

APPENDIX F

Alternative SS-A-4

Table 1

Seventh Street 8-inch Sewer Relining

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Seventh Street 8-inch Sewer Relining

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	CIPP Liner 8"	703	Lft	\$60	\$42,180
2	CIPP Insertion Point Setup	1	ea	\$1,250	\$1,250
3	CIPP Lateral Cutout/Restoration	5	ea	\$125	\$625
4	CIP Manhole Lining	28	Lft	\$577	\$16,156
5	CIP Manhole Setup	3	ea	\$600	\$1,800
6	Maintaining Flow / ByPass Pumping	1	ls	\$6,000	\$6,000
7	Traffic Control	1	ea	\$5,000	\$5,000
8	Mobilization	1	ea	\$4,000	\$4,000
Sub Total					\$77,011
Contingencies @ 8.0%					\$6,200
Total Construction Cost					\$83,211
Design Engineering Services @ 7.0%					\$5,800
Construction Engineering Services @ 6.0%					\$5,000
Administrative & Legal @ 4.0%					\$3,300
Total					\$97,311
Construction Costs Net Present Worth					\$41,327

Alternative SS-A-4 Table 2

Seventh Street 8-inch Sewer Relining

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Seventh Street 8-inch Sewer Relining	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
1	CIPP Liner 8"	\$42,180	\$50
4	CIP Manhole Lining	\$16,156	\$25
Total Additional Annual Costs			\$75
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$4,274

Alternative SS-A-4 Table 3

Seventh Street 8-inch Sewer Relining

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Seventh Street 8-inch Sewer Relining
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
CIPP Liner 8"	\$42,180	100%	50	\$844
CIP Manhole Lining	\$16,156	100%	50	\$323
Annual Replacement Reserve:				\$1,167
Reserve Net Present Worth:				\$15,342

Alternative SS-A-4 Table 4

Seventh Street 8-inch Sewer Relining

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Seventh Street 8-inch Sewer Relining
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
1	CIPP Liner 8"	\$42,180	60%	50	\$25,308	\$10,748
4	CIP Manhole Lining	\$16,156	60%	50	\$9,694	\$4,117
Salvage Value Present Worth:						\$14,865

Alternative SS-A-4 Table 5

Seventh Street 8-inch Sewer Relining

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Seventh Street 8-inch Sewer Relining
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$41,327
Present Worth of Operation & Maintenance	\$4,274
Present Worth of Reserve	\$15,342
Total Construction, O & M, and Reserve	\$60,943
Present Worth Salvage Value	\$14,865
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$46,078

Alternative SS-A-5 Table 1

Seventh Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Seventh Street 8-inch PVC Sewer Replacement

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" PVC	703	Lft	\$4	\$2,812
2	8" PVC Sewer	703	Lft	\$38	\$26,714
3	PVC Lateral	5	ea	\$325	\$1,625
4	Pavement Removal	469	Syd	\$8	\$3,752
5	Manhole Casting	3	ea	\$600	\$1,800
6	Maintaining Flow / ByPass Pumping	1	ls	\$6,000	\$6,000
7	Traffic Control	1	ls	\$8,000	\$8,000
8	Mobilization	1	ls	\$4,000	\$4,000
9	Trenching	703	ea	\$28	\$19,684
10	Special Backfill	50	Cyd	\$24	\$1,200
11	Asphalt Patching 330 lbs/Syd	77	Ton	\$165	\$12,705
12	48" Sanitary MH	18	Vft	\$480	\$8,640
13	Structure Rem	3	ea	\$750	\$2,250
14	Aggregate Base 8'	469	Syd	\$20	\$9,380
Sub Total					\$108,562
Contingencies @ 8.0%					\$8,700
Total Construction Cost					\$117,262
Design Engineering Services @ 7.0%					\$8,200
Construction Engineering Services @ 6.0%					\$7,000
Administrative & Legal @ 4.0%					\$4,700
Total					\$137,200
Construction Costs Net Present Worth					\$58,267

Alternative SS-A-5 Table 2

Seventh Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Seventh Street 8-inch PVC Sewer Replacement	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	8" PVC Sewer	\$26,714	\$250
3	PVC Lateral	\$1,625	\$100
11	Asphalt Patching 330 lbs/Syd	\$12,705	\$150
12	48" Sanitary MH	\$8,640	\$150
Total Additional Annual Costs			\$650
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$11,835

