the short-term impacts will be minimal due to reseeding and re-vegetation with native plants.
5. The protection of the Semi-Primitive recreation opportunities remain because of the Baker City Watershed and the surrounding protections afforded the water quality.

The Baker County Board of Commissioners urges the Forest Service to issue the temporary Special Use Permit with the methodology outlined in the Proposed Action. This will allow for protection of resources and contribute to sustainability of the Baker City water supply.

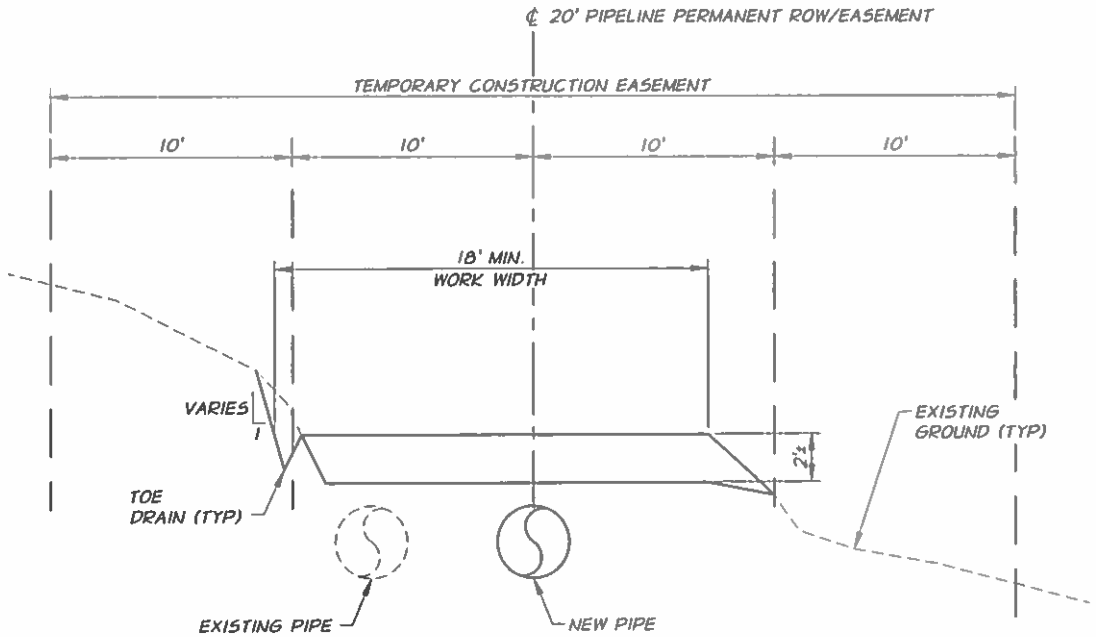
Thank you for your consideration and feel free to contact us with any issues.

**BAKER COUNTY BOARD OF COMMISSIONERS**

Fred Warner Jr., Commission Chair

Absent
Tim L. Kerns, Commissioner

Mark E. Bennett, Commissioner




TYPICAL SECTION

N.T.S.

