

Rubin & Hays

ATTORNEYS AT LAW

Kentucky Home Trust Building, 450 South Third Street, Louisville, Kentucky 40202-1410
Telephone (502) 569-7525 Telefax (502) 569-7555 Email: rh@rubinhays.com

CHARLES S. MUSSON
W. RANDALL JONES
CHRISTIAN L. JUCKETT

PARALEGAL
MARY M. EMBRY

April 29, 2004

RECEIVED
MAY 03 2004
PUBLIC SERVICE
COMMISSION

Mr. Thomas Dorman
Executive Director
Public Service Commission
P.O. Box 615
Frankfort, Kentucky 40602

Re: **Caldwell County Water District, Case No. 2004-00149**

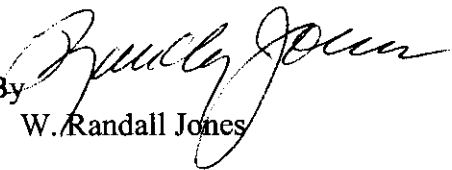
Dear Mr. Dorman:

Enclosed please find Two (2) copies of the Preliminary and Final Engineering Reports relating to the above Case.

If you need any additional information or documentation, please let us know.

Sincerely,

Rubin & Hays

By 
W. Randall Jones

WRJ:jlm
Enclosures
cc: Distribution List

FINAL SUMMARY ENGINEERING REPORT

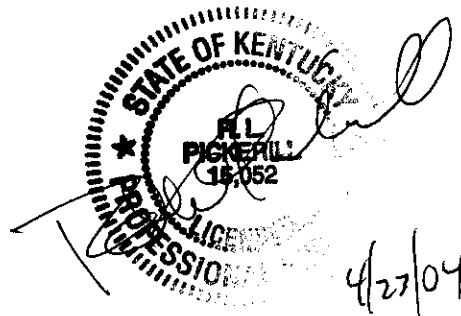
FOR

**CONTRACT 506-02-02
PHASE VII
WATER MAIN EXTENSIONS
CALDWELL COUNTY WATER DISTRICT
CALDWELL COUNTY, KENTUCKY**

RECEIVED

**MAY 03 2004
PUBLIC SERVICE
COMMISSION**

April 23, 2004



HOWARD K. BELL, CONSULTING ENGINEERS, INC.

354 Waller Avenue
P.O. Box 546
Lexington, KY 40588

107 Forbes Drive
P.O. Box 661
Hopkinsville, KY 42240

3983 Teays Valley Road
Suite 202
P.O. Box 266
Scott Depot, KY 25560

1. Introduction

This Final Summary Engineering Report is prepared to satisfy current funding agency requirements. The following sections will indicate any changes which have occurred as well as information regarding the bidding and proposed funding. The project consists of one contract:

Contract 506-02-02
Phase VII
Water Main Extensions
Caldwell County Water District
Caldwell County, Kentucky

The principal purpose of this final summary report is to reflect the project to be constructed by the Caldwell County Water District, Princeton, Kentucky.

2. General

This project will provide a public potable water source to inhabited areas of Caldwell County which do not currently have access to the public water supply system. The project area is primarily in the Northwest section of Caldwell County between the City of Princeton and the Crittenden County Line. This area includes the communities of Farmersville, Rufus, Enon, Creswell and Needmore. Also included are smaller project areas in the Eastern Section near Midway and Montgomerys and in the Southern section near Cobb. The constructed water lines will be connected to the existing Caldwell County Water District system. The Caldwell County Water District will own and maintain the system.

The total project will include the following construction related items;

78,248 L.F. of 6 inch water main and associated accessories
99,420 L.F. of 4 inch water main and associated accessories
35,961 L.F. of 3 inch water main and associated accessories
142 water service meters and associated accessories

The location of the project is as shown on the attached vicinity map and as indicated in the plan sheets of Contract 506-02-02

3. Current Project Status

Bids were opened on April 1, 2004. All bids were reviewed, mathematically checked and tabulated (see attached). The low bid as submitted by Twin States Utilities and Excavation, Inc. contained no error. The submitted bid was \$1,397,300.28. A recommendation of award (attached) was transmitted to the Caldwell County Water District. The Caldwell County Water District on April 8, 2004, passed a motion to accept the low bid and award approval of funding agencies.

4. Revised Project Budget

The project budget/funding is shown (per attached form 424C) and as follows:

RUS Loan	\$600,000
RUS Grant	\$900,000
KIA 2020	\$669,589
Tap Fees	\$72,000
Total	\$2,241,589

5. Projected Project Schedule

Bids Opened	April 1, 2004
Recommendation for Award	April 8, 2004
Resolution to Award	April 8, 2004
Preclose Loan	May 31, 2004
Notice to Proceed	May 31, 2004
Start Construction of 180 Calendar Days	June 10, 2004
End Construction	December 7, 2004
Final Inspection/ Closeout	January 7, 2005

6. Final Review/Summary

Caldwell County Water District is prepared to start construction on or before the above schedule date. The start of construction will depend upon how quickly bonds can be bid and the requirements for preclosing of the Rural Development loan is met.

Upon preclosing of the loan, this project will proceed in a timely manner. This is a much needed project for the residents of Caldwell County.

Prepared by:

Howard K. Bell, Consulting Engineers, Inc.
Robert L. Pickerill, Project Manager

Item No.	Item	Quantity	Unit	Engineer's Opinion of Probable Project Cost		Twin State Utilities & Excavation, Inc.		Stotts Construction Co., Inc.		Burgess Contracting, Inc.		Mickeyd, Inc.		S.J. Cox Enterprises, Inc.		Perry Construction	
				Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total
1.	6-inch Ductile Iron Pipe, Class 350, Furnishing, Trenching, Bedding, Laying and Backfilling, Unclassified Excavation, Complete	200	L.F.	\$12.00	\$2,400.00	\$13.83	\$2,766.00	\$10.70	\$2,140.00	\$12.60	\$2,520.00	\$11.37	\$2,274.00	\$15.00	\$3,000.00	\$13.50	\$2,700.00
2.	4-inch Ductile Iron Pipe, Class 350, Furnishing, Trenching, Bedding, Laying and Backfilling, Unclassified Excavation, Complete	300	L.F.	\$11.00	\$3,300.00	\$13.65	\$4,095.00	\$11.00	\$3,300.00	\$12.70	\$3,810.00	\$12.15	\$3,645.00	\$14.00	\$4,200.00	\$14.00	\$4,200.00
3.	3-inch Ductile Iron Pipe, Class 350, Furnishing, Trenching, Bedding, Laying and Backfilling, Unclassified Excavation, Complete	50	L.F.	\$10.50	\$525.00	\$12.92	\$646.00	\$11.00	\$550.00	\$14.75	\$737.50	\$13.45	\$672.50	\$18.00	\$900.00	\$16.00	\$800.00
4.	6-inch Class 200 (SDR 21) PVC Pipe, Furnishing, Trenching, Bedding, Laying and Backfilling, Copper Tracer Wire, Unclassified Excavation, Complete	78,248	L.F.	\$6.00	\$469,488.00	\$6.01	\$470,270.48	\$6.10	\$477,312.80	\$6.40	\$500,787.20	\$6.12	\$478,877.76	\$7.80	\$610,334.40	\$7.75	\$606,422.00
5.	4-inch Class 200 (SDR 21) PVC Pipe, Furnishing, Trenching, Bedding, Laying and Backfilling, Copper Tracer Wire, Unclassified Excavation, Complete	99,420	L.F.	\$5.50	\$546,810.00	\$4.34	\$431,482.80	\$4.70	\$467,274.00	\$4.60	\$457,332.00	\$4.81	\$478,210.20	\$6.00	\$596,520.00	\$6.25	\$621,375.00
6.	3-inch Class 200 (SDR 21) PVC Pipe, Furnishing, Trenching, Bedding, Laying and Backfilling, Copper Tracer Wire, Unclassified Excavation, Complete	35,981	L.F.	\$5.00	\$179,805.00	\$3.86	\$138,809.46	\$4.30	\$154,632.30	\$3.85	\$138,449.85	\$4.42	\$158,947.62	\$5.50	\$197,785.50	\$6.00	\$215,766.00
7.	Ductile Iron Compact Mechanical Joint Pipe Fittings, Furnishing and Laying, Concrete Blocking, Complete	4,100	Lbs.	\$3.00	\$12,300.00	\$2.25	\$9,225.00	\$2.00	\$8,200.00	\$3.50	\$14,350.00	\$4.75	\$19,475.00	\$3.00	\$12,300.00	\$3.95	\$16,195.00
8.	8-inch x 0.250 Inch Steel Cover Pipe, Furnish and Install, Including Spacers, End Seals, Complete	407	L.F.	\$40.00	\$16,280.00	\$40.00	\$16,280.00	\$25.00	\$10,175.00	\$22.00	\$8,954.00	\$60.60	\$24,664.20	\$65.00	\$26,455.00	\$21.00	\$8,547.00
9.	10-inch x 0.250 Inch Steel Cover Pipe, Furnish and Install, Including Spacers, End Seals, Complete	280	L.F.	\$45.00	\$12,600.00	\$45.00	\$12,600.00	\$26.00	\$7,280.00	\$25.50	\$7,140.00	\$78.30	\$21,924.00	\$35.00	\$9,800.00	\$25.50	\$7,140.00
10.	Boring and/or Jacking for 8-inch Steel Cover Pipe, Unclassified Excavation	407	L.F.	\$75.00	\$30,525.00	\$65.00	\$26,455.00	\$65.00	\$34,595.00	\$195.00	\$79,365.00	\$235.00	\$95,645.00	\$100.00	\$40,700.00	\$140.00	\$56,980.00
11.	Boring and/or Jacking for 10-inch Steel Cover Pipe, Unclassified Excavation	280	L.F.	\$85.00	\$23,800.00	\$70.00	\$19,600.00	\$75.00	\$21,000.00	\$50.00	\$14,000.00	\$90.00	\$25,200.00	\$40.00	\$11,200.00	\$95.00	\$26,600.00
12.	Boring and/or Jacking for 3-inch Through 6-inch Water Pipe, Under Paved Driveways and Sidewalks, Including Grouting of Voids, Unclassified Excavation	505	L.F.	\$40.00	\$20,200.00	\$30.00	\$15,150.00	\$25.00	\$12,625.00	\$30.00	\$15,150.00	\$45.00	\$22,725.00	\$40.00	\$20,200.00	\$65.00	\$32,825.00
13.	6-inch Mechanical Joint Resilient Seated Gate Valve and Box, Including Concrete Valve Box Collar, Complete	31	Each	\$450.00	\$13,950.00	\$450.00	\$13,950.00	\$480.00	\$14,880.00	\$445.00	\$13,795.00	\$260.00	\$8,060.00	\$470.00	\$14,570.00	\$650.00	\$20,150.00
14.	4-inch Mechanical Joint Resilient Seated Gate Valve and Box, Including Concrete Valve Box Collar, Complete	35	Each	\$375.00	\$13,125.00	\$430.00	\$15,050.00	\$450.00	\$15,750.00	\$380.00	\$13,300.00	\$203.45	\$7,120.75	\$390.00	\$13,650.00	\$600.00	\$21,000.00
15.	3-inch Mechanical Joint Resilient Seated Gate Valve and Box, Including Concrete Valve Box Collar, Complete	14	Each	\$350.00	\$4,900.00	\$380.00	\$5,040.00	\$400.00	\$5,600.00	\$360.00	\$5,040.00	\$182.00	\$2,548.00	\$370.00	\$5,180.00	\$575.00	\$8,050.00
16.	Above Ground Blow-Off Hydrant Assembly, Furnish and Install, Complete	45	Each	\$1,250.00	\$56,250.00	\$1,500.00	\$67,500.00	\$1,400.00	\$63,000.00	\$1,300.00	\$58,500.00	\$828.00	\$37,260.00	\$1,600.00	\$72,000.00	\$1,365.00	\$61,425.00
17.	Underground Blow-Off Hydrant Assembly, Furnish and Install, Complete	1	Each	\$1,500.00	\$1,500.00	\$1,700.00	\$1,700.00	\$1,800.00	\$1,800.00	\$1,900.00	\$1,900.00	\$855.50	\$855.50	\$1,900.00	\$1,900.00	\$1,300.00	\$1,300.00

Item No.	Item Description	Quantity	Unit	Engineer's Opinion of Probable Project Cost		Twin State Utilities & Excavation, Inc. 2101 Brimstone Creek Road Moss, Tennessee 38575		Stotts Construction Co., Inc. 3815 Burkesville Road Columbia, Kentucky 42728		Burgess Contracting, Inc. 78 Eden Bay Drive Eddyville, Kentucky 42038		Mickeyd, Inc. 2105 Donaldson Road Nabo, Kentucky 42441		S.J. Cox Enterprises, Inc. 7350 Morehead Road Flemingsburg, Kentucky 4104		Perry Construction 125B MacArthur Court Nicholasville, Kentucky 40536	
				Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total
18.	Test Meter Assembly, Furnish and Install, Complete per Detail	8	Each	\$700.00	\$5,600.00	\$681.63	\$5,293.04	\$690.00	\$5,520.00	\$375.00	\$3,000.00	\$117.00	\$836.00	\$450.00	\$3,600.00	\$600.00	\$4,800.00
19.	Line Marker, Furnish and Install, Complete	37	Each	\$30.00	\$1,110.00	\$30.00	\$1,110.00	\$35.00	\$1,295.00	\$65.00	\$2,035.00	\$37.00	\$1,369.00	\$40.00	\$1,480.00	\$55.00	\$2,035.00
20.	3/4-inch Polyethylene Service Pipe, Furnishing, Trenching (Or Installing by Jacking), Bedding, Laying and Backfilling, Copper Tracer Wire, Unclassified Excavation, Complete	3,195	L.F.	\$4.00	\$12,780.00	\$3.50	\$11,182.50	\$3.50	\$11,182.50	\$2.00	\$6,390.00	\$0.14	\$447.30	\$6.00	\$19,170.00	\$4.00	\$12,780.00
21.	3/4-inch Polyethylene Service Pipe with 1-1/2 inch PVC Casing, End Seals on State Road Crossings, Furnishing, Trenching (or Installing by Jacking), Bedding, Laying, Backfilling, Copper Tracer Wire, Unclassified Excavation, Complete	1,470	L.F.	\$6.50	\$9,555.00	\$6.50	\$9,555.00	\$4.50	\$6,615.00	\$5.00	\$7,350.00	\$0.44	\$646.80	\$15.00	\$22,050.00	\$7.00	\$10,290.00
22.	3/4-inch Corporation Stop, Including Tap and Tapping Saddle, Furnish and Install, Complete	142	Each	\$150.00	\$21,300.00	\$100.00	\$14,200.00	\$70.00	\$9,940.00	\$45.00	\$6,390.00	\$72.13	\$10,242.46	\$50.00	\$7,100.00	\$150.00	\$21,300.00
23.	5/8-inch x 3/4-inch Service Meter Assembly, Including All Components, Furnish and Install, Complete	20	Each	\$180.00	\$3,200.00	\$350.00	\$7,000.00	\$300.00	\$6,000.00	\$300.00	\$6,000.00	\$104.66	\$2,093.20	\$275.00	\$5,500.00	\$200.00	\$4,000.00
24.	5/8-inch x 3/4-inch Service Meter Assembly, Including All Components, Furnish and Install, Complete with Tandem Setter and Pressure Reducing Valve	122	Each	\$185.00	\$22,570.00	\$370.00	\$45,140.00	\$385.00	\$46,970.00	\$380.00	\$46,360.00	\$185.16	\$22,589.52	\$330.00	\$40,260.00	\$250.00	\$30,500.00
25.	4-inch x 4-inch D.I. m.j. Tapping Sleeve, Valve, Box and Concrete Collar, Furnish and Install, Complete	1	Each	\$1,000.00	\$1,000.00	\$900.00	\$900.00	\$850.00	\$850.00	\$1,025.00	\$1,025.00	\$628.30	\$628.30	\$1,300.00	\$1,300.00	\$1,400.00	\$1,400.00
26.	6-inch x 6-inch D.I. m.j. Tapping Sleeve, Valve, Box and Concrete Collar, Furnish and Install, Complete	4	Each	\$1,300.00	\$5,200.00	\$1,000.00	\$4,000.00	\$1,090.00	\$4,360.00	\$1,200.00	\$4,800.00	\$741.97	\$2,967.88	\$1,700.00	\$6,800.00	\$1,550.00	\$6,200.00
27.	6-inch x 4-inch D.I. m.j. Tapping Sleeve, Valve, Box and Concrete Collar, Furnish and Install, Complete	3	Each	\$1,300.00	\$3,900.00	\$900.00	\$2,700.00	\$950.00	\$2,850.00	\$1,100.00	\$3,300.00	\$426.01	\$1,278.03	\$1,400.00	\$4,200.00	\$1,420.00	\$4,260.00
28.	Air Release Valve Assembly, Furnish and Install, Complete	28	Each	\$1,600.00	\$44,800.00	\$756.00	\$21,168.00	\$450.00	\$12,600.00	\$610.00	\$17,080.00	\$366.95	\$10,274.60	\$470.00	\$13,160.00	\$650.00	\$18,200.00
29.	Remove Existing Plug, Tie Into Existing 6" Water Main, Complete	2	Each	\$350.00	\$700.00	\$250.00	\$500.00	\$150.00	\$300.00	\$300.00	\$600.00	\$200.00	\$400.00	\$300.00	\$600.00	\$400.00	\$800.00
30.	Remove Existing Plug, Tie Into Existing 4" Water Main, Complete	2	Each	\$350.00	\$700.00	\$250.00	\$500.00	\$150.00	\$300.00	\$280.00	\$560.00	\$200.00	\$400.00	\$300.00	\$600.00	\$400.00	\$800.00
31.	Remove Existing Blowoff Assembly, Tie Into Existing 3" Water Main, Complete	1	Each	\$350.00	\$350.00	\$250.00	\$250.00	\$150.00	\$150.00	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00	\$400.00	\$400.00
32.	Remove Existing Blowoff Assembly, Tie Into Existing 4" Water Main, Complete	4	Each	\$350.00	\$1,400.00	\$300.00	\$1,200.00	\$200.00	\$800.00	\$300.00	\$1,200.00	\$300.00	\$1,200.00	\$300.00	\$1,200.00	\$400.00	\$1,600.00
33.	Remove Existing Blowoff Assembly, Tie Into Existing 5" Water Main, Complete	12	Each	\$450.00	\$5,400.00	\$300.00	\$3,600.00	\$200.00	\$2,400.00	\$320.00	\$3,840.00	\$300.00	\$3,600.00	\$300.00	\$3,600.00	\$400.00	\$4,800.00
34.	Reset Existing Blowoff Assembly, Complete	7	Each	\$850.00	\$5,950.00	\$300.00	\$2,100.00	\$300.00	\$2,100.00	\$700.00	\$4,900.00	\$500.00	\$3,500.00	\$500.00	\$3,500.00	\$400.00	\$2,800.00
35.	Remove Existing Blowoff Assembly, Tie Into Existing 4" Water Main, Return Blowoff Assembly to Owner, Complete	1	Each	\$350.00	\$350.00	\$350.00	\$350.00	\$400.00	\$400.00	\$350.00	\$350.00	\$300.00	\$300.00	\$400.00	\$400.00	\$400.00	\$400.00
36.	Extra for Mechanical Removal of Solid Rock, Only On Order of the Engineer	10	C.Y.	\$50.00	\$500.00	\$50.00	\$500.00	\$100.00	\$1,000.00	\$200.00	\$2,000.00	\$500.00	\$5,000.00	\$150.00	\$1,500.00	\$100.00	\$1,000.00