Alternative SS-A-5 Table 3

Seventh Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Seventh Street 8-inch PVC Sewer Replacement	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
8" PVC Sewer	\$26,714	90%	50	\$481
PVC Lateral	\$1,625	90%	50	\$29
Asphalt Patching 330 lbs/Syd	\$12,705	85%	20	\$540
48" Sanitary MH	\$8,640	90%	50	\$156
Annual Replacement Reserve:				\$1,206
Reserve Net Present Worth:				\$15,853

Alternative SS-A-5 Table 4

Seventh Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Seventh Street 8-inch PVC Sewer Replacement
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	8" PVC Sewer	\$26,714	60%	50	\$16,028	\$6,807
3	PVC Lateral	\$1,625	33%	30	\$542	\$230
11	Asphalt Patching 330 lbs/Syd	\$12,705	0%	20	\$0	\$0
12	48" Sanitary MH	\$8,640	50%	40	\$4,320	\$1,835
Salvage Value Present Worth:						\$8,872

Alternative SS-A-5 Table 5

Seventh Street 8-inch PVC Sewer Replacement

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Seventh Street 8-inch PVC Sewer Replacement
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$58,267
Present Worth of Operation & Maintenance	\$11,835
Present Worth of Reserve	\$15,853
Total Construction, O & M, and Reserve	\$85,956
Present Worth Salvage Value	\$8,872
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$77,084

Alternative SS-B-4

Table 1

Broadway Street River Crossing - CIPP Reline

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Broadway Street River Crossing - CIPP Reline

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	CIPP Liner 12"	285	Lft	\$102	\$29,070
2	CIPP Insertion Point Setup	1	ea	\$2,250	\$2,250
3	CIP Manhole Lining	26	Lft	\$577	\$15,002
4	CIP Manhole Setup	2	ea	\$600	\$1,200
5	Maintaining Flow / ByPass Pumping	1	ls	\$16,000	\$16,000
6	Traffic Control	1	ea	\$2,000	\$2,000
7	Mobilization	1	ea	\$4,000	\$4,000
Sub Total					\$69,522
Contingencies @ 8.0%					\$5,600
Total Construction Cost					\$75,122
Design Engineering Services @ 7.0%					\$5,300
Construction Engineering Services @ 6.0%					\$4,500
Administrative & Legal @ 4.0%					\$3,000
Total					\$87,922
Construction Costs Net Present Worth					\$37,339

Alternative SS-B-4 Table 2

Broadway Street River Crossing - CIPP Reline

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Broadway Street River Crossing - CIPP Reline	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
1	CIPP Liner 12"	\$29,070	\$50
3	CIP Manhole Lining	\$15,002	\$25
Total Additional Annual Costs			\$75
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$4,274

Alternative SS-B-4 Table 3

Broadway Street River Crossing - CIPP Reline

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>Broadway Street River Crossing - CIPP Reline</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
CIPP Liner 12"	\$29,070	100%	50	\$581
CIP Manhole Lining	\$15,002	100%	50	\$300
Annual Replacement Reserve:				\$881
Reserve Net Present Worth:				\$11,591

Alternative SS-B-4 Table 4

Broadway Street River Crossing - CIPP Reline

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Broadway Street River Crossing - CIPP Reline
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
1	CIPP Liner 12"	\$29,070	60%	50	\$17,442	\$7,407
3	CIP Manhole Lining	\$15,002	60%	50	\$9,001	\$3,823
Salvage Value Present Worth:						\$11,230

Alternative SS-B-4 Table 5

Broadway Street River Crossing - CIPP Reline

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Broadway Street River Crossing - CIPP Reline
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$37,339
Present Worth of Operation & Maintenance	\$4,274
Present Worth of Reserve	\$11,591
Total Construction, O & M, and Reserve	\$53,204
Present Worth Salvage Value	\$11,230
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$41,974

Alternative SS-B-5 Table 1

Broadway Street River Crossing - Open Cut DIP

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Broadway Street River Crossing - Open Cut DIP