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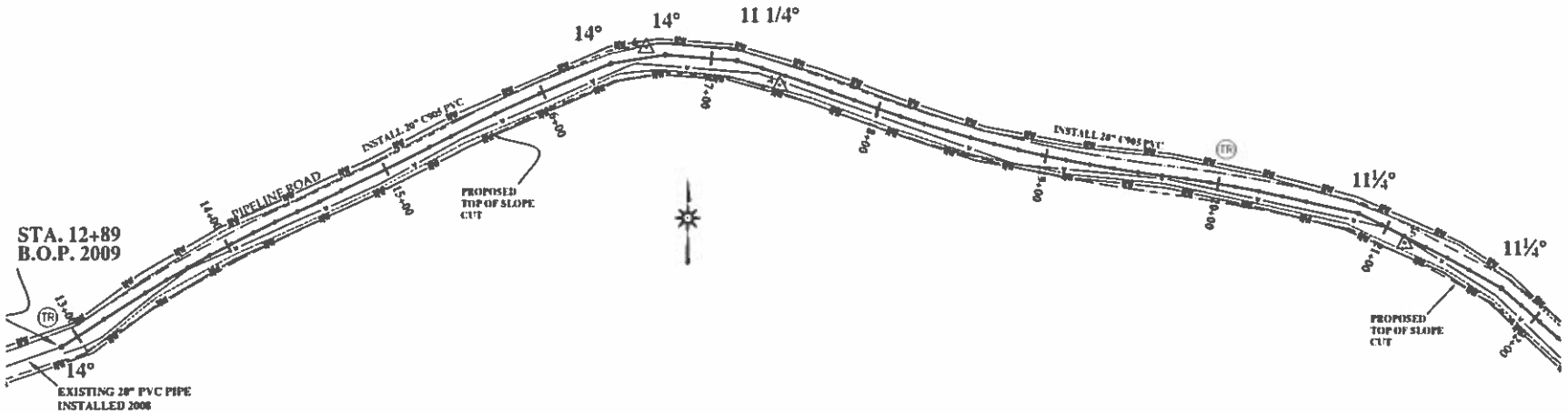
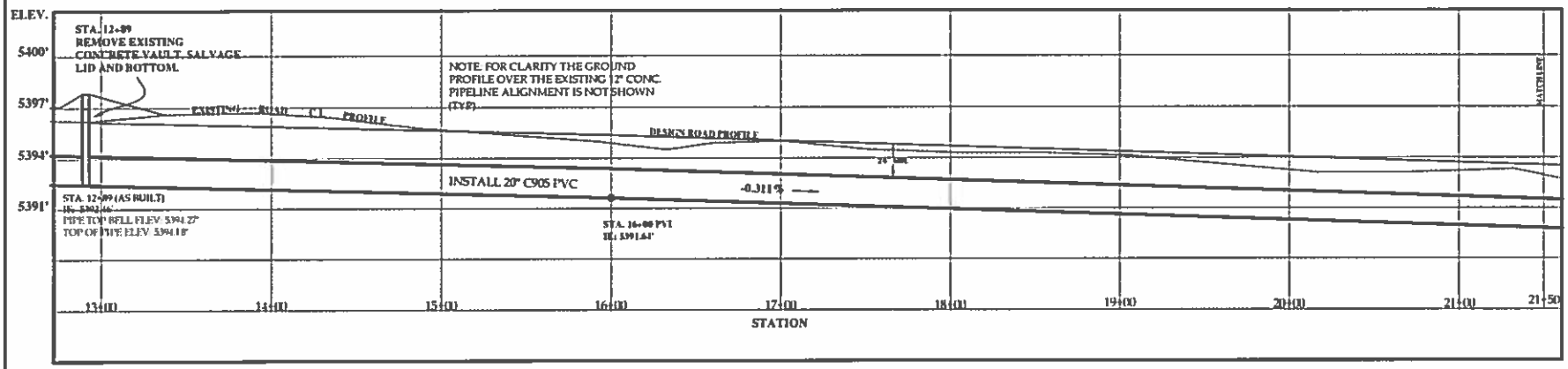
CITY OF
**BAKER CITY, OREGON**
MOUNTAIN LINE REPLACEMENT PROJECT
ENVIRONMENTAL ASSESSMENT

**MOUNTAIN LINE TYPICAL SECTION**

**FIGURE 4**

# PLAN/PROFILE




## REVIEW COPY

Z:\E\CAD\WATER\mountain line\Little Mill to Big Mill.dwg, 1/19/2016 3:08:13 PM

| | | | | | |
|---|---|---|---|---|---|
| Drawn by: Larry McBroom 2009<br>Reviewed By: Doug Schwin<br>Construction Date:<br>Constructed by: | Horizontal Scale: 1"= 30'<br>Vert Scale: 1"=5'<br>Job No: 4.2.1.9.03<br>Crd File: Watershed Little Mill to Big Mill 2009 | PUBLIC WORKS OFFICE | Baker City, Oregon<br>Watershed Pipeline Replacement<br>STA. 12+89 TO STA. 21+50 | SHEET 3 OF 14 |