Item No.	Item	Quantity	Unit	Engineer's Opinion of Probable Project Cost		Twin State Utilities & Excavation, Inc.		Stats Construction Co., Inc.		Burgess Contracting, Inc.		Mickeyd, Inc.		S.J. Cox Enterprises, Inc.		Perry Construction	
				Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total	Unit Price	Total
37.	Extra for Mechanical Tamping of Trench Backfill, When Not Required by Plans and/or Specifications, On Order of the Engineer	10	C.Y.	\$10.00	\$100.00	\$1.00	\$10.00	\$20.00	\$200.00	\$200.00	\$2,000.00	\$400.00	\$4,000.00	\$10.00	\$100.00	\$25.00	\$250.00
38.	Crushed Rock for Trench Stabilization, On Order of the Engineer	20	Ton	\$12.50	\$250.00	\$15.00	\$300.00	\$20.00	\$400.00	\$15.00	\$300.00	\$15.00	\$300.00	\$18.00	\$360.00	\$16.50	\$330.00
39.	Extra for Crushed Rock for Pipe Bedding, On Order of the Engineer	20	Ton	\$12.50	\$250.00	\$15.00	\$300.00	\$15.00	\$300.00	\$15.00	\$300.00	\$15.00	\$300.00	\$18.00	\$360.00	\$16.50	\$330.00
40.	Crushed Rock on Trench Surface, in Place (_____ L.F. x 225 Lbs/2000 = _____ Ton)	500	Ton	\$15.00	\$7,500.00	\$12.00	\$6,000.00	\$12.00	\$6,000.00	\$15.00	\$7,500.00	\$15.00	\$7,500.00	\$15.00	\$7,500.00	\$16.50	\$8,250.00
41.	Riprap on Trench Surface, in Place	10	Ton	\$15.00	\$150.00	\$20.00	\$200.00	\$30.00	\$300.00	\$15.00	\$150.00	\$15.00	\$150.00	\$60.00	\$600.00	\$18.00	\$180.00
42.	2-inch Thickness Bituminous Surface Replacement, Trench Width, on Streets, Drives and Roads, Complete	756	L.F.	\$15.00	\$11,340.00	\$12.00	\$9,072.00	\$8.00	\$6,048.00	\$6.00	\$4,536.00	\$45.00	\$34,020.00	\$11.50	\$8,694.00	\$12.00	\$9,072.00
43.	6" Concrete Sidewalk Replacement, Trench Width, Complete	40	L.F.	\$60.00	\$2,400.00	\$0.00	\$0.00	\$5.00	\$200.00	\$22.00	\$880.00	\$48.00	\$1,800.00	\$18.80	\$744.00	\$20.00	\$800.00
44.	4" Concrete Sidewalk Replacement, Trench Width, Complete	15	L.F.	\$50.00	\$750.00	\$0.00	\$0.00	\$5.00	\$75.00	\$20.00	\$300.00	\$40.00	\$600.00	\$18.80	\$282.00	\$20.00	\$300.00
				\$1,576,863.00		\$1,387,300.28		\$1,429,269.60		\$1,468,576.55		\$1,504,947.62		\$1,795,624.90		\$1,859,352.00	

TOTAL CONTRACT 506-02-02

We certify that the following is a true and complete tabulation of all bids received by the Caldwell County Water District, Princeton, Kentucky, on April 1, 2004, for the titled project.

HOWARD K. BELL, CONSULTING ENGINEERS, INC.





April 8, 2004

Caldwell County Water District
118 West Market Street
Princeton, KY 42445
Attn: Mr. Gary Fuller, Chairman

Re: Recommendation for Award
Contract 506-02-02
Phase VII Water Main Extensions
Caldwell County, Kentucky

Dear Mr. Fuller:

Six bids for the construction of the above referenced project were received and opened on Thursday, April 1, 2004. After the bid opening, HKB reviewed, mathematically checked and tabulated all bids received. Please find enclosed a copy of the certified tabulations of the bids.

The Engineer's Opinion of Probable Construction Cost for the contract was \$1,576,863.00. The low bid was less than the Engineer's Opinion. Four of the six bids were within an 8 per cent range, indicating valid pricing and good competition.

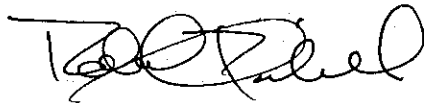
During the review and mathematical check it was determined that the fourth place bidder, MickeyD, had a minor mathematical error in their bid total, but the error made virtually no difference in the amount bid.

According to qualification information submitted, the low bidder, Twin States Utilities, is currently performing Phase V and Phase VI Water

Mr. Gary Fuller
April 8, 2004
Page 2

Main Extensions for the Caldwell County Water District and has, therefore, performed projects of similar size and scope. Based upon a review of qualifications submitted and a check of some of their submitted references, Twin States Utilities are judged to be a qualified contractor, capable of completing this project in a satisfactory manner. **HKB recommends that Contract 506-02-02 be awarded to Twin States Utilities and Excavation, Inc. of Moss, Tennessee in the amount of \$1,397,300.28.**

Sincerely,
Howard K. Bell, Consulting Engineers, Inc.



Robert L. Pickerill, P.E.
Project Manager

C: Debbie Boone, Rural Development

Enclosure

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April 12, 2004

Mr. Roy Brown, President
Twin States Utilities and Excavation, Inc.
2101 Brimstone Creek Road
Moss, Tennessee 38575

Re: Recommendation for Award
Contract 506-02-02
Phase VII Water Main Extensions
Caldwell County, Kentucky

Dear Mr. Brown:

Bids were received by the Caldwell County Water District on the above referenced project on April 1, 2004. Please find enclosed a copy of the certified bid tabulation.

The Caldwell County Water District Board voted to award the project to the apparent low bidder, Twin States Utilities and Excavation, Inc. at their regular meeting on April 8, 2004. The award will be made pending funding from Rural Utilities Rural Development Program and the Kentucky Infrastructure Authority 2020 monies.

Sincerely,
Howard K. Bell, Consulting Engineers, Inc.

A handwritten signature in black ink, appearing to read 'Robert Pickerill', is written over a horizontal line.

Robert Pickerill, P.E.
Regional Office Manager

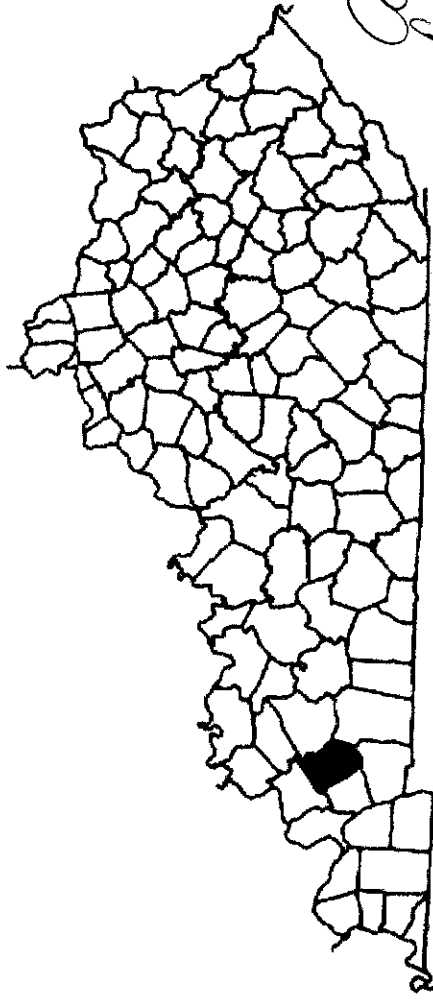
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BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	\$ 80,000.00	.00	\$ 80,000.00
2. Land, structures, rights-of-way, appraisals, etc.	\$ 15,000.00	.00	\$ 15,000.00
3. Relocation expenses and payments	\$.00	.00	\$ 0.00
4. Architectural and engineering fees	\$ 107,872.00	.00	\$ 107,872.00
5. Other architectural and engineering fees	\$ 17,500.00	.00	\$ 17,500.00
6. Project inspection fees	\$ 58,687.00	.00	\$ 58,687.00
7. Site work	\$.00	.00	\$ 0.00
8. Demolition and removal	\$.00	.00	\$ 0.00
9. Construction	\$ 1,397,300.00	.00	\$ 1,397,300.00
10. Equipment	\$.00	.00	\$ 0.00
11. Miscellaneous	\$.00	.00	\$ 0.00
12. SUBTOTAL (sum of lines 1-11)	\$ 1,676,359.00	0.00	\$ 1,676,359.00
13. Contingencies	\$ 565,230.00	.00	\$ 565,230.00
14. SUBTOTAL	\$ 2,241,589.00	0.00	\$ 2,241,589.00
15. Project (program) income	\$.00	.00	\$ 0.00
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ 2,241,589.00	0.00	\$ 2,241,589.00
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X _____%		\$ 0.00

22.5 MILES



Case # 2004-00149
Rec 5-3-04

B HOWARD K. BELL
Consulting Engineers, Inc.

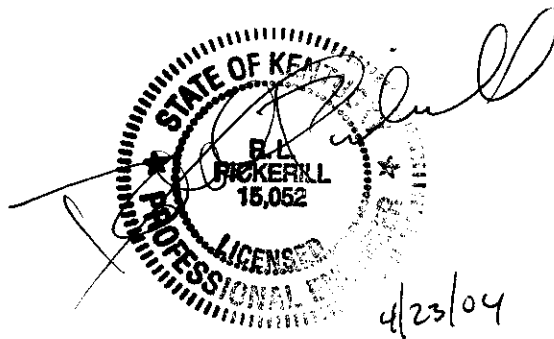
KY - HOPKINSVILLE, KY - SCOTT DEPOT, WV



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102 West Second Street • Hopkinsville, Kentucky • P.O. Box 661, 42240 • (502) 886-5466

CALDWELL COUNTY, KENTUCKY
WATER MAIN EXTENSIONS
PHASE VII
PRELIMINARY ENGINEERING REPORT

REC
MAY 0 3
PUBLIC SERVICE
COMMISSION



HOWARD K. BELL, CONSULTING ENGINEERS, INC.

354 Waller Avenue
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**PRELIMINARY ENGINEERING REPORT
WATER MAIN EXTENSIONS
PHASE VII
CALDWELL COUNTY, KENTUCKY**

GENERAL

This document is prepared as a preliminary engineering report for the Caldwell County Water Main Extension Project, Phase VII. This project will provide potable water to sections of Caldwell County currently being served by wells or cisterns.

PROJECT PLANNING AREA

The project area consists principally of inhabited areas of Caldwell County that do not currently have access to a public water supply system. A master development plan containing Phases 5 to 8 is intended to provide water to all remaining inhabited areas of Caldwell County that is not currently provided a public potable water source. This project is a portion of that master plan. The project areas are all in the service area of the Caldwell County Water District.

LOCATION

The project area is primarily in the Northwest section of Caldwell County between the City of Princeton, Kentucky and the Crittenden County line. This area includes the communities of Farmersville, Rufus, Enon, Creswell and Needmore. Also included are smaller project areas in the Eastern section near Midway and Montgomerys, and in the Southern section near Cobb. Elevations in the areas range from 372 feet to 682 feet. A map of the project areas is included in this report.

ENVIRONMENTAL RESOURCES PRESENT

The construction will primarily occur in and adjacent to the right of way of public roads. Since most of these areas have been previously disturbed, no significant impact is anticipated to wetlands, historical sites or endangered species. Since stream crossings are planned in the project, the appropriate construction techniques will be

used to prevent damage to the stream and the surrounding ecosystem.

GROWTH AREAS AND POPULATION TRENDS

The current population of the project area is estimated at 350 persons, 125 homes. Significant growth is not anticipated during the design period.

EXISTING FACILITIES

The only utilities currently provided to the project area is electricity and telephone. Water and sewer service is not currently available. The project will provide potable water to the area from the existing Caldwell County Water District system by tying on to existing lines at numerous locations. Currently the Caldwell County Water District purchases all of their water with the City of Princeton being their sole supplier. The only exception will be Longbreak Road. This area will be served by the Caldwell County Water District with water being purchased from the South Hopkins Water District. The connection and purchase agreement with South Hopkins will occur during Phase 6. The unserved residents of the area are currently use wells and cisterns as water supplies. Upon completion, operation and maintenance will be the responsibility of the Caldwell County Water District. Water rates are not anticipated to increase as a direct result of this project. This is demonstrated by the Projected Annual Revenue Requirements analysis. This analysis is found in exhibit 4 of appendix D.

NEED FOR PROJECT

The need for this project is primarily related to health and safety issues. Most residents of the area are currently served by wells and cisterns. Some residents have complained of wells periodically going dry. Testing by the Caldwell County Health Department indicates high levels of Coliform and some E Coli present in numerous wells in the county. The potable water provided by this project will make a much safer environment for the residents of the area.

ALTERNATIVES CONSIDERED

No other alternatives were considered for serving the entire project area.

PROPOSED PROJECT

PROJECT DESIGN

The water supply for this project will be provided by the City of Princeton Water Treatment Plant with the exception of Longbreak Road which will be supplied by the South Hopkins Water District. Being a part of a larger master plan, a hydraulic analysis was performed which included all phases.

The project consists of three, four and six inch diameter line additions to the current distribution system. Because of the low population density of the service area, small diameter (6 inches or less) water lines are proposed for the system. Small diameter lines have less water stored in the distribution system which allows for a more rapid water turnover and fewer water quality problems. In general, 6 inch lines are proposed in the core sections of the system and 4 inch lines in the branches of the system. Three inch lines are only utilized in areas where lines dead end and no significant future growth is anticipated. The system design will conform to "Recommended Standards for Water Works" (10 state standards).

The system is comprised of four pressure zones. Two pressure zones are supplied directly by the City of Princeton high and low pressure zones. The other two zones are contained within the Caldwell County system, and are created with booster pumps and associated tanks. The pressure zones are currently divided with closed valves. Proposed additions to the system will include pressure reducing valves located between the zones that will automatically open to supplement flows and pressure in periods of high demand to some portions of the system.

A hydraulic analysis was completed for this project and is included in this report as appendix B. The hydraulic analysis was performed using the KYPIPE 2000 computer program and models the entire existing and proposed Caldwell County Water District system.

OPINION OF PROBABLE COST

The total project cost is estimated to be \$3,035,837 as shown in the attached itemized opinion of probable costs. The opinion of probable cost is included in appendix C of this report.

ANNUAL OPERATION BUDGET

This project is not expected to affect the current water rates. The operating budget is included in appendix D of this report.

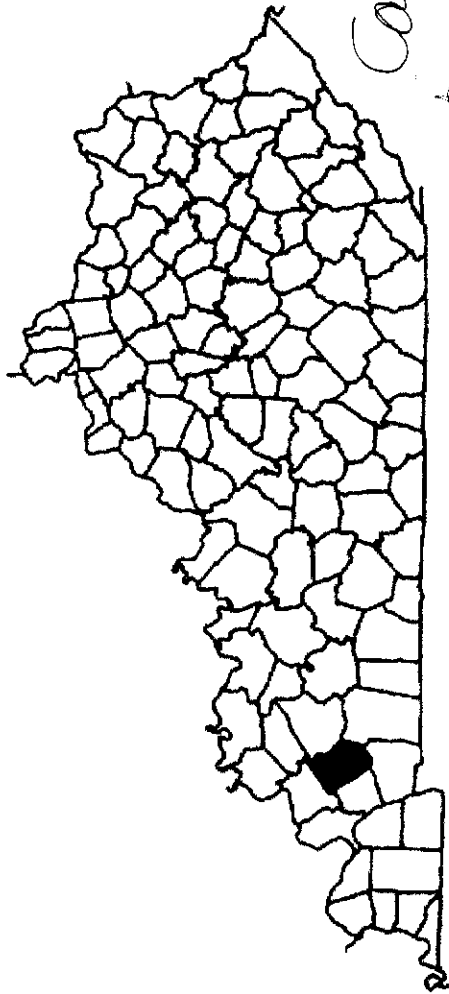
CONCLUSIONS AND RECOMMENDATIONS

The project area does not currently have a public potable water source available. The residents are either relying on private wells or hauling water to maintain cisterns. For health and safety concerns a public potable water source is needed. This project will provide potable water to unserved areas of Caldwell County to prevent potential health risks.

APPENDIX A
PROJECT AREA MAP

CALDWELL COUNTY
WATER MAIN EXTENSIONS
CALDWELL COUNTY, KENTUCKY

TO
22.5 MILES



Case # 2004-00149
Dec. 5-3-04

HOWARD K. BELL

Consulting Engineers, Inc.

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APPENDIX B
HYDRAULIC ANALYSIS

CALDWELL COUNTY
WATER MAIN EXTENSIONS
CALDWELL COUNTY, KENTUCKY

Hydraulic Analysis

System Description

Caldwell County Water District supplied water distribution maps with lines sizes and customer counts for the existing distribution system. Based on these maps, a system schematic was generated. Elevations were obtained from USGS topographic quadrangles and pipeline lengths were measured from county road maps. The hydraulic model was calibrated to the existing system prior to the addition of the proposed waterlines. Existing system demands are based on customer counts from meter routes. For the proposed waterline, the customer counts are based on house counts in the areas to be served by the proposed new water lines.

The Caldwell County Water District is supplied primarily from the City of Princeton water distribution system. City of Princeton water storage consists of two elevated tanks and one ground storage tank with a combined capacity of 1,400,000 gallons. There are two pressure zones within the Princeton distribution system. The Skyline Tank is an elevated tank located in the high level pressure system. Bremner and Linton Hill Tanks are located in the low level pressure system. High service pumps, located at the Princeton WTP, fill the low level system tanks. A booster station located at the Linton Hill Tank site fills the Skyline Tank. The high service pumps have a design point of 1,400 gpm at 430 feet of head. The booster pumps have a design pump rating of 1,000 gpm at 90 feet of head.

The current Caldwell County Water distribution (CCWD) system has four pressure zones. Portions of the CCWD system are on the City of Princeton pressure zones. One of the CCWD zones is supplied by a booster pump station and elevated tank located on Dalton road in the western side of the county. The other zone is supplied by a booster station and tank located on HWY 91 (Hopkinsville Road) in the eastern part of the county.

Hydraulics

A KYPIPE 2000 analysis was run of the CCWD distribution system that included both existing and proposed pipelines. Three analyses were performed. One was a static run at normal demand, another was a static run at peak demand (five times normal demand). The other run was an example of system flushing capability. Enclosed is a copy of a flushing velocity run along with a system schematic superimposed on a Caldwell County road that shows the junction nodes and pipe numbers.