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Abandon 12" DIP River Crossing	1	ea	\$2,200	\$2,200
2	16" Ductile Iron Pipe	285	Lft	\$72	\$20,520
3	Dewatering	1	ls	\$16,000	\$16,000
4	Manhole Casting	2	ea	\$600	\$1,200
5	Maintaining Flow / ByPass Pumping	1	ls	\$12,800	\$12,800
6	Bank Stabilization	1	ls	\$5,400	\$5,400
7	Mobilization	1	ls	\$8,000	\$8,000
8	River Crossing Open Cut	285	Lft	\$800	\$228,000
9	Special Backfill	50	Cyd	\$24	\$1,200
10	Erosion Control	1	ls	\$8,200	\$8,200
11	48" Sanitary MH	26	Vft	\$480	\$12,480
12	Structure Rem	3	ea	\$750	\$2,250
Sub Total					\$318,250
Contingencies @ 8.0%					\$25,500
Total Construction Cost					\$343,750
Design Engineering Services @ 7.0%					\$24,100
Construction Engineering Services @ 6.0%					\$20,600
Administrative & Legal @ 4.0%					\$13,800
Total					\$402,250
Construction Costs Net Present Worth					\$170,831

Alternative SS-B-5 Table 2

Broadway Street River Crossing - Open Cut DIP

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Broadway Street River Crossing - Open Cut DIP	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	16" Ductile Iron Pipe	\$20,520	\$325
11	48" Sanitary MH	\$12,480	\$150
Total Additional Annual Costs			\$475
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$9,534

Alternative SS-B-5 Table 3

Broadway Street River Crossing - Open Cut DIP

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>Broadway Street River Crossing - Open Cut DIP</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
16" Ductile Iron Pipe	\$20,520	90%	50	\$369
48" Sanitary MH	\$12,480	90%	50	\$225
Annual Replacement Reserve:				\$594
Reserve Net Present Worth:				\$7,811

Alternative SS-B-5 Table 4

Broadway Street River Crossing - Open Cut DIP

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Broadway Street River Crossing - Open Cut DIP
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	16" Ductile Iron Pipe	\$20,520	60%	50	\$12,312	\$5,229
11	48" Sanitary MH	\$12,480	60%	50	\$7,488	\$3,180
Salvage Value Present Worth:						\$8,409

Alternative SS-B-5 Table 5

Broadway Street River Crossing - Open Cut DIP

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Broadway Street River Crossing - Open Cut DIP
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$170,831
Present Worth of Operation & Maintenance	\$9,534
Present Worth of Reserve	\$7,811
Total Construction, O & M, and Reserve	\$188,176
Present Worth Salvage Value	\$8,409
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$179,767

Alternative SS-B-6 Table 1

Broadway Street River Crossing - Directional Drill HDPE

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Broadway Street River Crossing - Directional Drill HDPE

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	18" HDPE Fusible Butt Joint	285	Lft	\$74	\$21,090
2	Directional Drilling	285	Lft	\$346	\$98,610
3	Dewatering	1	ls	\$1,650	\$1,650
4	Abandon 12" crossing	1	ls	\$2,300	\$2,300
5	Manhole Casting	2	ea	\$600	\$1,200
6	Maintaining Flow / ByPass Pumping	1	ls	\$9,400	\$9,400
7	Mobilization	1	ls	\$3,800	\$3,800
8	Special Backfill	10	Cyd	\$24	\$240
9	Erosion Control	1	ls	\$800	\$800
10	48" Sanitary MH	26	Vft	\$480	\$12,480
11	Structure Rem	3	ea	\$750	\$2,250
Sub Total					\$153,820
Contingencies @ 8.0%					\$12,300
Total Construction Cost					\$166,120
Design Engineering Services @ 7.0%					\$11,600
Construction Engineering Services @ 6.0%					\$10,000
Administrative & Legal @ 4.0%					\$6,600
Total					\$194,320
Construction Costs Net Present Worth					\$82,525

Alternative SS-B-6 Table 2

Broadway Street River Crossing - Directional Drill HDPE

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Broadway Street River Crossing - Directional Drill HDPE	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
1	18" HDPE Fusible Butt Joint	\$21,090	\$175
10	48" Sanitary MH	\$12,480	\$150
Total Additional Annual Costs			\$325
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$7,561

Alternative SS-B-6 Table 3

Broadway Street River Crossing - Directional Drill HDPE

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>Broadway Street River Crossing - Directional Drill HDPE</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
18" HDPE Fusible Butt Joint	\$21,090	100%	50	\$422
48" Sanitary MH	\$12,480	100%	50	\$250
Annual Replacement Reserve:				\$671
Reserve Net Present Worth:				\$8,829

Alternative SS-B-6 Table 4

Broadway Street River Crossing - Directional Drill HDPE

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Broadway Street River Crossing - Directional Drill HDPE
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value	Equivalent Present Value
1	18" HDPE Fusible Butt Joint	\$21,090	60%	50	\$12,654	\$5,374
10	48" Sanitary MH	\$12,480	60%	50	\$7,488	\$3,180
Salvage Value Present Worth:						\$8,554

Alternative SS-B-6 Table 5

Broadway Street River Crossing - Directional Drill HDPE

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Broadway Street River Crossing - Directional Drill HDPE
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$82,525
Present Worth of Operation & Maintenance	\$7,561
Present Worth of Reserve	\$8,829
Total Construction, O & M, and Reserve	\$98,916
Present Worth Salvage Value	\$8,554
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$90,361

Alternative SS-C-4

Table 1

Spring Street 8-inch CIPP Sewer Relining

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.