The static analysis demonstrated that the water distribution system can supply customers during periods of peak demand and still maintain adequate pressures,

greater than 30 psi, throughout the system. Peak demand is estimated at 0.5 gpm per customer and normal demand is expected to average approximately 0.1 gpm per customer.

In order to assure that flushing velocities of at least 2.5 fps can be achieved the new lines, simulated demands of 55 gpm, 100 gpm and 220 gpm were placed on 3, 4 and 6 inch lines respectively. Because of the number of computer runs required, they have not been included in this report. An example computer run that demonstrates the procedure is attached. The enclosed run demonstrates flushing at junction JCN 217, pipe P-249. Flushing velocities of at least 2.5 fps can be achieved in all new water lines while maintaining at least 20 psi in surround areas.

System Pressures

Under all normal and peak demand conditions , at least 30 psi can be delivered at each meter. Some nodes, located near tanks, have less than 30 psi; however, no customers are connected in these low pressure zones. Pressures greater than 90 psi at customer meters will be reduced by individual pressure reducing valves. Under the imposed flushing conditions at least 20 psi. can be maintained at the surrounding nodes.

Tanks

There are no additional tanks proposed for the system. Existing storage capacity for the Caldwell County system is greater than the expected average daily consumption.

Pumps

There are no new booster stations proposed for the system.


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***** K Y P I P E 4 *****
*
* University of Kentucky Network Modeling Software *
*
* Copyrighted by KPFS 1998 *
* Version 1.200 - 01/26/2000 *
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Date & Time: Tue Dec 24 11:01:58 2002

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*****
SUMMARY OF ORIGINAL DATA
*****

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U N I T S S P E C I F I E D

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

P I P E L I N E D A T A

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E N A M E S		L E N G T H (ft)	D I A M E T E R (in)	R O U G H N E S S C O E F F .	M I N O R L O S S C O E F F .
	#1	#2				
P-1	J-1	J-301	6702.59	8.00	120.0000	0.00
P-10	J-10	J-11	7220.87	6.00	120.0000	0.00
P-100	J-95	J-96	3808.17	6.00	120.0000	0.00
P-101	J-96	J-97	3118.72	4.00	121.0965	0.00
P-102	J-96	J-98	3088.66	6.00	120.0000	0.00
P-103	J-99	J-91	7121.40	4.00	121.0965	0.00
P-104	J-99	J-256	7612.00	6.00	120.0000	0.00
P-105	J-102	J-255	5941.00	4.00	120.0000	0.00
P-106	J-311	J-100	1663.28	6.00	120.0000	0.00
P-107	J-311	J-182	11154.99	6.00	120.0000	0.00
P-108	J-104	J-105	8018.87	4.00	121.0965	0.00
P-109	J-103	J-104	2727.16	6.00	120.0000	0.00
P-11	J-10	J-14	2712.56	4.00	121.0965	0.00
P-110	J-103	J-247	10751.22	6.00	120.0000	0.00
P-111	J-105	J-229	3326.65	6.00	120.0000	0.00
P-112	J-105	J-108	12877.23	6.00	120.0000	0.00
P-113	J-108	J-107	1567.00	4.00	121.0965	0.00
P-114	J-108	J-227	5741.46	6.00	120.0000	0.00
P-115	J-109	J-110	1477.00	4.00	121.0965	0.00
P-116	J-109	J-114	1893.08	6.00	120.0000	0.00
P-117	J-112	J-109	880.55	6.00	120.0000	0.00
P-118	J-111	J-112	2231.92	6.00	120.0000	0.00
P-119	J-111	J-113	1412.45	6.00	120.0000	0.00
P-12	J-12	J-10	1378.70	6.00	120.0000	0.00
P-120	J-113	J-98	8661.22	6.00	120.0000	0.00
P-121	J-113	J-162	2837.95	4.00	121.0965	0.00
P-122	J-114	J-111	1792.51	6.00	120.0000	0.00
P-123	J-114	J-150	8179.80	6.00	120.0000	0.00
P-124	J-117	J-116	2650.25	4.00	121.0965	0.00
P-125	J-117	J-206	1834.28	6.00	120.0000	0.00
P-126	J-119	J-118	1243.98	4.00	121.0965	0.00
P-127	J-119	J-125	7395.79	6.00	120.0000	0.00
P-128	J-121	J-120	3207.85	4.00	121.0965	0.00
P-129	J-121	J-127	2086.44	4.00	121.0965	0.00
P-13	J-12	J-13	3544.26	4.00	121.0965	0.00
P-130	J-122	J-121	1371.16	4.00	121.0965	0.00
P-131	J-123	J-122	2179.52	6.00	120.0000	0.00
P-132	J-123	J-124	3174.11	4.00	121.0965	0.00
P-133	J-125	J-122	6970.60	6.00	120.0000	0.00

P-134	J-125	J-126	2067.95	4.00	121.0965	0.00
P-135	J-127	J-123	1423.95	4.00	121.0965	0.00
P-136	J-127	J-128	3778.44	4.00	121.0965	0.00
P-137	J-128	J-123	3651.94	6.00	120.0000	0.00
P-138	J-128	J-166	6639.18	6.00	120.0000	0.00
P-139	J-130	J-132	2681.21	4.00	121.0965	0.00
P-14	J-15	J-12	4141.13	6.00	120.0000	0.00
P-140	J-132	J-134	1904.38	4.00	121.0965	0.00
P-141	J-132	J-133	4386.00	4.00	121.0965	0.00
P-142	J-134	J-131	2568.40	4.00	121.0965	0.00
P-143	J-134	J-136	13703.24	4.00	121.0965	0.00
P-144	J-136	J-135	3203.01	4.00	121.0965	0.00
P-145	J-50	J-78	2170.82	4.00	121.0965	0.00
P-146	J-136	J-138	6663.65	4.00	121.0965	0.00
P-147	J-138	J-139	7229.21	6.00	120.0000	0.00
P-148	J-138	J-140	8228.11	6.00	120.0000	0.00
P-149	J-140	J-141	2747.97	4.00	121.0965	0.00
P-15	J-15	J-300	2471.60	4.00	121.0965	0.00
P-150	J-140	J-143	1667.24	6.00	120.0000	0.00
P-151	J-143	J-142	5062.53	4.00	121.0965	0.00
P-152	J-143	J-144	3585.24	6.00	120.0000	0.00
P-153	J-144	J-304	5382.25	4.00	121.0965	0.00
P-154	J-144	J-306	8239.35	6.00	120.0000	0.00
P-155	J-147	J-146	2238.81	4.00	121.0965	0.00
P-156	J-147	J-205	3380.27	4.00	121.0965	0.00
P-157	J-147	J-151	4066.61	6.00	120.0000	0.00
P-158	J-150	J-211	5097.29	6.00	120.0000	0.00
P-159-XX	J-309	J-150	1760.87	6.00	120.0000	0.00
P-16	J-17	J-15	1103.46	6.00	120.0000	0.00
P-160	J-151	J-207	4551.54	6.00	120.0000	0.00
P-161	J-151	J-307	6116.52	6.00	120.0000	0.00
P-162	J-153	J-152	1403.62	6.00	120.0000	0.00
P-163	J-153	J-157	6427.73	4.00	121.0965	0.00
P-164	J-155	J-156	6880.83	4.00	121.0965	0.00
P-165	J-157	J-155	1517.21	4.00	121.0965	0.00
P-166	J-156	J-154	4324.00	4.00	121.0965	0.00
P-167	J-156	J-158	10280.82	4.00	121.0965	0.00
P-168	J-158	J-157	5351.21	4.00	121.0965	0.00
P-169	J-158	J-160	4095.82	4.00	121.0965	0.00
P-17	J-16	J-17	998.55	6.00	120.0000	0.00
P-170	J-160	J-159	4642.52	3.00	120.0000	0.00
P-171	J-161	J-309	2622.20	6.00	120.0000	0.00
P-172	J-164	J-148	6197.17	10.00	120.0000	0.00
P-173	J-150	J-170	2676.21	4.00	121.0965	0.00
P-174	J-162	J-115	6910.88	4.00	121.0965	0.00
P-175	J-152	J-165	7901.54	4.00	121.0965	0.00
P-176	J-165	J-164	2206.34	6.00	120.0000	0.00
P-177	J-166	J-129	10792.58	6.00	120.0000	0.00
P-178-XX	J-101	J-311	1542.54	6.00	120.0000	0.00
P-179	J-167	J-152	6173.59	10.00	120.0000	0.00
P-18	J-16	J-19	2071.43	4.00	121.0965	0.00
P-180	J-168	J-245	6248.44	6.00	120.0000	0.00
P-181	J-169	T-4	18629.34	10.00	120.0000	0.00
P-182-XX	J-171	J-2	4144.47	4.00	121.0965	0.00
P-183	J-171	J-11	11725.24	6.00	120.0000	0.00
P-184-XX	J-11	J-172	4540.75	4.00	121.0965	0.00
P-185	J-77	J-84	2414.27	4.00	121.0965	0.00
P-186-XX	J-75	J-67	2145.00	4.00	121.0965	0.00
P-187-XX	J-73	J-173	3405.67	4.00	121.0965	0.00
P-188-XX	J-174	J-102	3222.09	4.00	121.0965	0.00
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P-194-XX	J-177	J-283	1197.50	6.00	120.0000	0.00
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P-198	J-179	J-68	1640.00	6.00	120.0000	0.00
P-199	J-68	J-279	9005.00	4.00	120.0000	0.00
P-2	J-3	J-8	3251.04	6.00	120.0000	0.00
P-20	J-18	J-20	3485.54	4.00	121.0965	0.00
P-200	J-181	J-276	5162.43	8.00	120.0000	0.00
P-201-XX	J-180	J-177	1201.74	6.00	120.0000	0.00
P-202-XX	J-180	J-260	187478.00	6.00	120.0000	0.00
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P-205-XX	J-137	J-40	2730.34	4.00	121.0965	0.00

P-206-XX	J-137	J-42	2947.90	6.00	120.0000	0.00
P-207-XX	J-39	J-185	3942.00	4.00	121.0965	0.00
P-208-XX	J-33	J-186	5252.00	4.00	121.0965	0.00
P-209-XX	J-172	J-257	23661.44	6.00	120.0000	0.00
P-21	J-18	J-22	3239.51	4.00	121.0965	0.00
P-210	J-187	J-44	9136.80	8.00	120.0000	0.00
P-211	J-184	J-9	4797.82	4.00	121.0965	0.00
P-212	J-263	J-278	1300.00	4.00	121.0965	0.00
P-213	J-188	J-48	4097.65	4.00	121.0965	0.00
P-214	J-189	J-188	613.00	4.00	120.0000	0.00
P-215	J-189	J-190	3303.86	4.00	120.0000	0.00
P-216	J-6	J-263	3103.00	4.00	121.0965	0.00
P-217-XX	J-192	J-191	4013.00	4.00	121.0965	0.00
P-218	J-192	J-193	810.00	3.00	120.0000	0.00
P-219	J-4	J-252	3310.87	4.00	121.0965	0.00
P-22	J-21	J-18	2789.47	6.00	120.0000	0.00
P-220-XX	J-195	J-194	2800.66	4.00	121.0965	0.00
P-221-XX	J-195	J-197	4118.00	4.00	121.0965	0.00
P-222-XX	J-154	J-196	4863.00	4.00	121.0965	0.00
P-223-XX	J-196	J-198	2254.43	4.00	121.0965	0.00
P-224-XX	J-196	J-199	1607.65	4.00	121.0965	0.00
P-225-XX	J-199	J-200	3396.65	4.00	121.0965	0.00
P-226-XX	J-199	J-201	7835.00	4.00	121.0965	0.00
P-227-XX	J-201	J-202	2048.68	4.00	121.0965	0.00
P-228-XX	J-201	J-146	10487.00	4.00	121.0965	0.00
P-229	J-203	J-147	2702.14	6.00	120.0000	0.00
P-23	J-21	J-24	6149.56	4.00	121.0965	0.00
P-230-XX	J-203	J-204	2670.42	6.00	120.0000	0.00
P-231	J-205	J-149	5156.94	4.00	121.0965	0.00
P-232-XX	J-204	J-205	3779.56	4.00	121.0965	0.00
P-233-XX	J-204	J-209	9959.68	6.00	120.0000	0.00
P-234	J-206	J-119	2459.44	6.00	120.0000	0.00
P-235-XX	J-206	J-208	4185.26	4.00	121.0965	0.00
P-236	J-207	J-161	3144.50	6.00	120.0000	0.00
P-237	J-207	J-274	931.00	4.00	121.0965	0.00
P-238-XX	J-110	J-211	5703.00	4.00	121.0965	0.00
P-239	J-211	J-117	1834.74	6.00	120.0000	0.00
P-24	J-23	J-21	5566.73	6.00	120.0000	0.00
P-240-XX	J-209	J-118	935.89	4.00	121.0965	0.00
P-241-XX	J-209	J-212	7434.06	6.00	120.0000	0.00
P-242-XX	J-212	J-145	6534.33	4.00	121.0965	0.00
P-243-XX	J-212	J-214	6094.00	4.00	121.0965	0.00
P-244-XX	J-214	J-213	3221.00	4.00	121.0965	0.00
P-245-XX	J-214	J-215	4339.00	4.00	121.0965	0.00
P-246-XX	J-215	J-216	4699.00	4.00	121.0965	0.00
P-247-XX	J-215	J-133	10823.00	4.00	121.0965	0.00
P-248	J-127	J-221	4856.79	6.00	120.0000	0.00
P-249-XX	J-218	J-217	5673.88	4.00	121.0965	0.00
P-25	J-23	J-25	5124.16	6.00	120.0000	0.00
P-250	J-258	J-219	4193.00	3.00	120.0000	0.00
P-251-XX	J-219	J-220	900.00	3.00	120.0000	0.00
P-252-XX	J-219	J-238	3284.38	4.00	121.0965	0.00
P-253	J-221	J-218	5489.00	3.00	120.0000	0.00
P-254-XX	J-221	J-222	4118.00	6.00	120.0000	0.00
P-255-XX	J-222	J-120	1347.17	4.00	121.0965	0.00
P-256-XX	J-222	J-223	8448.00	6.00	120.0000	0.00
P-257-XX	J-223	J-125	7974.10	6.00	120.0000	0.00
P-258-XX	J-223	J-226	985.80	4.00	121.0965	0.00
P-259-XX	J-224	J-303	3379.00	4.00	121.0965	0.00
P-26	J-25	J-298	4647.19	4.00	121.0965	0.00
P-260-XX	J-224	J-227	4833.00	4.00	121.0965	0.00
P-261	J-227	J-112	810.47	6.00	120.0000	0.00
P-262-XX	J-226	J-228	3432.00	6.00	120.0000	0.00
P-263-XX	J-226	J-229	10915.69	6.00	120.0000	0.00
P-264	J-229	J-103	2270.33	6.00	120.0000	0.00
P-265-XX	J-229	J-231	3659.78	4.00	121.0965	0.00
P-266-XX	J-229	J-230	5233.00	4.00	121.0965	0.00
P-267	J-106	J-232	3593.80	4.00	121.0965	0.00
P-268-XX	J-232	J-233	2475.63	4.00	121.0965	0.00
P-269	J-232	J-234	5326.00	4.00	121.0965	0.00
P-27	J-25	J-28	4469.47	6.00	120.0000	0.00
P-270	J-234	J-235	4224.00	3.00	120.0000	0.00
P-271	J-234	J-237	2964.00	3.00	120.0000	0.00
P-272-XX	J-232	J-238	10957.95	6.00	120.0000	0.00
P-273-XX	J-238	J-221	8823.08	6.00	120.0000	0.00
P-274	J-106	J-254	2281.00	6.00	120.0000	0.00
P-275	J-239	J-106	1050.00	4.00	121.0965	0.00
P-276-XX	J-239	J-241	8557.11	4.00	121.0965	0.00
P-277-XX	J-241	J-240	3749.00	4.00	120.0000	0.00
P-278-XX	J-241	J-242	7234.00	4.00	120.0000	0.00

P-279-XX	J-241	J-244	3529.72	4.00	120.0000	0.00
P-28	J-28	J-27	2450.90	4.00	121.0965	0.00
P-280-XX	J-244	J-243	15348.49	4.00	120.0000	0.00
P-281-XX	J-244	J-245	15466.89	4.00	121.0965	0.00
P-282	J-245	J-248	1934.29	6.00	120.0000	0.00
P-283	J-246	J-104	4573.58	6.00	120.0000	0.00
P-284-XX	J-246	J-247	11408.16	6.00	120.0000	0.00
P-285	J-247	J-239	944.21	6.00	120.0000	0.00
P-286-XX	J-246	J-249	14871.19	4.00	121.0965	0.00
P-287	J-248	J-246	8704.33	6.00	120.0000	0.00
P-288-XX	J-248	J-251	9694.62	4.00	121.0965	0.00
P-289	J-100	J-312	1690.71	6.00	120.0000	0.00
P-29	J-28	J-43	2352.14	6.00	120.0000	0.00
P-290	J-249	J-269	6710.72	8.00	120.0000	0.00
P-291-XX	J-98	J-97	9978.10	4.00	121.0965	0.00
P-292	J-250	J-92	2293.67	4.00	121.0965	0.00
P-293	J-97	J-250	1847.24	4.00	121.0965	0.00
P-294-XX	J-92	J-94	1520.00	4.00	121.0965	0.00
P-295	J-80	J-253	4225.00	4.00	121.0965	0.00
P-296	J-182	J-168	5926.29	6.00	120.0000	0.00
P-297	J-252	J-176	2946.22	4.00	121.0965	0.00
P-298-XX	J-255	J-195	2803.05	4.00	121.0965	0.00
P-299-XX	J-257	J-187	5979.56	6.00	120.0000	0.00
P-3	J-3	J-4	5925.87	4.00	121.0965	0.00
P-30	J-29	J-30	5829.29	4.00	121.0965	0.00
P-300	J-256	J-264	3765.38	6.00	120.0000	0.00
P-301	J-189	J-310	2839.00	3.00	120.0000	0.00
P-302	J-102	J-2	961.00	4.00	121.0965	0.00
P-303	J-259	J-189	5744.00	4.00	120.0000	0.00
P-304	J-254	J-236	3421.00	4.00	121.0965	0.00
P-305	J-261	J-101	3433.20	6.00	120.0000	0.00
P-306-XX	J-260	J-183	90835.00	6.00	120.0000	0.00
P-307	J-262	J-81	12656.09	10.00	120.0000	0.00
P-308	J-262	J-292	15141.82	8.00	120.0000	0.00
P-309	J-264	J-261	6899.19	6.00	120.0000	0.00
P-31	J-29	J-34	5053.58	6.00	120.0000	0.00
P-310	J-263	J-265	863.00	3.00	120.0000	0.00
P-311	J-274	J-210	992.00	3.00	1200.0000	0.00
P-312	J-267	J-171	2264.56	6.00	120.0000	0.00
P-313	J-269	J-268	12509.88	4.00	121.0965	0.00
P-314	J-267	T-5	2056.69	6.00	120.0000	0.00
P-315	J-268	J-270	6434.07	8.00	120.0000	0.00
P-316	J-270	J-96	1132.27	8.00	120.0000	0.00
P-317-XX	J-275	J-192	2326.85	4.00	121.0965	0.00
P-318	J-272	J-99	5512.29	6.00	120.0000	0.00
P-319	J-107	J-273	1570.00	4.00	121.0965	0.00
P-32	J-32	J-31	5326.03	4.00	121.0965	0.00
P-320	J-112	J-225	5577.19	4.00	121.0965	0.00
P-321	J-225	J-126	8836.26	4.00	121.0965	0.00
P-322	J-271	J-65	6952.89	8.00	120.0000	0.00
P-323	J-278	J-277	4468.00	4.00	121.0965	0.00
P-324	J-278	J-275	810.00	3.00	120.0000	0.00
P-325-XX	J-279	J-181	5867.47	4.00	121.0965	0.00
P-326	J-276	J-271	6214.83	8.00	120.0000	0.00
P-327-XX	J-280	J-71	3780.50	4.00	121.0965	0.00
P-328	J-283	J-179	1792.00	6.00	120.0000	0.00
P-329	J-176	J-285	2787.00	3.00	120.0000	0.00
P-33	J-32	J-33	3556.55	4.00	121.0965	0.00
P-331	J-281	J-282	1346.45	4.00	121.0965	0.00
P-333	J-282	J-284	6761.98	4.00	121.0965	0.00
P-335	J-284	J-291	3479.40	4.00	121.0965	0.00
P-336	J-284	J-287	8867.30	4.00	121.0965	0.00
P-337	J-286	J-55	3889.83	6.00	120.0000	0.00
P-338	J-286	T-1	1646.49	8.00	120.0000	0.00
P-339-XX	J-288	J-74	8824.00	4.00	121.0965	0.00
P-34	J-34	J-32	7466.44	4.00	121.0965	0.00
P-340	J-289	J-288	4972.60	8.00	120.0000	0.00
P-341	J-290	J-79	4185.42	8.00	120.0000	0.00
P-342	J-291	J-77	11093.84	4.00	121.0965	0.00
P-343	J-292	J-59	2437.55	4.00	121.0965	0.00
P-344	J-293	J-55	6962.61	4.00	121.0965	0.00
P-345	J-294	J-293	5564.18	4.00	121.0965	0.00
P-346	J-295	J-54	3734.47	4.00	121.0965	0.00
P-347	J-296	J-38	6310.82	4.00	121.0965	0.00
P-348	J-297	J-44	7745.48	10.00	120.0000	0.00
P-349	J-298	J-26	5709.59	4.00	121.0965	0.00
P-35	J-34	J-40	4122.66	6.00	120.0000	0.00
P-350	J-23	J-299	1887.91	4.00	121.0965	0.00
P-351	J-300	J-17	2307.49	4.00	121.0965	0.00
P-352	J-301	J-7	5629.10	6.00	120.0000	0.00

P-353	J-301	J-302	2793.70	4.00	121.0965	0.00
P-354-XX	J-228	J-224	8210.00	4.00	121.0965	0.00
P-355-XX	J-228	J-303	4103.00	4.00	121.0965	0.00
P-356-XX	J-303	J-225	5085.00	4.00	121.0965	0.00
P-357-XX	J-212	J-125	9537.70	6.00	120.0000	0.00
P-358	J-304	J-145	4474.06	4.00	121.0965	0.00
P-359	J-304	J-305	2518.77	4.00	121.0965	0.00
P-36	J-36	J-35	3317.98	4.00	121.0965	0.00
P-360	J-306	J-203	8151.37	6.00	120.0000	0.00
P-361	J-307	J-153	3751.43	6.00	120.0000	0.00
P-362	J-307	J-308	2236.02	4.00	121.0965	0.00
P-363	J-165	J-309	2537.40	6.00	120.0000	0.00
P-364	J-312	J-249	9427.74	8.00	120.0000	0.00
P-365	J-312	T-2	1011.14	6.00	120.0000	0.00
P-366	J-169	J-272	4349.25	6.00	120.0000	0.00
P-367	T-4	J-82	2636.73	10.00	120.0000	0.00
P-368	T-4	J-262	10880.51	10.00	120.0000	0.00
P-37	J-36	J-37	2183.22	4.00	121.0965	0.00
P-38	J-38	J-36	4478.38	4.00	121.0965	0.00
P-39-XX	J-38	J-39	2140.15	4.00	121.0965	0.00
P-4	J-5	J-3	1632.16	6.00	120.0000	0.00
P-40	J-40	J-296	13293.73	4.00	121.0965	0.00
P-41	J-40	J-42	1889.27	6.00	120.0000	0.00
P-42	J-42	J-41	11369.53	4.00	121.0965	0.00
P-43	J-42	J-52	6998.45	6.00	120.0000	0.00
P-44	J-43	J-29	4772.85	6.00	120.0000	0.00
P-45	J-43	J-45	14472.51	4.00	121.0965	0.00
P-46	J-45	J-47	4045.34	4.00	121.0965	0.00
P-47	J-45	J-46	1587.05	4.00	121.0965	0.00
P-48	J-44	J-23	10735.47	4.00	121.0965	0.00
P-49	J-47	J-297	8482.72	10.00	120.0000	0.00
P-5	J-5	J-6	5562.25	4.00	121.0965	0.00
P-50	J-47	J-49	4552.74	4.00	121.0965	0.00
P-51	J-49	J-188	12054.83	4.00	121.0965	0.00
P-52	J-49	J-163	12635.04	4.00	121.0965	0.00
P-53	J-49	J-51	2953.91	4.00	121.0965	0.00
P-54	J-51	J-47	5562.56	4.00	121.0965	0.00
P-55	J-51	J-53	4461.15	6.00	120.0000	0.00
P-56	J-52	J-43	9753.79	6.00	120.0000	0.00
P-57	J-53	J-286	3210.08	6.00	120.0000	0.00
P-58	J-53	J-295	4237.45	4.00	121.0965	0.00
P-59	J-55	J-52	7935.05	6.00	120.0000	0.00
P-6	J-7	J-5	1973.82	6.00	120.0000	0.00
P-60	J-54	J-56	1740.03	4.00	121.0965	0.00
P-61	J-54	J-57	3334.16	4.00	121.0965	0.00
P-62	J-56	J-294	4577.28	4.00	121.0965	0.00
P-63	J-56	J-58	10314.40	6.00	120.0000	0.00
P-64-XX	J-51	J-292	6018.81	8.00	120.0000	0.00
P-65	J-59	J-60	5140.86	4.00	121.0965	0.00
P-66	J-60	J-61	5632.67	4.00	121.0965	0.00
P-67	J-60	J-63	2883.82	4.00	121.0965	0.00
P-68	J-63	J-62	2824.77	4.00	121.0965	0.00
P-69	J-63	J-64	7059.02	4.00	121.0965	0.00
P-7	J-7	J-184	1288.33	4.00	121.0965	0.00
P-70	J-167	T-3	19361.90	10.00	120.0000	0.00
P-71	J-65	J-289	4900.57	8.00	120.0000	0.00
P-72	J-65	J-69	6919.40	4.00	121.0965	0.00
P-73	J-69	J-68	6579.44	4.00	121.0965	0.00
P-74	J-69	J-70	4669.94	4.00	121.0965	0.00
P-75	J-70	J-71	8623.17	4.00	121.0965	0.00
P-76	J-70	J-72	4945.75	4.00	121.0965	0.00
P-77	J-72	J-178	11791.17	4.00	121.0965	0.00
P-78	J-72	J-75	722.44	4.00	121.0965	0.00
P-79	J-75	J-74	8046.87	4.00	121.0965	0.00
P-8	J-8	J-266	9490.80	6.00	120.0000	0.00
P-80	J-75	J-65	8948.17	4.00	121.0965	0.00
P-81	J-76	J-181	1568.53	8.00	120.0000	0.00
P-82	J-76	J-281	5859.59	4.00	121.0965	0.00
P-83	J-78	J-76	5281.97	8.00	120.0000	0.00
P-84	J-78	J-290	6164.81	8.00	120.0000	0.00
P-85	J-79	J-66	5821.51	4.00	121.0965	0.00
P-86	J-79	J-81	5846.55	8.00	120.0000	0.00
P-87	J-80	J-83	10686.83	4.00	121.0965	0.00
P-88	J-83	J-87	3345.36	4.00	121.0965	0.00
P-89	J-83	J-85	6439.53	4.00	121.0965	0.00
P-9	J-8	J-187	7977.98	6.00	120.0000	0.00
P-90	J-85	J-77	23746.35	4.00	121.0965	0.00
P-91	J-85	J-86	4416.30	4.00	121.0965	0.00
P-92	J-87	J-82	6747.73	6.00	120.0000	0.00
P-93	J-87	J-89	7977.33	6.00	120.0000	0.00

P-94	J-89	J-88	7114.31	4.00	121.0965	0.00
P-95	J-89	J-90	5572.03	6.00	120.0000	0.00
P-96-XX	J-93	J-169	2576.21	4.00	121.0965	0.00
P-97	J-93	J-95	2176.22	6.00	120.0000	0.00
P-98	J-93	J-94	1483.92	4.00	121.0965	0.00
P-99	J-95	J-250	2766.62	4.00	121.0965	0.00

END NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
J-1	Stalling/62	0.50	430.00	
J-10	672	0.50	577.00	
J-100	GoodSpringsC	0.20	600.00	
J-101		0.00	522.00	
J-102		0.00	540.00	
J-103	(BM)	1.00	497.00	
J-104	Knob/Hwy 70	1.20	545.00	
J-105	Knob/FlatRoc	2.00	496.00	
J-106		1.10	470.00	
J-107	O'Brion	0.30	430.00	
J-108	O'Brion/Flat	1.20	482.00	
J-109		2.00	472.00	
J-11	62/Co.Line	0.60	410.00	
J-110		1.20	472.00	
J-111		2.00	488.00	
J-112	Farmersville	2.00	472.00	
J-113	139/Calvert	1.00	488.00	
J-114	1119,near 13	0.80	467.00	
J-115	Calvert	0.20	500.00	
J-116		0.00	420.00	
J-117	(BM) Pr'ton/	0.20	400.00	
J-118	Rufus Rd	0.00	430.00	
J-119	Rufus/Prince	0.00	421.00	
J-12	672	0.50	592.00	
J-120	Williams Rd	0.20	461.00	
J-121		0.40	400.00	
J-122	139/Williams	0.20	397.00	
J-123	902/139	1.00	434.00	
J-124	end Creswell	0.20	390.00	
J-125	(BM) 139/70	0.20	417.00	
J-126	139,near 70	0.20	430.00	
J-127	902/Creswell	0.00	410.00	
J-128	139/Creswell	0.60	599.00	
J-129	(BM) 139/159	1.00	456.00	
J-13	Co Line	0.70	422.00	
J-130	Shady Grove	0.20	450.00	
J-131		0.20	440.00	
J-132	(BM) Dyennen/	0.20	466.00	
J-133	Dynnen Rd	0.20	500.00	
J-134	Coleman/Shad	0.20	390.00	
J-135	end Quinn Rd	0.20	560.00	
J-136	Webster/Quin	1.00	531.00	
J-137		0.00	550.00	
J-138	293/Quinn	1.00	480.00	
J-139	293/Co. Line	0.20	366.00	
J-14	Co Line	0.60	420.00	
J-140	293/70 (Nort	0.20	425.00	
J-141	70/Co Line	0.20	360.00	
J-142		0.50	500.00	
J-143	293/GreenBer	0.40	400.00	
J-144	293/70 (Sout	0.20	380.00	
J-145	70	0.20	444.00	
J-146	Needmore-Onl	0.20	475.00	
J-147	Crisp Rd/293	1.00	604.00	
J-148	end 1119	1.50	554.00	
J-149	Ridge Rd/Cri	0.20	450.00	
J-15	672	0.00	594.00	
J-150	1119/Shady G	2.00	464.00	
J-151	293/Briar Hi	0.70	497.00	
J-152	SugarCkCh/29	0.00	526.00	
J-153	293/ Nichola	0.00	521.00	
J-154	(BM) Bayles/P	1.40	394.00	
J-155	Nicholas Rd	0.20	500.00	
J-156	Nicholas/Pri	0.00	461.00	

J-157	end Nicholas	1.70	550.00
J-158	Princeton	0.20	465.00
J-159	end Fairview	0.70	450.00
J-16	672/Lakeshor	0.50	615.00
J-160	Princeton	0.10	518.00
J-161		0.20	410.00
J-162	Calvert/Beth	0.80	481.00
J-163		0.00	430.00
J-164		1.00	525.00
J-165	1119/SugarCr	1.50	525.00
J-166		0.30	565.00
J-167		0.20	578.00
J-168	70/91	2.00	444.00
J-169	91/139	0.00	540.00
J-17	672/nearLake	0.00	600.00
J-170		0.40	465.00
J-171	62,nearMontg	2.30	570.00
J-172	HebronRd	0.20	462.00
J-173	end 672	0.40	480.00
J-174		0.50	400.00
J-175	126/Harmony	0.60	470.00
J-176		0.30	512.00
J-177	128/Mashburn	0.20	532.00
J-178	126/514	1.40	456.00
J-179	126/128	0.20	547.00
J-18	PineyGroveC/	0.20	620.00
J-180	Mashburn/Har	0.50	532.00
J-181	(BM) 139/126	0.30	472.00
J-182		2.00	442.00
J-183	672/DRAAdamsR	0.30	568.00
J-184		0.30	550.00
J-185	MayRd/CoLine	0.50	560.00
J-186	Goodwin/CoLi	0.40	680.00
J-187	BeulahHill/J	0.50	615.00
J-188		0.80	541.00
J-189	Hudgins/Wats	0.30	541.00
J-19	end Lakeshor	0.50	475.00
J-190	end Watson	0.50	540.00
J-191	near Lewisto	0.40	575.00
J-192	near Lewisto	0.30	588.00
J-193	end Lewistow	0.20	390.00
J-194	WhiteSch/CoL	0.40	400.00
J-195	(BM)White Sc	0.40	473.00
J-196	Donahu/Princ	0.40	478.00
J-197	end YoungCem	0.00	380.00
J-198		0.10	530.00
J-199	Neddmore/Pri	0.00	478.00
J-2	(BM)Toll/Boa	0.20	534.00
J-20	end PineyGro	1.50	450.00
J-200		0.20	370.00
J-201	Needmore-Onl	0.00	585.00
J-202	near Needmor	0.20	575.00
J-203	293/near Nee	1.00	519.00
J-204	Liberty Driv	0.40	609.00
J-205	Liberty/Cris	0.20	596.00
J-206		0.00	410.00
J-207	Briar Hill	0.40	428.00
J-208		0.40	450.00
J-209	Rufus/Cotter	0.80	420.00
J-21	672/LisanbyR	0.50	553.00
J-210	end Liberty	0.10	450.00
J-211		0.50	420.00
J-212	(BM)70/Rufus	0.80	410.00
J-213	end Harper	0.10	450.00
J-214	Rufus/Harper	0.00	377.00
J-215	Rufus/Creswe	0.00	486.00
J-216	Creswell Rd	0.20	550.00
J-217	Rustin/CoLin	0.40	566.00
J-218	Fralick/Rust	55.00	600.00
J-219	506/Fralick	0.40	577.00
J-22	end PineyGro	0.70	430.00
J-220	506/CoLine	0.00	400.00
J-221	902/Creswell	0.50	410.00
J-222		0.40	488.00
J-223		0.20	403.00
J-224	PleasantGro	0.40	414.00
J-225	139/Donaldso	0.40	420.00
J-226		0.30	403.00
J-227	Pleasant Gro	1.20	440.00
J-228		0.00	454.00

J-229	(BM) Flat Roc	0.40	497.00
J-23		0.60	586.00
J-230		0.10	550.00
J-231	FltRock-Plea	0.40	430.00
J-232	(BM) 902/Bugg	0.60	450.00
J-233		0.20	463.00
J-234	Vinson/Buggs	0.30	566.00
J-235	end Buggs	0.30	450.00
J-236	Co Line	0.20	592.00
J-237	Vinson/CoLin	0.30	600.00
J-238	Hwy 902	1.00	554.00
J-239	902/WalnutGr	0.00	470.00
J-24	end Lisanby	1.70	450.00
J-240	Wiggington/C	0.10	652.00
J-241	902/EchoVall	0.40	535.00
J-242	EchoValley/C	0.40	515.00
J-243	TrolleyRd/Co	0.40	440.00
J-244	902/UnionGro	0.60	505.00
J-245	Union Grove/	2.00	443.00
J-246	(BM) 70/Cride	0.50	497.00
J-247	Crider/Farme	0.70	452.00
J-248	70/Livingsto	1.10	438.00
J-249	Good SprgRd/	0.50	628.00
J-25	672/Haile Rd	0.20	535.00
J-250	Carner Hill	0.00	649.00
J-251	end Livingst	0.00	593.00
J-252		0.20	488.00
J-253	1495/293	0.50	502.00
J-254		0.20	565.00
J-255		0.30	370.00
J-256	(BM) 91	1.30	487.00
J-257		0.60	600.00
J-258		0.00	515.00
J-259		0.40	460.00
J-26	end Haile Rd	0.50	429.00
J-260		2.20	482.00
J-261	91/WalnutGro	2.00	465.00
J-262		1.00	500.00
J-263		0.30	0.00
J-264	(BM) Crider	0.00	459.00
J-265		0.10	0.00
J-266		0.00	582.00
J-267		0.00	582.00
J-268	Crider/White	2.00	458.00
J-269	(BM) Crider,n	0.50	551.00
J-27		0.10	700.00
J-270	Crider/ 139	0.00	492.00
J-271	139/514 (Nor	1.70	527.00
J-272	BrightMill/	1.00	539.00
J-273	O'Brion	0.50	520.00
J-274		0.10	435.00
J-275		0.20	0.00
J-276	139/1272	0.00	500.00
J-277		0.20	0.00
J-278		0.00	0.00
J-279		0.20	465.00
J-28	672/Crossroa	0.20	652.00
J-280		0.20	541.00
J-281	515/Etheridg	1.50	521.00
J-282	515/Tandy	0.20	505.00
J-283		0.20	541.00
J-284		0.20	502.00
J-285		0.40	418.00
J-286		0.00	550.00
J-287	Mitchell Rd-	0.20	380.00
J-288		2.00	580.00
J-289		1.40	575.00
J-29	Park Rd/278	0.70	648.00
J-290		0.30	520.00
J-291		0.30	515.00
J-292		0.50	509.00
J-293	DippingSprin	1.00	515.00
J-294		1.00	566.00
J-295		1.10	583.00
J-296		0.00	642.00
J-297		1.50	500.00
J-298		0.20	650.00
J-299		0.70	586.00
J-3	Longbreak/62	0.10	529.00
J-30	(BM) Penyrile	0.70	530.00

J-300		2.70	450.00
J-301		1.30	605.00
J-302		0.40	605.00
J-303		0.50	462.00
J-304		0.40	407.00
J-305		0.20	420.00
J-306		1.40	415.00
J-307		0.20	528.00
J-308		0.20	559.00
J-309		0.70	482.00
J-31	Pennyrile Rd	0.52	620.00
J-310		0.40	700.00
J-311	GoodSprings/	0.00	522.00
J-312		0.00	600.00
J-32	Crosrd.Ch./P	0.50	595.00
J-33	Pennyrile/Go	0.00	603.00
J-34	278/Crosrd.C	1.60	658.00
J-35	Cobb Creek R	0.10	570.00
J-36	Cobb Creek R	0.00	546.00
J-37		0.50	550.00
J-38	CobbCreek/Ma	0.10	540.00
J-39	May Rd	0.10	555.00
J-4	Longbreak Rd	0.50	534.00
J-40	Hwy 672/91	1.90	585.00
J-41		0.90	550.00
J-42	Holmes Cook/	0.50	650.00
J-43	(BM) 278/672	0.00	586.00
J-44	(BM)Bed/Refu	1.70	480.00
J-45	278/BaldKnob	0.50	610.00
J-46	Bald Knob Rd	0.20	630.00
J-47	278/Old	0.11	580.00
J-48		0.50	600.00
J-49	Scottsburg/2	0.80	594.00
J-5	Lewistown/62	0.00	508.00
J-50		0.00	450.00
J-51	Scottsburg	0.10	535.00
J-52	91/Friendshi	0.50	527.00
J-53	hwy91/1857 f	0.50	550.00
J-54	1857/Webster	0.50	596.00
J-55	Dipping Spri	0.50	574.00
J-56	Hwy 1857/Ott	0.00	600.00
J-57	end Webster	0.20	560.00
J-58	(BM)128/Drip	0.50	544.00
J-59		0.30	498.00
J-6	WKYToll/Lewi	0.50	510.00
J-60	McGowan/2060	0.40	527.00
J-61		0.50	470.00
J-62	end McGowan	0.50	550.00
J-63	128/ McGowan	0.10	484.00
J-64	Hwy 128	0.50	495.00
J-65	(BM)139/514	1.20	539.00
J-66	McGowan/139	0.50	500.00
J-67	RedHill,near	0.10	476.00
J-68	126/OtterPon	1.60	541.00
J-69	OtterPond/Ho	0.70	531.00
J-7	62/NicholsCe	1.60	457.00
J-70	OtterPond/Cr	0.50	533.00
J-71	126/Cravens	0.00	500.00
J-72		0.00	550.00
J-73	(BM) 126/128	0.20	452.00
J-74	Blue Spring	0.90	550.00
J-75	514/BlueSpri	0.10	471.00
J-76	139/515	0.10	493.00
J-77	293/903	0.00	437.00
J-78	139/SilverSt	0.30	505.00
J-79	Jo Jones Rd	0.30	440.00
J-8	JonesKeeney/	1.00	424.00
J-80	OldWheat./Ch	0.50	494.00
J-81	end Jo Jones	0.20	420.00
J-82	62	0.00	506.00
J-83	Gromes/Chape	0.20	547.00
J-84	293,nearJoJo	0.20	432.00
J-85	Gromes	0.00	520.00
J-86	Gromes	0.20	500.00
J-87	62/cromes	0.00	549.00
J-88	Dulaney/Co L	0.40	540.00
J-89	62/Dulaney	0.20	549.00
J-9	end Nichols	0.50	532.00
J-90	62/Cty line	2.80	562.00
J-91	White Sulfur	0.80	450.00

J-92		0.20	650.00	
J-93	139, near 91	0.20	568.00	
J-94		0.20	650.00	
J-95	139/	0.20	550.00	
J-96	139	0.20	492.00	
J-97	Carner Hill	0.50	665.00	
J-98	139/CarnerHi	1.50	440.00	
J-99	WhiteSulfur/	2.00	507.00	
T-1		----	721.00	814.00
T-2		----	706.50	829.00
T-3		----	690.00	731.00
T-4		----	620.00	662.00
T-5		----	666.00	672.00

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 10

SYSTEM CONFIGURATION

NUMBER OF PIPES (p) = 365
 NUMBER OF END NODES (j) = 312
 NUMBER OF PRIMARY LOOPS (l) = 49
 NUMBER OF SUPPLY NODES (f) = 5
 NUMBER OF SUPPLY ZONES (z) = 1

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RESULTS OBTAINED AFTER 7 TRIALS: ACCURACY = 0.00184

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL/ 1000 (ft/ft)
	#1	#2					
P-1	J-1	J-301	-0.50	0.00	0.00	0.00	0.00
P-10	J-10	J-11	144.05	17.17	0.00	1.63	2.38
P-100	J-95	J-96	-0.62	0.00	0.00	0.01	0.00
P-101	J-96	J-97	0.68	0.00	0.00	0.02	0.00
P-102	J-96	J-98	35.85	0.56	0.00	0.41	0.18
P-103	J-99	J-91	0.80	0.01	0.00	0.02	0.00
P-104	J-99	J-256	3.30	0.02	0.00	0.04	0.00
P-105	J-102	J-255	0.00	0.00	0.00	0.00	0.00
P-106	J-311	J-100	-58.05	0.73	0.00	0.66	0.44
P-107	J-311	J-182	58.05	4.93	0.00	0.66	0.44
P-108	J-104	J-105	12.04	1.36	0.00	0.31	0.17
P-109	J-103	J-104	-37.21	0.53	0.00	0.42	0.19
P-11	J-10	J-14	0.60	0.00	0.00	0.02	0.00
P-110	J-103	J-247	3.70	0.03	0.00	0.04	0.00
P-111	J-105	J-229	-32.11	0.49	0.00	0.36	0.15
P-112	J-105	J-108	42.15	3.14	0.00	0.48	0.24
P-113	J-108	J-107	0.80	0.00	0.00	0.02	0.00
P-114	J-108	J-227	40.15	1.28	0.00	0.46	0.22
P-115	J-109	J-110	1.20	0.00	0.00	0.03	0.00
P-116	J-109	J-114	18.80	0.10	0.00	0.21	0.05
P-117	J-112	J-109	22.00	0.06	0.00	0.25	0.07
P-118	J-111	J-112	4.51	0.01	0.00	0.05	0.00
P-119	J-111	J-113	-32.35	0.21	0.00	0.37	0.15
P-12	J-12	J-10	145.15	3.32	0.00	1.65	2.41
P-120	J-113	J-98	-34.35	1.45	0.00	0.39	0.17
P-121	J-113	J-162	1.00	0.00	0.00	0.03	0.00
P-122	J-114	J-111	-25.84	0.18	0.00	0.29	0.10

P-123	J-114	J-150	43.84	2.15	0.00	0.50	0.26
P-124	J-117	J-116	0.00	0.00	0.00	0.00	0.00
P-125	J-117	J-206	40.74	0.42	0.00	0.46	0.23
P-126	J-119	J-118	0.00	0.00	0.00	0.00	0.00
P-127	J-119	J-125	40.74	1.70	0.00	0.46	0.23
P-128	J-121	J-120	0.20	0.00	0.00	0.01	0.00
P-129	J-121	J-127	18.61	0.79	0.00	0.48	0.38
P-13	J-12	J-13	0.70	0.00	0.00	0.02	0.00
P-130	J-122	J-121	19.21	0.55	0.00	0.49	0.40
P-131	J-123	J-122	-39.99	0.48	0.00	0.45	0.22
P-132	J-123	J-124	0.20	0.00	0.00	0.01	0.00
P-133	J-125	J-122	59.40	3.21	0.00	0.67	0.46
P-134	J-125	J-126	-18.86	0.81	0.00	0.48	0.39
P-135	J-127	J-123	-23.94	0.86	0.00	0.61	0.61
P-136	J-127	J-128	-12.95	0.73	0.00	0.33	0.19
P-137	J-128	J-123	-14.85	0.13	0.00	0.17	0.04
P-138	J-128	J-166	1.30	0.00	0.00	0.01	0.00
P-139	J-130	J-132	-0.20	0.00	0.00	0.01	0.00
P-14	J-15	J-12	146.35	10.14	0.00	1.66	2.45
P-140	J-132	J-134	-0.60	0.00	0.00	0.02	0.00
P-141	J-132	J-133	0.20	0.00	0.00	0.01	0.00
P-142	J-134	J-131	0.20	0.00	0.00	0.01	0.00
P-143	J-134	J-136	-1.00	0.02	0.00	0.03	0.00
P-144	J-136	J-135	0.20	0.00	0.00	0.01	0.00
P-145	J-50	J-78	0.00	0.00	0.00	0.00	0.00
P-146	J-136	J-138	-2.20	0.05	0.00	0.06	0.01
P-147	J-138	J-139	0.20	0.00	0.00	0.00	0.00
P-148	J-138	J-140	-3.40	0.02	0.00	0.04	0.00
P-149	J-140	J-141	0.20	0.00	0.00	0.01	0.00
P-15	J-15	J-300	-18.76	0.95	0.00	0.48	0.39
P-150	J-140	J-143	-3.80	0.00	0.00	0.04	0.00
P-151	J-143	J-142	0.50	0.00	0.00	0.01	0.00
P-152	J-143	J-144	-4.70	0.02	0.00	0.05	0.00
P-153	J-144	J-304	0.80	0.01	0.00	0.02	0.00
P-154	J-144	J-306	-5.70	0.05	0.00	0.06	0.01
P-155	J-147	J-146	0.20	0.00	0.00	0.01	0.00
P-156	J-147	J-205	0.40	0.00	0.00	0.01	0.00
P-157	J-147	J-151	-9.70	0.07	0.00	0.11	0.02
P-158	J-150	J-211	41.44	1.21	0.00	0.47	0.24
P-159-XX	J-309	J-150					
P-16	J-17	J-15	127.59	2.10	0.00	1.45	1.90
P-160	J-151	J-207	0.55	0.00	0.00	0.01	0.00
P-161	J-151	J-307	-10.95	0.12	0.00	0.12	0.02
P-162	J-153	J-152	-15.65	0.05	0.00	0.18	0.04
P-163	J-153	J-157	4.30	0.16	0.00	0.11	0.03
P-164	J-155	J-156	1.40	0.02	0.00	0.04	0.00
P-165	J-157	J-155	1.60	0.01	0.00	0.04	0.00
P-166	J-156	J-154	1.40	0.01	0.00	0.04	0.00
P-167	J-156	J-158	0.00	0.00	0.00	0.00	0.00
P-168	J-158	J-157	-1.00	0.01	0.00	0.03	0.00
P-169	J-158	J-160	0.80	0.00	0.00	0.02	0.00
P-17	J-16	J-17	149.05	2.53	0.00	1.69	2.53
P-170	J-160	J-159	0.70	0.02	0.00	0.03	0.00
P-171	J-161	J-309	-0.25	0.00	0.00	0.00	0.00
P-172	J-164	J-148	1.50	0.00	0.00	0.01	0.00
P-173	J-150	J-170	0.40	0.00	0.00	0.01	0.00
P-174	J-162	J-115	0.20	0.00	0.00	0.01	0.00
P-175	J-152	J-165	4.95	0.26	0.00	0.13	0.03
P-176	J-165	J-164	2.50	0.00	0.00	0.03	0.00
P-177	J-166	J-129	1.00	0.00	0.00	0.01	0.00
P-178-XX	J-101	J-311					
P-179	J-167	J-152	20.60	0.03	0.00	0.08	0.01
P-18	J-16	J-19	0.50	0.00	0.00	0.01	0.00
P-180	J-168	J-245	54.05	2.42	0.00	0.61	0.39
P-181	J-169	T-4	-7.10	0.01	0.00	0.03	0.00
P-182	J-171	J-2	0.00	0.00	0.00	0.00	0.00
P-183	J-171	J-11	-143.45	27.66	0.00	1.63	2.36
P-184	J-11	J-172	0.00	0.00	0.00	0.00	0.00
P-185	J-77	J-84	0.20	0.00	0.00	0.01	0.00
P-186	J-75	J-67	0.00	0.00	0.00	0.00	0.00
P-187	J-73	J-173	0.00	0.00	0.00	0.00	0.00
P-188	J-174	J-102	0.00	0.00	0.00	0.00	0.00
P-189-XX	J-176	J-174					
P-19	J-18	J-16	150.05	7.58	0.00	1.70	2.56
P-190	J-175	J-73	0.00	0.00	0.00	0.00	0.00
P-191	J-175	J-180	0.00	0.00	0.00	0.00	0.00
P-192-XX	J-71	J-178					
P-193-XX	J-178	J-175	0.00	0.00	0.00	0.00	0.00
P-194-XX	J-177	J-283	0.00	0.00	0.00	0.00	0.00
P-195-XX	J-177	J-58					

P-196-XX	J-58	J-64						
P-197	J-179	J-280	0.20	0.00	0.00	0.00	0.00	0.00
P-198	J-179	J-68	-0.60	0.00	0.00	0.00	0.01	0.00
P-199	J-68	J-279	0.20	0.00	0.00	0.00	0.01	0.00
P-2	J-3	J-8	-7.40	0.03	0.00	0.00	0.08	0.01
P-20	J-18	J-20	1.50	0.01	0.00	0.00	0.04	0.00
P-200	J-181	J-276	12.30	0.03	0.00	0.00	0.08	0.01
P-201-XX	J-180	J-177						
P-202-XX	J-180	J-260	0.00	0.00	0.00	0.00	0.00	0.00
P-203	J-183	J-37	-0.30	0.00	0.00	0.00	0.01	0.00
P-204	J-183	J-137	0.00	0.00	0.00	0.00	0.00	0.00
P-205-XX	J-137	J-40						
P-206-XX	J-137	J-42						
P-207-XX	J-39	J-185	0.00	0.00	0.00	0.00	0.00	0.00
P-208-XX	J-33	J-186	0.00	0.00	0.00	0.00	0.00	0.00
P-209-XX	J-172	J-257	0.00	0.00	0.00	0.00	0.00	0.00
P-21	J-18	J-22	0.70	0.00	0.00	0.00	0.02	0.00
P-210	J-187	J-44	-8.90	0.03	0.00	0.00	0.06	0.00
P-211	J-184	J-9	0.50	0.00	0.00	0.00	0.01	0.00
P-212	J-263	J-278	0.40	0.00	0.00	0.00	0.01	0.00
P-213	J-188	J-48	0.50	0.00	0.00	0.00	0.01	0.00
P-214	J-189	J-188	-1.60	0.00	0.00	0.00	0.04	0.00
P-215	J-189	J-190	0.50	0.00	0.00	0.00	0.01	0.00
P-216	J-6	J-263	0.80	0.00	0.00	0.00	0.02	0.00
P-217	J-192	J-191	0.00	0.00	0.00	0.00	0.00	0.00
P-218	J-192	J-193	0.00	0.00	0.00	0.00	0.00	0.00
P-219	J-4	J-252	0.90	0.00	0.00	0.00	0.02	0.00
P-22	J-21	J-18	152.45	7.37	0.00	1.73	2.64	
P-220	J-195	J-194	0.00	0.00	0.00	0.00	0.00	0.00
P-221	J-195	J-197	0.00	0.00	0.00	0.00	0.00	0.00
P-222	J-154	J-196	0.00	0.00	0.00	0.00	0.00	0.00
P-223	J-196	J-198	0.00	0.00	0.00	0.00	0.00	0.00
P-224	J-196	J-199	0.00	0.00	0.00	0.00	0.00	0.00
P-225	J-199	J-200	0.00	0.00	0.00	0.00	0.00	0.00
P-226	J-199	J-201	0.00	0.00	0.00	0.00	0.00	0.00
P-227	J-201	J-202	0.00	0.00	0.00	0.00	0.00	0.00
P-228-XX	J-201	J-146						
P-229	J-203	J-147	-8.10	0.03	0.00	0.09	0.01	
P-23	J-21	J-24	1.70	0.03	0.00	0.04	0.00	
P-230	J-203	J-204	0.00	0.00	0.00	0.00	0.00	
P-231	J-205	J-149	0.20	0.00	0.00	0.01	0.00	
P-232-XX	J-204	J-205						
P-233-XX	J-204	J-209	0.00	0.00	0.00	0.00	0.00	
P-234	J-206	J-119	40.74	0.56	0.00	0.46	0.23	
P-235	J-206	J-208	0.00	0.00	0.00	0.00	0.00	
P-236	J-207	J-161	-0.05	0.00	0.00	0.00	0.00	
P-237	J-207	J-274	0.20	0.00	0.00	0.01	0.00	
P-238-XX	J-110	J-211						
P-239	J-211	J-117	40.94	0.42	0.00	0.46	0.23	
P-24	J-23	J-21	154.65	15.09	0.00	1.75	2.71	
P-240-XX	J-209	J-118						
P-241-XX	J-209	J-212	0.00	0.00	0.00	0.00	0.00	
P-242-XX	J-212	J-145						
P-243-XX	J-212	J-214	0.00	0.00	0.00	0.00	0.00	
P-244-XX	J-214	J-213	0.00	0.00	0.00	0.00	0.00	
P-245-XX	J-214	J-215	0.00	0.00	0.00	0.00	0.00	
P-246-XX	J-215	J-216	0.00	0.00	0.00	0.00	0.00	
P-247-XX	J-215	J-133						
P-248	J-127	J-221	55.50	1.97	0.00	0.63	0.41	
P-249	J-218	J-217	0.00	0.00	0.00	0.00	0.00	
P-25	J-23	J-25	-110.16	7.41	0.00	1.25	1.45	
P-250	J-258	J-219	0.00	0.00	0.00	0.00	0.00	
P-251	J-219	J-220	0.00	0.00	0.00	0.00	0.00	
P-252	J-219	J-238	0.00	0.00	0.00	0.00	0.00	
P-253	J-221	J-218	55.00	64.15	0.00	2.50	11.69	
P-254	J-221	J-222	0.00	0.00	0.00	0.00	0.00	
P-255-XX	J-222	J-120						
P-256-XX	J-222	J-223	0.00	0.00	0.00	0.00	0.00	
P-257-XX	J-223	J-125						
P-258-XX	J-223	J-226	0.00	0.00	0.00	0.00	0.00	
P-259-XX	J-224	J-303	0.00	0.00	0.00	0.00	0.00	
P-26	J-25	J-298	0.70	0.00	0.00	0.02	0.00	
P-260	J-224	J-227	0.00	0.00	0.00	0.00	0.00	
P-261	J-227	J-112	38.95	0.17	0.00	0.44	0.21	
P-262	J-226	J-228	0.00	0.00	0.00	0.00	0.00	
P-263-XX	J-226	J-229						
P-264	J-229	J-103	-32.51	0.34	0.00	0.37	0.15	
P-265	J-229	J-231	0.00	0.00	0.00	0.00	0.00	
P-266	J-229	J-230	0.00	0.00	0.00	0.00	0.00	
P-267	J-106	J-232	1.50	0.01	0.00	0.04	0.00	

P-268	J-232	J-233	0.00	0.00	0.00	0.00	0.00
P-269	J-232	J-234	0.90	0.01	0.00	0.02	0.00
P-27	J-25	J-28	-111.06	6.56	0.00	1.26	1.47
P-270	J-234	J-235	0.30	0.00	0.00	0.01	0.00
P-271	J-234	J-237	0.30	0.00	0.00	0.01	0.00
P-272	J-232	J-238	0.00	0.00	0.00	0.00	0.00
P-273-XX	J-238	J-221					
P-274	J-106	J-254	0.40	0.00	0.00	0.00	0.00
P-275	J-239	J-106	3.00	0.01	0.00	0.08	0.01
P-276	J-239	J-241	0.00	0.00	0.00	0.00	0.00
P-277	J-241	J-240	0.00	0.00	0.00	0.00	0.00
P-278	J-241	J-242	0.00	0.00	0.00	0.00	0.00
P-279	J-241	J-244	0.00	0.00	0.00	0.00	0.00
P-28	J-28	J-27	0.10	0.00	0.00	0.00	0.00
P-280	J-244	J-243	0.00	0.00	0.00	0.00	0.00
P-281-XX	J-244	J-245					
P-282	J-245	J-248	52.05	0.70	0.00	0.59	0.36
P-283	J-246	J-104	50.45	1.56	0.00	0.57	0.34
P-284-XX	J-246	J-247					
P-285	J-247	J-239	3.00	0.00	0.00	0.03	0.00
P-286-XX	J-246	J-249					
P-287	J-248	J-246	50.95	3.02	0.00	0.58	0.35
P-288	J-248	J-251	0.00	0.00	0.00	0.00	0.00
P-289	J-100	J-312	-58.25	0.75	0.00	0.66	0.44
P-29	J-28	J-43	-111.36	3.47	0.00	1.26	1.48
P-290	J-249	J-269	39.85	0.36	0.00	0.25	0.05
P-291-XX	J-98	J-97					
P-292	J-250	J-92	0.20	0.00	0.00	0.01	0.00
P-293	J-97	J-250	0.18	0.00	0.00	0.00	0.00
P-294-XX	J-92	J-94					
P-295	J-80	J-253	0.50	0.00	0.00	0.01	0.00
P-296	J-182	J-168	56.05	2.45	0.00	0.64	0.41
P-297	J-252	J-176	0.70	0.00	0.00	0.02	0.00
P-298	J-255	J-195	0.00	0.00	0.00	0.00	0.00
P-299-XX	J-257	J-187					
P-3	J-3	J-4	1.40	0.02	0.00	0.04	0.00
P-30	J-29	J-30	0.70	0.01	0.00	0.02	0.00
P-300	J-256	J-264	2.00	0.00	0.00	0.02	0.00
P-301	J-189	J-310	0.40	0.00	0.00	0.02	0.00
P-302	J-102	J-2	0.00	0.00	0.00	0.00	0.00
P-303	J-259	J-189	-0.40	0.00	0.00	0.01	0.00
P-304	J-254	J-236	0.20	0.00	0.00	0.01	0.00
P-305	J-261	J-101	0.00	0.00	0.00	0.00	0.00
P-306-XX	J-260	J-183					
P-307	J-262	J-81	15.29	0.04	0.00	0.06	0.00
P-308	J-262	J-292	2.80	0.01	0.00	0.02	0.00
P-309	J-264	J-261	2.00	0.01	0.00	0.02	0.00
P-31	J-29	J-34	-36.11	0.93	0.00	0.41	0.18
P-310	J-263	J-265	0.10	0.00	0.00	0.00	0.00
P-311	J-274	J-210	0.10	0.00	0.00	0.00	0.00
P-312	J-267	J-171	-141.15	5.18	0.00	1.60	2.29
P-313	J-269	J-268	39.35	19.04	0.00	1.00	1.52
P-314	J-267	T-5	141.15	4.71	0.00	1.60	2.29
P-315	J-268	J-270	37.35	0.31	0.00	0.24	0.05
P-316	J-270	J-96	37.35	0.05	0.00	0.24	0.05
P-317	J-275	J-192	0.00	0.00	0.00	0.00	0.00
P-318	J-272	J-99	6.10	0.04	0.00	0.07	0.01
P-319	J-107	J-273	0.50	0.00	0.00	0.01	0.00
P-32	J-32	J-31	0.52	0.00	0.00	0.01	0.00
P-320	J-112	J-225	19.46	2.31	0.00	0.50	0.41
P-321	J-225	J-126	19.06	3.51	0.00	0.49	0.40
P-322	J-271	J-65	10.60	0.03	0.00	0.07	0.00
P-323	J-278	J-277	0.20	0.00	0.00	0.01	0.00
P-324	J-278	J-275	0.20	0.00	0.00	0.01	0.00
P-325-XX	J-279	J-181					
P-326	J-276	J-271	12.30	0.04	0.00	0.08	0.01
P-327-XX	J-280	J-71					
P-328	J-283	J-179	-0.20	0.00	0.00	0.00	0.00
P-329	J-176	J-285	0.40	0.00	0.00	0.02	0.00
P-33	J-32	J-33	0.00	0.00	0.00	0.00	0.00
P-331	J-281	J-282	-0.51	0.00	0.00	0.01	0.00
P-333	J-282	J-284	-0.71	0.01	0.00	0.02	0.00
P-335	J-284	J-291	-1.11	0.01	0.00	0.03	0.00
P-336	J-284	J-287	0.20	0.00	0.00	0.01	0.00
P-337	J-286	J-55	100.58	4.75	0.00	1.14	1.22
P-338	J-286	T-1	-187.98	1.58	0.00	1.20	0.96
P-339-XX	J-288	J-74					
P-34	J-34	J-32	1.02	0.01	0.00	0.03	0.00
P-340	J-289	J-288	2.00	0.00	0.00	0.01	0.00
P-341	J-290	J-79	-14.29	0.03	0.00	0.09	0.01

P-342	J-291	J-77	-1.41	0.04	0.00	0.04	0.00
P-343	J-292	J-59	2.30	0.02	0.00	0.06	0.01
P-344	J-293	J-55	5.17	0.25	0.00	0.13	0.04
P-345	J-294	J-293	6.17	0.27	0.00	0.16	0.05
P-346	J-295	J-54	8.37	0.32	0.00	0.21	0.09
P-347	J-296	J-38	1.00	0.01	0.00	0.03	0.00
P-348	J-297	J-44	56.39	0.27	0.00	0.23	0.03
P-349	J-298	J-26	0.50	0.00	0.00	0.01	0.00
P-35	J-34	J-40	-38.73	0.86	0.00	0.44	0.21
P-350	J-23	J-299	0.70	0.00	0.00	0.02	0.00
P-351	J-300	J-17	-21.46	1.14	0.00	0.55	0.50
P-352	J-301	J-7	-2.20	0.01	0.00	0.02	0.00
P-353	J-301	J-302	0.40	0.00	0.00	0.01	0.00
P-354-XX	J-228	J-224					
P-355-XX	J-228	J-303					
P-356-XX	J-303	J-225					
P-357-XX	J-212	J-125					
P-358	J-304	J-145	0.20	0.00	0.00	0.01	0.00
P-359	J-304	J-305	0.20	0.00	0.00	0.01	0.00
P-36	J-36	J-35	0.10	0.00	0.00	0.00	0.00
P-360	J-306	J-203	-7.10	0.07	0.00	0.08	0.01
P-361	J-307	J-153	-11.35	0.08	0.00	0.13	0.02
P-362	J-307	J-308	0.20	0.00	0.00	0.01	0.00
P-363	J-165	J-309	0.95	0.00	0.00	0.01	0.00
P-364	J-312	J-249	40.35	0.52	0.00	0.26	0.06
P-365	J-312	T-2	-98.60	1.19	0.00	1.12	1.18
P-366	J-169	J-272	7.10	0.04	0.00	0.08	0.01
P-367	T-4	J-82	6.41	0.00	0.00	0.03	0.00
P-368	T-4	J-262	19.09	0.05	0.00	0.08	0.00
P-37	J-36	J-37	0.80	0.00	0.00	0.02	0.00
P-38	J-38	J-36	0.90	0.01	0.00	0.02	0.00
P-39	J-38	J-39	0.00	0.00	0.00	0.00	0.00
P-4	J-5	J-3	-5.90	0.01	0.00	0.07	0.01
P-40	J-40	J-296	1.00	0.02	0.00	0.03	0.00
P-41	J-40	J-42	-41.63	0.45	0.00	0.47	0.24
P-42	J-42	J-41	0.90	0.02	0.00	0.02	0.00
P-43	J-42	J-52	-43.03	1.78	0.00	0.49	0.25
P-44	J-43	J-29	-34.71	0.81	0.00	0.39	0.17
P-45	J-43	J-45	-14.93	3.66	0.00	0.38	0.25
P-46	J-45	J-47	-15.63	1.11	0.00	0.40	0.28
P-47	J-45	J-46	0.20	0.00	0.00	0.01	0.00
P-48	J-44	J-23	45.79	21.64	0.00	1.17	2.02
P-49	J-47	J-297	57.89	0.31	0.00	0.24	0.04
P-5	J-5	J-6	1.30	0.02	0.00	0.03	0.00
P-50	J-47	J-49	-33.03	5.01	0.00	0.84	1.10
P-51	J-49	J-188	2.90	0.15	0.00	0.07	0.01
P-52	J-49	J-163	0.00	0.00	0.00	0.00	0.00
P-53	J-49	J-51	-36.73	3.96	0.00	0.94	1.34
P-54	J-51	J-47	40.59	8.97	0.00	1.04	1.61
P-55	J-51	J-53	-77.43	3.36	0.00	0.88	0.75
P-56	J-52	J-43	61.72	4.83	0.00	0.70	0.49
P-57	J-53	J-286	-87.39	3.02	0.00	0.99	0.94
P-58	J-53	J-295	9.47	0.46	0.00	0.24	0.11
P-59	J-55	J-52	105.25	10.55	0.00	1.19	1.33
P-6	J-7	J-5	-4.60	0.01	0.00	0.05	0.00
P-60	J-54	J-56	7.67	0.13	0.00	0.20	0.07
P-61	J-54	J-57	0.20	0.00	0.00	0.01	0.00
P-62	J-56	J-294	7.17	0.30	0.00	0.18	0.06
P-63	J-56	J-58	0.50	0.00	0.00	0.01	0.00
P-64-XX	J-51	J-292					
P-65	J-59	J-60	2.00	0.03	0.00	0.05	0.01
P-66	J-60	J-61	0.50	0.00	0.00	0.01	0.00
P-67	J-60	J-63	1.10	0.01	0.00	0.03	0.00
P-68	J-63	J-62	0.50	0.00	0.00	0.01	0.00
P-69	J-63	J-64	0.50	0.00	0.00	0.01	0.00
P-7	J-7	J-184	0.80	0.00	0.00	0.02	0.00
P-70	J-167	T-3	-20.80	0.11	0.00	0.08	0.01
P-71	J-65	J-289	3.40	0.00	0.00	0.02	0.00
P-72	J-65	J-69	3.25	0.10	0.00	0.08	0.01
P-73	J-69	J-68	2.40	0.06	0.00	0.06	0.01
P-74	J-69	J-70	0.35	0.00	0.00	0.00	0.00
P-75	J-70	J-71	0.00	0.00	0.00	0.00	0.00
P-76	J-70	J-72	-0.35	0.00	0.00	0.01	0.00
P-77	J-72	J-178	1.40	0.04	0.00	0.04	0.00
P-78	J-72	J-75	-1.75	0.00	0.00	0.04	0.00
P-79	J-75	J-74	0.90	0.01	0.00	0.02	0.00
P-8	J-8	J-266	0.00	0.00	0.00	0.00	0.00
P-80	J-75	J-65	-2.75	0.10	0.00	0.07	0.01
P-81	J-76	J-181	12.60	0.01	0.00	0.08	0.01
P-82	J-76	J-281	0.99	0.01	0.00	0.03	0.00

P-83	J-78	J-76	13.69	0.04	0.00	0.09	0.01
P-84	J-78	J-290	-13.99	0.05	0.00	0.09	0.01
P-85	J-79	J-66	0.50	0.00	0.00	0.01	0.00
P-86	J-79	J-81	-15.09	0.05	0.00	0.10	0.01
P-87	J-80	J-83	-1.00	0.02	0.00	0.03	0.00
P-88	J-83	J-87	-3.01	0.04	0.00	0.08	0.01
P-89	J-83	J-85	1.81	0.03	0.00	0.05	0.01
P-9	J-8	J-187	-8.40	0.10	0.00	0.10	0.01
P-90	J-85	J-77	1.61	0.10	0.00	0.04	0.00
P-91	J-85	J-86	0.20	0.00	0.00	0.01	0.00
P-92	J-87	J-82	-6.41	0.05	0.00	0.07	0.01
P-93	J-87	J-89	3.40	0.02	0.00	0.04	0.00
P-94	J-89	J-88	0.40	0.00	0.00	0.01	0.00
P-95	J-89	J-90	2.80	0.01	0.00	0.03	0.00
P-96-XX	J-93	J-169					
P-97	J-93	J-95	-0.40	0.00	0.00	0.00	0.00
P-98	J-93	J-94	0.20	0.00	0.00	0.01	0.00
P-99	J-95	J-250	0.02	0.00	0.00	0.00	0.00

END NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
J-1	Stalling/62	0.50	796.30	430.00	366.30	158.73
J-10	672	0.50	726.72	577.00	149.72	64.88
J-100	GoodSpringsC	0.20	827.06	600.00	227.06	98.39
J-101		0.00	661.88	522.00	139.88	60.62
J-102		0.00	681.89	540.00	141.89	61.49
J-103	(BM)	1.00	810.72	497.00	313.72	135.94
J-104	Knob/Hwy 70	1.20	811.25	545.00	266.25	115.37
J-105	Knob/FlatRoc	2.00	809.89	496.00	313.89	136.02
J-106		1.10	810.67	470.00	340.67	147.63
J-107	O'Brion	0.30	806.74	430.00	376.74	163.25
J-108	O'Brion/Flat	1.20	806.74	482.00	324.74	140.72
J-109		2.00	805.22	472.00	333.22	144.40
J-11	62/Co.Line	0.60	709.55	410.00	299.55	129.81
J-110		1.20	805.22	472.00	333.22	144.40
J-111		2.00	805.30	488.00	317.30	137.50
J-112	Farmersville	2.00	805.29	472.00	333.29	144.43
J-113	139/Calvert	1.00	805.51	488.00	317.51	137.59
J-114	1119,near 13	0.80	805.12	467.00	338.12	146.52
J-115	Calvert	0.20	805.50	500.00	305.50	132.38
J-116		0.00	801.34	420.00	381.34	165.25
J-117	(BM) Pr'ton/	0.20	801.34	400.00	401.34	173.91
J-118	Rufus Rd	0.00	800.36	430.00	370.36	160.49
J-119	Rufus/Prince	0.00	800.36	421.00	379.36	164.39
J-12	672	0.50	730.04	592.00	138.04	59.82
J-120	Williams Rd	0.20	794.90	461.00	333.90	144.69
J-121		0.40	794.90	400.00	394.90	171.12
J-122	139/Williams	0.20	795.45	397.00	398.45	172.66
J-123	902/139	1.00	794.97	434.00	360.97	156.42
J-124	end Creswell	0.20	794.97	390.00	404.97	175.49
J-125	(BM) 139/70	0.20	798.66	417.00	381.66	165.39
J-126	139,near 70	0.20	799.47	430.00	369.47	160.10
J-127	902/Creswell	0.00	794.10	410.00	384.10	166.44
J-128	139/Creswell	0.60	794.84	599.00	195.84	84.86
J-129	(BM) 139/159	1.00	794.83	456.00	338.83	146.83
J-13	Co Line	0.70	730.04	422.00	308.04	133.48
J-130	Shady Grove	0.20	730.27	450.00	280.27	121.45
J-131		0.20	730.27	440.00	290.27	125.78
J-132	(BM) Dyennen/	0.20	730.27	466.00	264.27	114.52
J-133	Dyennen Rd	0.20	730.27	500.00	230.27	99.78
J-134	Coleman/Shad	0.20	730.27	390.00	340.27	147.45
J-135	end Quinn Rd	0.20	730.29	560.00	170.29	73.79
J-136	Webster/Quin	1.00	730.30	531.00	199.30	86.36
J-137		0.00	794.85	550.00	244.85	106.10
J-138	293/Quinn	1.00	730.34	480.00	250.34	108.48
J-139	293/Co. Line	0.20	730.34	366.00	364.34	157.88
J-14	Co Line	0.60	726.72	420.00	306.72	132.91
J-140	293/70 (Nort	0.20	730.36	425.00	305.36	132.32
J-141	70/Co Line	0.20	730.36	360.00	370.36	160.49
J-142		0.50	730.37	500.00	230.37	99.82
J-143	293/GreenBer	0.40	730.37	400.00	330.37	143.16
J-144	293/70 (Sout	0.20	730.38	380.00	350.38	151.83
J-145	70	0.20	730.38	444.00	286.38	124.10
J-146	Needmore-Onl	0.20	730.54	475.00	255.54	110.73

J-147	Crisp Rd/293	1.00	730.54	604.00	126.54	54.83
J-148	end 1119	1.50	730.60	554.00	176.60	76.53
J-149	Ridge Rd/Cri	0.20	730.54	450.00	280.54	121.57
J-15	672	0.00	740.18	594.00	146.18	63.34
J-150	1119/Shady G	2.00	802.97	464.00	338.97	146.89
J-151	293/Briar Hi	0.70	730.60	497.00	233.60	101.23
J-152	SugarCkCh/29	0.00	730.86	526.00	204.86	88.77
J-153	293/ Nichola	0.00	730.81	521.00	209.81	90.92
J-154	(BM) Bayles/P	1.40	730.60	394.00	336.60	145.86
J-155	Nicholas Rd	0.20	730.64	500.00	230.64	99.94
J-156	Nicholas/Pri	0.00	730.62	461.00	269.62	116.83
J-157	end Nicholas	1.70	730.64	550.00	180.64	78.28
J-158	Princeton	0.20	730.63	465.00	265.63	115.11
J-159	end Fairview	0.70	730.61	450.00	280.61	121.60
J-16	672/Lakeshor	0.50	744.80	615.00	129.80	56.25
J-160	Princeton	0.10	730.63	518.00	212.63	92.14
J-161		0.20	730.60	410.00	320.60	138.93
J-162	Calvert/Beth	0.80	805.50	481.00	324.50	140.62
J-163		0.00	802.08	430.00	372.08	161.23
J-164		1.00	730.60	525.00	205.60	89.09
J-165	1119/SugarCr	1.50	730.60	525.00	205.60	89.09
J-166		0.30	794.84	565.00	229.84	99.60
J-167		0.20	730.89	578.00	152.89	66.25
J-168	70/91	2.00	818.94	444.00	374.94	162.47
J-169	91/139	0.00	661.99	540.00	121.99	52.86
J-17	672/nearLake	0.00	742.27	600.00	142.27	61.65
J-170		0.40	802.97	465.00	337.97	146.45
J-171	62, nearMontg	2.30	681.89	570.00	111.89	48.49
J-172	HebronRd	0.00(0.00)	709.55	462.00	247.55	107.27
J-173	end 672	0.00(0.00)	661.48	480.00	181.48	78.64
J-174		0.00(0.00)	681.89	400.00	281.89	122.15
J-175	126/Harmony	0.00(0.00)	661.48	470.00	191.48	82.98
J-176		0.30	796.30	512.00	284.30	123.20
J-177	128/Mashburn	0.00(0.00)	661.46	532.00	129.46	56.10
J-178	126/514	1.40	661.48	456.00	205.48	89.04
J-179	126/128	0.20	661.46	547.00	114.46	49.60
J-18	PineyGroveC/	0.20	752.39	620.00	132.39	57.37
J-180	Mashburn/Har	0.00(0.00)	661.48	532.00	129.48	56.11
J-181	(BM) 139/126	0.30	661.73	472.00	189.73	82.21
J-182		2.00	821.40	442.00	379.40	164.40
J-183	672/DRAdamsR	0.30	794.85	568.00	226.85	98.30
J-184		0.30	796.31	550.00	246.31	106.73
J-185	MayRd/CoLine	0.00(0.00)	794.86	560.00	234.86	101.77
J-186	Goodwin/CoLi	0.00(0.00)	794.02	680.00	114.02	49.41
J-187	BeulahHill/J	0.50	796.46	615.00	181.46	78.63
J-188		0.80	801.93	541.00	260.93	113.07
J-189	Hudgins/Wats	0.30	801.93	541.00	260.93	113.07
J-19	end Lakeshor	0.50	744.80	475.00	269.80	116.91
J-190	end Watson	0.50	801.93	540.00	261.93	113.50
J-191	near Lewisto	0.00(0.00)	796.30	575.00	221.30	95.89
J-192	near Lewisto	0.00(0.00)	796.30	588.00	208.30	90.26
J-193	end Lewistow	0.00(0.00)	796.30	390.00	406.30	176.06
J-194	WhiteSch/CoL	0.00(0.00)	681.89	400.00	281.89	122.15
J-195	(BM) White Sc	0.00(0.00)	681.89	473.00	208.89	90.52
J-196	Donahu/Princ	0.00(0.00)	730.60	478.00	252.60	109.46
J-197	end YoungCem	0.00	681.89	380.00	301.89	130.82
J-198		0.00(0.00)	730.60	530.00	200.60	86.93
J-199	Neddmore/Pri	0.00	730.60	478.00	252.60	109.46
J-2	(BM) Toll/Boa	0.00(0.00)	681.89	534.00	147.89	64.09
J-20	end PineyGro	1.50	752.37	450.00	302.37	131.03
J-200		0.00(0.00)	750.60	370.00	360.60	156.26
J-201	Needmore-Onl	0.00	730.60	585.00	145.60	63.09
J-202	near Needmor	0.00(0.00)	730.60	575.00	155.60	67.43
J-203	293/near Nee	1.00	730.51	519.00	211.51	91.65
J-204	Liberty Driv	0.00(0.00)	730.51	609.00	121.51	52.65
J-205	Liberty/Cris	0.20	730.54	596.00	134.54	58.30
J-206		0.00	800.92	410.00	390.92	169.40
J-207	Briar Hill	0.40	730.60	428.00	302.60	131.13
J-208		0.00(0.00)	800.92	450.00	350.92	152.07
J-209	Rufus/Cotter	0.00(0.00)	730.51	420.00	310.51	134.55
J-21	672/LisanbyR	0.50	759.75	553.00	206.75	89.59
J-210	end Liberty	0.10	730.60	450.00	280.60	121.59
J-211		0.50	801.77	420.00	381.77	165.43
J-212	(BM) 70/Rufus	0.00(0.00)	730.51	410.00	320.51	138.89
J-213	end Harper	0.00(0.00)	730.51	450.00	280.51	121.55
J-214	Rufus/Harper	0.00	730.51	377.00	353.51	153.19
J-215	Rufus/Creswe	0.00	730.51	486.00	244.51	105.95
J-216	Creswell Rd	0.00(0.00)	730.51	550.00	180.51	78.22
J-217	Rustin/CoLin	0.00(0.00)	727.98	566.00	161.98	70.19
J-218	Fralick/Rust	55.00	727.98	600.00	127.98	55.46

J-219	506/Fralick	0.00	(0.00)	810.66	577.00	233.66	101.25
J-22	end PineyGro	0.70		752.38	430.00	322.38	139.70
J-220	506/CoLine	0.00		810.66	400.00	410.66	177.95
J-221	902/Creswell	0.50		792.13	410.00	382.13	165.59
J-222		0.00	(0.00)	792.13	488.00	304.13	131.79
J-223		0.00	(0.00)	792.13	403.00	389.13	168.62
J-224	PleasantGro	0.00	(0.00)	805.46	414.00	391.46	169.63
J-225	139/Donaldso	0.40		802.98	420.00	382.98	165.96
J-226		0.00	(0.00)	792.13	403.00	389.13	168.62
J-227	Pleasant Gro	1.20		805.46	440.00	365.46	158.37
J-228		0.00		792.13	454.00	338.13	146.52
J-229	(BM) Flat Roc	0.40		810.38	497.00	313.38	135.80
J-23		0.60		774.84	586.00	188.84	81.83
J-230		0.00	(0.00)	810.38	550.00	260.38	112.83
J-231	FltRock-Plea	0.00	(0.00)	810.38	430.00	380.38	164.83
J-232	(BM) 902/Bugg	0.60		810.66	450.00	360.66	156.29
J-233		0.00	(0.00)	810.66	463.00	347.66	150.65
J-234	Vinson/Buggs	0.30		810.65	566.00	244.65	106.02
J-235	end Buggs	0.30		810.65	450.00	360.65	156.28
J-236	Co Line	0.20		810.67	592.00	218.67	94.76
J-237	Vinson/CoLin	0.30		810.65	600.00	210.65	91.28
J-238	Hwy 902	0.00	(0.00)	810.66	554.00	256.66	111.22
J-239	902/WalnutGr	0.00		810.69	470.00	340.69	147.63
J-24	end Lisanby	1.70		759.72	450.00	309.72	134.21
J-240	Wiggington/C	0.00	(0.00)	810.69	652.00	158.69	68.77
J-241	902/EchoVall	0.00	(0.00)	810.69	535.00	275.69	119.47
J-242	EchoValley/C	0.00	(0.00)	810.69	515.00	295.69	128.13
J-243	TrolleyRd/Co	0.00	(0.00)	810.69	440.00	370.69	160.63
J-244	902/UnionGro	0.00	(0.00)	810.69	505.00	305.69	132.47
J-245	Union Grove/	2.00		816.52	443.00	373.52	161.86
J-246	(BM) 70/Cride	0.50		812.81	497.00	315.81	136.85
J-247	Crider/Farme	0.70		810.69	452.00	358.69	155.43
J-248	70/Livingsto	1.10		815.83	438.00	377.83	163.72
J-249	Good SprgRd/	0.50		827.29	628.00	199.29	86.36
J-25	672/Haile Rd	0.20		782.26	535.00	247.26	107.14
J-250	Carner Hill	0.00		807.51	649.00	158.51	68.69
J-251	end Livingst	0.00		815.83	593.00	222.83	96.56
J-252		0.20		796.30	488.00	308.30	133.60
J-253	1495/293	0.50		661.88	502.00	159.88	69.28
J-254		0.20		810.67	565.00	245.67	106.46
J-255		0.00	(0.00)	681.89	370.00	311.89	135.15
J-256	(BM) 91	1.30		661.89	487.00	174.89	75.79
J-257		0.00	(0.00)	709.55	600.00	109.55	47.47
J-258		0.00		810.66	515.00	295.66	128.12
J-259		0.40		801.93	460.00	341.93	148.17
J-26	end Haile Rd	0.50		782.25	429.00	353.25	153.07
J-260		0.00	(0.00)	661.48	482.00	179.48	77.78
J-261	91/WalnutGro	2.00		661.88	465.00	196.88	85.32
J-262		1.00		661.95	500.00	161.95	70.18
J-263		0.30		796.30			
J-264	(BM) Crider	0.00		661.89	459.00	202.89	87.92
J-265		0.10		796.30			
J-266		0.00		796.36	582.00	214.36	92.89
J-267		0.00		675.71	582.00	94.71	41.04
J-268	Crider/White	2.00		807.88	458.00	349.88	151.61
J-269	(BM) Crider,n	0.50		826.92	551.00	275.92	119.57
J-27		0.10		788.82	700.00	88.82	38.49
J-270	Crider/ 139	0.00		807.57	492.00	315.57	136.75
J-271	139/514 (Nor	1.70		661.66	527.00	134.66	58.35
J-272	BrightMill/	1.00		661.95	539.00	122.95	53.28
J-273	O'Brion	0.50		806.74	520.00	286.74	124.25
J-274		0.10		730.60	435.00	295.60	128.09
J-275		0.20		796.30			
J-276	139/1272	0.00		661.69	500.00	161.69	70.07
J-277		0.20		796.30			
J-278		0.00		796.30			
J-279		0.20		661.46	465.00	196.46	85.13
J-28	672/Crossroa	0.20		788.82	652.00	136.82	59.29
J-280		0.20		661.46	541.00	120.46	52.20
J-281	515/Etheridg	1.50		661.73	521.00	140.73	60.98
J-282	515/Tandy	0.20		661.73	505.00	156.73	67.91
J-283		0.20		661.46	541.00	120.46	52.20
J-284		0.20		661.73	502.00	159.73	69.22
J-285		0.40		796.30	418.00	378.30	163.93
J-286		0.00		812.42	550.00	262.42	113.72
J-287	Mitchell Rd-	0.20		661.73	380.00	281.73	122.08
J-288		2.00		661.62	580.00	81.62	35.37
J-289		1.40		661.62	575.00	86.62	37.54
J-29	Park Rd/278	0.70		793.10	648.00	145.10	62.88
J-290		0.30		661.82	520.00	141.82	61.46

J-291		0.30	661.74	515.00	146.74	63.59
J-292		0.50	661.94	509.00	152.94	66.28
J-293	DippingSprin	1.00	807.91	515.00	292.91	126.93
J-294		1.00	808.19	566.00	242.19	104.95
J-295		1.10	808.94	583.00	225.94	97.91
J-296		0.00	794.87	642.00	152.87	66.24
J-297		1.50	796.76	500.00	296.76	128.59
J-298		0.20	782.25	650.00	132.25	57.31
J-299		0.70	774.84	586.00	188.84	81.83
J-3	Longbreak/62	0.10	796.33	529.00	267.33	115.84
J-30	(BM) Penyrile	0.70	793.10	530.00	263.10	114.01
J-300		2.70	741.13	450.00	291.13	126.16
J-301		1.30	796.30	605.00	191.30	82.90
J-302		0.40	796.30	605.00	191.30	82.90
J-303		0.00(0.00)	805.46	462.00	343.46	148.83
J-304		0.40	730.38	407.00	323.38	140.13
J-305		0.20	730.38	420.00	310.38	134.50
J-306		1.40	730.43	415.00	315.43	136.69
J-307		0.20	730.73	528.00	202.73	87.85
J-308		0.20	730.72	559.00	171.72	74.41
J-309		0.70	730.60	482.00	248.60	107.73
J-31	Pennyrile Rd	0.52	794.01	620.00	174.01	75.41
J-310		0.40	801.93	700.00	101.93	44.17
J-311	GoodSprings/	0.00	826.32	522.00	304.32	131.87
J-312		0.00	827.81	600.00	227.81	98.72
J-32	Crosrd.Ch./P	0.50	794.02	595.00	199.02	86.24
J-33	Pennyrile/Go	0.00	794.02	603.00	191.02	82.77
J-34	278/Crosrd.C	1.60	794.03	658.00	136.03	58.95
J-35	Cobb Creek R	0.10	794.85	570.00	224.85	97.44
J-36	Cobb Creek R	0.00	794.85	546.00	248.85	107.84
J-37		0.50	794.85	550.00	244.85	106.10
J-38	CobbCreek/Ma	0.10	794.86	540.00	254.86	110.44
J-39	May Rd	0.00(0.00)	794.86	555.00	239.86	103.94
J-4	Longbreak Rd	0.50	796.31	534.00	262.31	113.67
J-40	Hwy 672/91	1.90	794.89	585.00	209.89	90.95
J-41		0.90	795.33	550.00	245.33	106.31
J-42	Holmes Cook/	0.50	795.34	650.00	145.34	62.98
J-43	(BM) 278/672	0.00	792.29	586.00	206.29	89.39
J-44	(BM) Bed/Refu	1.70	796.49	480.00	316.49	137.14
J-45	278/BaldKnob	0.50	795.95	610.00	185.95	80.58
J-46	Bald Knob Rd	0.20	795.95	630.00	165.95	71.91
J-47	278/Old	0.11	797.07	580.00	217.07	94.06
J-48		0.50	801.93	600.00	201.93	87.50
J-49	Scottsburg/2	0.80	802.08	594.00	208.08	90.17
J-5	Lewistown/62	0.00	796.32	508.00	288.32	124.94
J-50		0.00	661.78	450.00	211.78	91.77
J-51	Scottsburg	0.10	806.04	535.00	271.04	117.45
J-52	91/Friendshi	0.50	797.12	527.00	270.12	117.05
J-53	hwy91/1857 f	0.50	809.40	550.00	259.40	112.41
J-54	1857/Webster	0.50	808.61	596.00	212.61	92.13
J-55	Dipping Spri	0.50	807.67	574.00	233.67	101.26
J-56	Hwy 1857/Ott	0.00	808.48	600.00	208.48	90.34
J-57	end Webster	0.20	808.61	560.00	248.61	107.73
J-58	(BM) 128/Drip	0.50	808.48	544.00	264.48	114.61
J-59		0.30	661.92	498.00	163.92	71.03
J-6	WKYToll/Lewi	0.50	796.30	510.00	286.30	124.06
J-60	McGowan/2060	0.40	661.89	527.00	134.89	58.45
J-61		0.50	661.89	470.00	191.89	83.15
J-62	end McGowan	0.50	661.89	550.00	111.89	48.48
J-63	128/ McGowan	0.10	661.89	484.00	177.89	77.08
J-64	Hwy 128	0.50	661.88	495.00	166.88	72.32
J-65	(BM) 139/514	1.20	661.62	539.00	122.62	53.14
J-66	McGowan/139	0.50	661.85	500.00	161.85	70.14
J-67	RedHill,near	0.00(0.00)	661.52	476.00	185.52	80.39
J-68	126/OtterPon	1.60	661.46	541.00	120.46	52.20
J-69	OtterPond/Ho	0.70	661.52	531.00	130.52	56.56
J-7	62/NicholsCe	1.60	796.31	457.00	339.31	147.03
J-70	OtterPond/Cr	0.50	661.52	533.00	128.52	55.69
J-71	126/Cravens	0.00	661.52	500.00	161.52	69.99
J-72		0.00	661.52	550.00	111.52	48.33
J-73	(BM) 126/128	0.00(0.00)	661.48	452.00	209.48	90.78
J-74	Blue Spring	0.90	661.51	550.00	111.51	48.32
J-75	514/BlueSpri	0.10	661.52	471.00	190.52	82.56
J-76	139/515	0.10	661.74	493.00	168.74	73.12
J-77	293/903	0.00	661.78	437.00	224.78	97.40
J-78	139/SilverSt	0.30	661.78	505.00	156.78	67.94
J-79	Jo Jones Rd	0.30	661.86	440.00	221.86	96.14
J-8	JonesKeeney/	1.00	796.36	424.00	372.36	161.35
J-80	OldWheat./Ch	0.50	661.89	494.00	167.89	72.75
J-81	end Jo Jones	0.20	661.91	420.00	241.91	104.83

J-82	62	0.00	662.00	506.00	156.00	67.60
J-83	Gromes/Chape	0.20	661.90	547.00	114.90	49.79
J-84	293,nearJoJo	0.20	661.77	432.00	229.77	99.57
J-85	Gromes	0.00	661.87	520.00	141.87	61.48
J-86	Gromes	0.20	661.87	500.00	161.87	70.14
J-87	62/cromes	0.00	661.95	549.00	112.95	48.94
J-88	Dulaney/Co L	0.40	661.93	540.00	121.93	52.84
J-89	62/Dulaney	0.20	661.93	549.00	112.93	48.94
J-9	end Nichols	0.50	796.30	532.00	264.30	114.53
J-90	62/Cty line	2.80	661.92	562.00	99.92	43.30
J-91	White Sulfur	0.80	661.90	450.00	211.90	91.82
J-92		0.20	807.51	650.00	157.51	68.26
J-93	139, near 91	0.20	807.51	568.00	239.51	103.79
J-94		0.20	807.51	650.00	157.51	68.26
J-95	139/	0.20	807.51	550.00	257.51	111.59
J-96	139	0.20	807.51	492.00	315.51	136.72
J-97	Carner Hill	0.50	807.51	665.00	142.51	61.76
J-98	139/CarnerHi	1.50	806.96	440.00	366.96	159.01
J-99	WhiteSulfur/	2.00	661.91	507.00	154.91	67.13
T-1		----	834.00	721.00	93.00	40.30
T-2		----	829.00	706.50	122.50	53.08
T-3		----	731.00	690.00	41.00	17.77
T-4		----	662.00	620.00	42.00	18.20
T-5		----	672.00	666.00	6.00	2.60

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES (psi)	JUNCTION NUMBER	MINIMUM PRESSURES (psi)
J-220	177.95	T-5	2.60
J-193	176.06	T-3	17.77
J-124	175.49	T-4	18.20
J-117	173.91	J-288	35.37
J-122	172.66	J-289	37.54
J-121	171.12	J-27	38.49
J-224	169.63	T-1	40.30
J-206	169.40	J-267	41.04
J-223	168.62	J-90	43.30
J-226	168.62	J-310	44.17

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
T-1	187.98	
T-2	98.60	
T-3	20.80	
T-4	32.60	
T-5	-141.15	
NET SYSTEM INFLOW	= 339.98	
NET SYSTEM OUTFLOW	= -141.15	
NET SYSTEM DEMAND	= 198.83	

***** HYDRAULIC ANALYSIS COMPLETED *****

Case # 2004-00149
Rec 5-3-04

1999 EDITION

GENERAL HIGHWAY MAP

WELL COUNTY

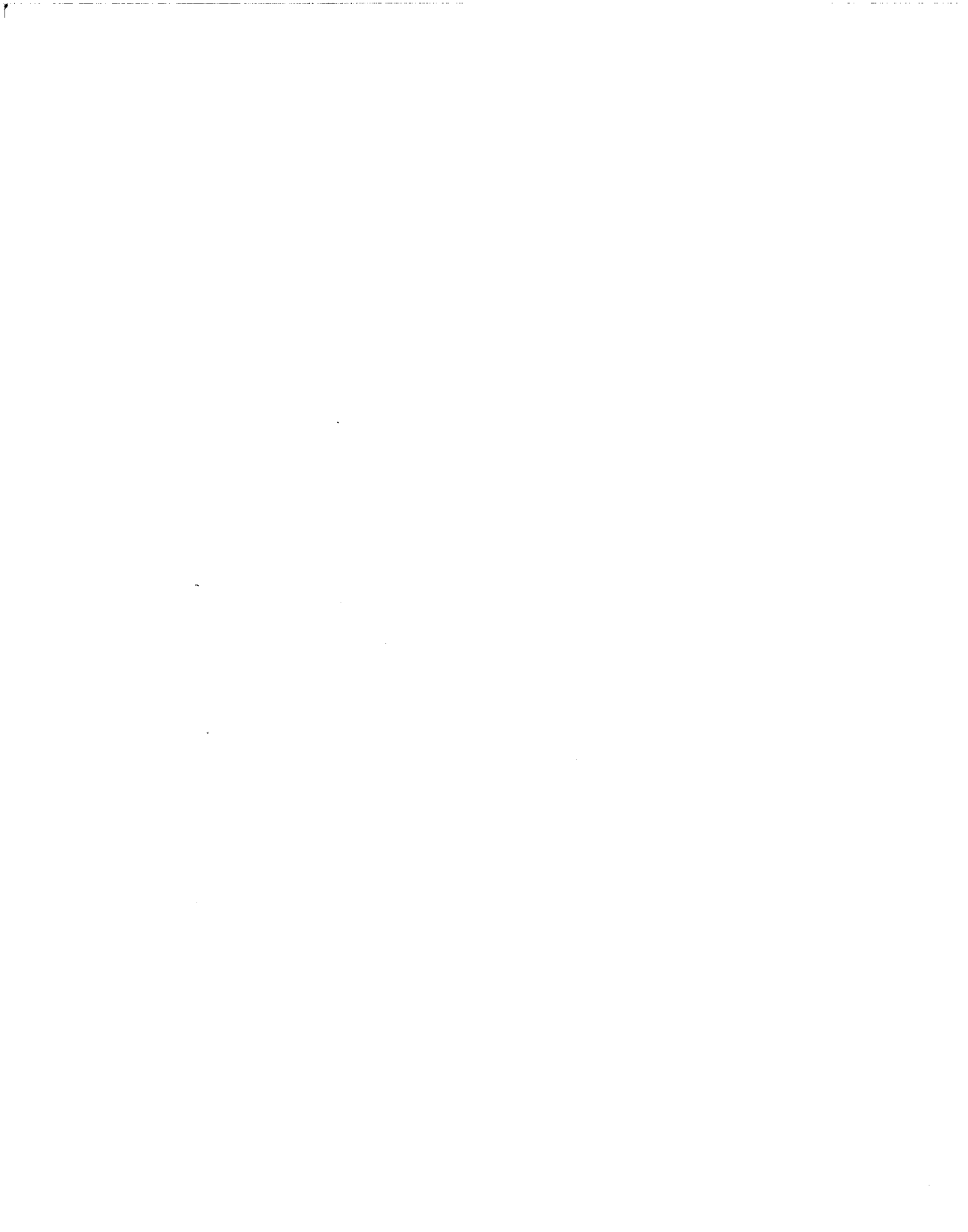
KENTUCKY

PREPARED BY THE

**KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
DIVISION OF PLANNING**

IN COOPERATION WITH THE

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**



APPENDIX C
OPINION OF PROBABLE COSTS

CALDWELL COUNTY
WATER MAIN EXTENSIONS
CALDWELL COUNTY, KENTUCKY

Contract 506-02-02

PHASE VII WATER MAIN EXTENSIONS
CALDWELL COUNTY WATER DISTRICT
CALDWELL COUNTY, KENTUCKY

Item No.	Item	Quantity	Unit	Unit Price	Total
1	6-Inch Ductile Iron, Restrained Joint Pipe, Class 350, Furnishing, Trenching, Bedding, Laying and Backfilling, Concrete Blocking, Unclassified Excavation, Complete	200	LF	\$20.00	\$4,000.00
2	4-Inch Ductile Iron, Restrained Joint Pipe, Class 350, Furnishing, Trenching, Bedding, Laying and Backfilling, Concrete Blocking, Unclassified Excavation, Complete	300	LF	\$15.00	\$4,500.00
3	3-Inch Ductile Iron, Restrained Joint Pipe, Class 350, Furnishing, Trenching, Bedding, Laying and Backfilling, Concrete Blocking, Unclassified Excavation, Complete	50	LF	\$12.00	\$600.00
4	6-Inch Class 200 (SDR 21) PVC Pipe, Furnishing, Trenching, Bedding, Laying and Backfilling, Detectable Tape, Unclassified Excavation, Complete	84,000	LF	\$8.50	\$714,000.00
5	4-Inch Class 200 (SDR 21) PVC Pipe, Furnishing, Trenching, Bedding, Laying and Backfilling, Detectable Tape, Unclassified Excavation, Complete	125,000	LF	\$7.00	\$875,000.00
6	3-Inch Class 200 (SDR 21) PVC Pipe, Furnishing, Trenching, Bedding, Laying and Backfilling, Detectable Tape, Unclassified Excavation, Complete	11,000	LF	\$6.00	\$66,000.00
7	Ductile Iron compact Mechanical Joint Pipe Fittings, furnishing and Laying, Including Concrete Blocking, Complete	4,000	Lbs.	\$4.00	\$16,000.00
8	8-Inch X 0.188 Inch Steel Cover Pipe, Furnish and Install, Complete	400	LF	\$25.00	\$10,000.00
9	10-Inch X 0.188 Inch Steel Cover Pipe, Furnish and Install, Complete	300	LF	\$30.00	\$9,000.00
10	Boring and/or Jacking for 8-Inch Steel Cover Pipe, Unclassified Excavation	400	LF	\$125.00	\$50,000.00
11	Boring and/or Jacking for 10-Inch Steel Cover Pipe, Unclassified Excavation	300	LF	\$150.00	\$45,000.00
12	6-Inch Mechanical Joint Resilient Seated Gate Valve and Box, Including Concrete Valve Box Collar, Complete	35	Each	\$575.00	\$20,125.00
13	4-Inch Mechanical Joint Resilient Seated Gate Valve and Box, Including Concrete Valve Box Collar, Complete	50	Each	\$500.00	\$25,000.00

Contract 506-02-02

PHASE VII WATER MAIN EXTENSIONS
 CALDWELL COUNTY WATER DISTRICT
 CALDWELL COUNTY, KENTUCKY

Item No.	Item	Quantity	Unit	Unit Price	Total
14	3-Inch Mechanical Joint Resilient Seated Gate Valve and Box, Including Concrete Valve Box Collar, Complete	5	Each	\$475.00	\$2,375.00
15	Blow-Off Assembly, furnish and Install, Complete	45	Each	\$1,100.00	\$49,500.00
16	Test Meter/Tap Assembly, Furnish and Install, Complete	7	Each	\$500.00	\$3,500.00
17	Line Marker, Furnish and Install, Complete	100	Each	\$100.00	\$10,000.00
18	3/4-Inch Copper Service Pipe, Furnishing, Trenching (Or Installing by Jacking), Bedding, Laying and Backfilling, Unclassified Excavation, Complete	4,700	LF	\$5.50	\$25,850.00
19	5/8-Inch X 3/4-Inch Service Meter Assembly, Including All Components, Furnish and Install, Complete	125	Each	\$350.00	\$43,750.00
20	4-Inch X 4-Inch D.I.m.j. Tapping Sleeve, Valve, Box and Concrete Collar, Furnish and Install, Complete	3	Each	\$1,200.00	\$3,600.00
21	6-Inch X 6-Inch D.I.m.j. Tapping Sleeve, Valve, Box and Concrete Collar, Furnish and Install, Complete	6	Each	\$2,000.00	\$12,000.00
22	Air Release Assembly, Furnish and Install, Complete	25	Each	\$500.00	\$12,500.00
23	Remove Existing Blowoff Assembly, Tie Into Existing 3" Water Main, Complete	2	Each	\$450.00	\$900.00
24	Remove Existing Blowoff Assembly, Tie Into Existing 4" Water Main, Complete	4	Each	\$450.00	\$1,800.00
25	Remove Existing Blowoff Assembly, Tie Into Existing 6" Water Main, Complete	1	Each	\$500.00	\$500.00
26	Reset Existing Blowoff Assembly, Complete	7	Each	\$350.00	\$2,450.00
27	Remove Existing Blowoff Assembly, Tie Into Existing 4" Water Main, Return Blowoff Assembly to Owner, Complete	1	Each	\$450.00	\$450.00
28	Extra for Mechanical Removal of solid Rock, Only On Order of the Engineer	150	CY	\$75.00	\$11,250.00
29	Extra for Mechanical Tamping of Trench Backfill, When Not Required by Plans and/or Specifications, On Order of the Engineer	150	CY	\$25.00	\$3,750.00
30	Crushed Rock for Trench Stabilization, On Order of the Engineer	250	Ton	\$15.00	\$3,750.00

Contract 506-02-02

PHASE VII WATER MAIN EXTENSIONS
CALDWELL COUNTY WATER DISTRICT
CALDWELL COUNTY, KENTUCKY

Item No.	Item	Quantity	Unit	Unit Price	Total
31	Extra for Crushed Rock for Pipe Bedding, On Order of the Engineer	250	Ton	\$15.00	\$3,750.00
32	Crushed Rock on Trench Surface, In Place	2,000	Ton	\$17.00	\$34,000.00
33	RipRap on Trench Surface, In Place	25	Ton	\$50.00	\$1,250.00
34	2-Inch Thickness Bituminous Surface Replacement, Trench Width, On Streets, Drives and Roads, Complete	800	LF	\$20.00	\$16,000.00
35	6-Inch Concrete Drive Replacement, Trench Width, Complete	50	LF	\$40.00	\$2,000.00
36	4-Inch Concrete Sidwalk replacement, Trench Width, Complete	30	LF	\$20.00	\$600.00
37	Seal Existing Wells	50	Each	\$2,500.00	\$125,000.00
SUBTOTAL					\$2,209,750.00
Contingencies					\$240,250.00
Construction Cost					\$2,450,000.00
Design, General Engineering, Inspection, Other Engineering					\$270,000.00
Land/Right of Ways					\$25,000.00
Legal/Administrative					\$25,000.00
Interest					\$25,000.00
					\$2,795,000.00
Project Contingencies					\$240,837.00
TOTAL ESTIMATED PROBABLE COST					\$3,035,837.00

APPENDIX D
FINANCIAL EXHIBITS

CALDWELL COUNTY
WATER MAIN EXTENSIONS
CALDWELL COUNTY, KENTUCKY

EXHIBIT 1

CURRENT OPERATIONS
CALDWELL COUNTY WATER DISTRICT
PRINCETOWN, KENTUCKY

(CALENDAR YEAR ENDED 12/31/2001)

Operating Revenues:	
Metered Sales and Service	\$603,721
All Other *	<u>17,097</u>
Total	\$620,818

Operating Expenses:	
Water Purchased	\$122,180
Salaries and Wages	88,477
Employee pensions & Benefits	77
Chemicals	6,102
Contract Services	30,277
Rents	811
Transportation	1,968
Insurance	12,162
Purchased Power & Fuel	31,128
Miscellaneous *	<u>11,545</u>
Total Exp. **	\$304,727

* Other water revenues and miscellaneous expenses are exclusive of grant funds and related capital expenditures

** Total operating expenses as shown are exclusive of depreciation expense

Net Operating Income	\$316,091
Debt Service - Current Long Term Debt	152,563
Coverage	2.07

EXHIBIT 2
SCHEDULE OF PRIN & INT. - LONG TERM DEBT
CALDWELL COUNTY WATER DISTRICT
PRINCETOWN, KENTUCKY

Calend. Yr. Edning Dec. 31	REVENUE BONDS					
	1993 (Refunding)	1993	1996	1999 (420,000)	1999 (800,000)	Total
2001	\$15,786.45	\$24,325.00	\$51,436.88	\$18,375.00	\$26,000.00	\$135,923.33
2002	15,643.61	24,075.00	51,973.75	22,375.00	34,500.00	148,567.36
2003	15,417.79	24,312.50	51,486.25	22,700.00	34,224.00	148,140.54
2004	15,377.93	24,037.50	51,974.38	22,503.00	34,448.00	148,340.81
2005	16,044.95	24,250.00	51,438.13	22,806.00	34,655.00	149,194.08
2006	15,778.80	23,950.00	51,877.50	22,588.00	34,846.00	149,040.30
2007	15,639.91	24,137.50	51,292.50	22,369.00	35,021.00	148,459.91
2008	15,304.38	24,300.00	51,683.13	22,650.00	35,180.00	149,117.51
2009	16,103.26	23,950.00	52,025.00	22,409.00	35,323.00	149,810.26
2010	15,763.29	24,087.50	51,342.50	22,669.00	35,449.00	149,311.29
2011	15,445.06	24,200.00	52,611.25	22,906.00	35,559.00	150,721.31
2012	16,090.68	24,287.50	51,831.25	22,622.00	35,653.00	150,484.43
2013	15,707.62	23,862.50	52,026.88	22,838.00	35,730.00	150,165.00
2014	16,230.44	24,412.50	52,173.75	22,531.00	35,791.00	151,138.69
2015	15,866.18	23,937.50	52,271.88	22,725.00	36,336.00	151,136.56
2016	16,434.61	23,950.00	52,321.25	22,897.00	36,349.00	151,951.86
2017	15,989.51	23,937.50	52,321.88	22,547.00	36,345.00	151,140.89
2018	16,367.04	23,900.00	52,273.75	23,197.00	36,825.00	152,562.79
2019		23,837.50	52,176.88	22,803.00	36,773.00	135,590.38
2020		24,237.50	52,031.25	22,909.00	37,204.00	136,381.75
2021		24,100.00	52,812.50	22,994.00	37,103.00	137,009.50
2022		23,937.50	52,520.63	23,056.00	37,485.00	136,999.13
2023		23,750.00	52,180.00	23,097.00	37,835.00	136,862.00
2024		24,025.00	52,766.25	23,116.00	38,153.00	138,060.25
2025		23,762.50	52,279.38	23,113.00	38,438.00	137,592.88
2026		23,962.50	52,719.38	23,088.00	38,690.00	138,459.88
2027		23,625.00	53,061.88	23,041.00	38,910.00	138,637.88
2028		23,750.00	52,331.25	23,472.00	39,098.00	138,651.25
2029		23,825.00	53,503.13	23,359.00	39,753.00	140,440.13
2030		23,850.00	52,577.50	23,225.00	39,859.00	139,511.50
2031		23,825.00	53,554.38	23,569.00	40,433.00	141,381.38
2032		23,750.00	53,409.36	23,369.00	40,458.00	140,986.36
2033		25,200.00	53,166.88	23,647.00	40,950.00	142,963.88
2034			53,802.50	23,381.00	41,394.00	118,577.50
2035			55,583.75	23,594.00	41,789.00	120,966.75
2036				23,763.00	42,635.00	66,398.00
2037				23,888.00	42,916.00	66,804.00
2038				23,969.00	43,149.00	67,118.00
2039				<u>24,006.00</u>	<u>42,333.00</u>	66,339.00
	284,991.51	793,350.00	1,834,838.81	894,166.00	1,463,592.00	

Maximum Year Principal and Interest (2018)

152,562.79

EXHIBIT 3
PROPOSED IMPROVEMENTS AND FUNDING
CALDWELL COUNTY WATER DISTRICT
PRINCETON, KENTUCKY

	Phase V	Phase VI	Phase VII	Phase VIII
Proposed Water Facilities - Cost Estimate	\$1,885,800	\$680,822	\$3,035,837	\$2,915,065
Source of Funds:				
Grants: CDBG		\$340,411		
KIA (20/20)	\$500,000	\$330,411	\$669,589	
RD	\$500,000		\$1,165,205	\$1,457,532
Tap on Fees	\$70,800	\$10,000	\$72,000	\$72,000
Bonds/Loans				
RD	\$815,000		\$1,129,043	\$1,385,532
KIA				
Total Funds	<u>\$1,885,800</u>	<u>\$680,822</u>	<u>\$3,035,837</u>	<u>\$2,915,064</u>
Debt Service:				
Principal	\$815,000		\$1,129,043	\$1,385,532
Interest Rate/ Yr.	4.50%		4.75%	4.75%
Amortization Period - Yrs.	38		38	38
Payment/Yr. - Prin.l and Interest & Admi	\$45,152		\$64,727	\$79,432
Coverage @ 20%	<u>\$9,030</u>		<u>\$12,945</u>	<u>\$7,500</u>
Total Debt Service Requirement	<u>\$54,183</u>		<u>\$77,673</u>	<u>\$86,932</u>

EXHIBIT 4

**PROJECTED ANNUAL REVENUE REQUIREMENTS
CALDWELL COUNTY WATER DISTRICT
PRINCETON, KENTUCKY**

1) Operating Expenses:

	Calendar 2003	Calendar 2004	Calendar 2005	Calendar 2006
a. Actual Costs - Year Ended 12/31/01	\$182,547	\$182,547	\$182,547	\$182,547
b. Water Purchased	122,180	122,180	122,180	122,180
c. Adjust for Inflation (3% per Yr.)	11,117	16,927	22,911	29,075
d. Adjustment of water purchase price (\$1.92/1000)	12,663	12,663	12,663	12,663
e. New Customers Water Purchase Cost	<u>7,882</u>	<u>21,174</u>	<u>28,355</u>	<u>28,355</u>
Total Projected O&M Costs	\$336,389	\$355,491	\$368,656	\$374,820
Estimated number of new customers and date On Line	Phase V -- 118 on 5/03 Phase VI --> 46 on 7/03 & Phase VII -- 125 on 10/03		Phase VIII New Cust (98) On Line 3/04	
Cumulative No. New Cust	289	387	387	387
Estimated water use (M Gal.) of new cust. @ 3180 gal/mo. X	4,105	11,028	14,768	14,768

2) Debt Service Requirements:

a. Annual Principal & Interest:				
Current Loans	152,563	152,563	152,563	\$152,563
Proposed RD Loans: - Phase 4.50% Interest Rate *	21,394	36,675	41,620	45,152
- Phase 4.75% Interest Rate *	22,346	53,630	58,254	64,727
- Phase 4.75% Interest Rate *		10,969	65,813	79,432

* Based on initial two years interest only and 38 year amortization thereafter. Shaded area = 38 year amort.

b. Coverage and Fees:

Coverage @ 20%	<u>39,261</u>	<u>50,767</u>	<u>63,650</u>	<u>68,375</u>
Total Debt Service Requirement	<u>\$235,564</u>	<u>\$304,604</u>	<u>\$381,900</u>	<u>\$410,249</u>

3) Total Annual Revenue Requirements

\$571,953	\$660,095	\$750,555	<u>\$785,069</u>
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4) System Revenues:

Metered Sales and Serv. (Yr. Ended 12/31/01)	\$603,721	\$603,721	\$603,721	\$603,721
Rate Adjustment (12/01/02)	20,701	\$20,701	\$20,701	\$20,701
New Customers (3,180 Gal/Mo.)	47,225	157,296	167,927	167,927
Other Operating Income	<u>17,097</u>	<u>17,097</u>	<u>17,097</u>	<u>17,097</u>
Total Operating Revenues	\$688,744	\$798,815	\$809,446	\$809,446
Non Operating Income - Interest Income Adjusted	<u>\$6,309</u>	<u>\$6,309</u>	<u>\$6,309</u>	<u>\$6,309</u>
Total System Revenues	\$695,053	\$805,124	\$815,755	<u>\$815,755</u>

5) Funds Above / (Below Requirements)

\$123,101	\$145,030	\$65,200	\$30,686
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6) Percent Rate Increase Needed **

0.00%	0.00%	0.00%	0.00%
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*** Additional customers from proposed projects and normal growth may be sufficient to offset annual revenue requirements through 2006.