4791 Campus Drive

Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Spring Street 8-inch CIPP Sewer Relining

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	CIPP Liner 8"	1550	Lft	\$60	\$93,000
2	CIPP Insertion Point Setup	3	ea	\$1,250	\$3,750
3	CIPP Lateral Cutout/Restoration	41	ea	\$125	\$5,125
4	CIP Manhole Lining	34	Lft	\$577	\$19,618
5	CIP Manhole Setup	6	ea	\$600	\$3,600
6	Maintaining Flow / ByPass Pumping	1	ls	\$6,000	\$6,000
7	Traffic Control	1	ea	\$3,000	\$3,000
8	Mobilization	1	ea	\$4,000	\$4,000
9	Cleaning and Video Inspection	1	ls	\$4,200	\$4,200
Sub Total					\$142,293
Contingencies @ 8.0%					\$11,400
Total Construction Cost					\$153,693
Design Engineering Services @ 7.0%					\$10,800
Construction Engineering Services @ 6.0%					\$9,200
Administrative & Legal @ 4.0%					\$6,100
Total					\$179,800
Construction Costs Net Present Worth					\$76,359

Alternative SS-C-4 Table 2

Spring Street 8-inch CIPP Sewer Relining

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Spring Street 8-inch CIPP Sewer Relining	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
1	CIPP Liner 8"	\$93,000	\$50
4	CIP Manhole Lining	\$19,618	\$25
Total Additional Annual Costs:			\$75
Total Current Annual Costs:			\$300
Operations and Maintenance Costs Net Present Worth			\$4,931

Alternative SS-C-4 Table 3

Spring Street 8-inch CIPP Sewer Relining

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>Spring Street 8-inch CIPP Sewer Relining</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
CIPP Liner 8"	\$93,000	100%	50	\$1,860
CIP Manhole Lining	\$19,618	100%	50	\$392
Annual Replacement Reserve:				\$2,252
Reserve Net Present Worth:				\$29,618

Alternative SS-C-4 Table 4

Spring Street 8-inch CIPP Sewer Relining

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Spring Street 8-inch CIPP Sewer Relining
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
1	CIPP Liner 8"	\$93,000	60%	50	\$55,800	\$23,698
4	CIP Manhole Lining	\$19,618	60%	50	\$11,771	\$4,999
Salvage Value Present Worth:						\$28,697

Alternative SS-C-4 Table 5

Spring Street 8-inch CIPP Sewer Relining

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Spring Street 8-inch CIPP Sewer Relining
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$76,359
Present Worth of Operation & Maintenance	\$4,931
Present Worth of Reserve	\$29,618
Total Construction, O & M, and Reserve	\$110,909
Present Worth Salvage Value	\$28,697
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$82,212

Alternative SS-C-5

Table 1

Spring Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Spring Street 8-inch PVC Sewer Replacement

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" VCP	1550	Lft	\$4	\$6,200
2	8" PVC Sewer	1550	Lft	\$38	\$58,900
3	PVC Lateral	41	ea	\$325	\$13,325
4	Pavement Removal	1033	Syd	\$8	\$8,264
5	Manhole Casting	6	ea	\$600	\$3,600
6	Maintaining Flow / ByPass Pumping	1	ls	\$6,000	\$6,000
7	Traffic Control	1	ls	\$1,000	\$1,000
8	Mobilization	1	ls	\$7,000	\$7,000
9	Trenching	1550	ea	\$28	\$43,400
10	Special Backfill	100	Cyd	\$24	\$2,400
11	Asphalt Patching 330 lbs/Syd	172	Ton	\$165	\$28,380
12	48" Sanitary MH	45	Vft	\$480	\$21,600
13	Structure Rem	6	ea	\$750	\$4,500
14	Aggregate Base 8'	1033	Syd	\$20	\$20,660
Sub Total					\$225,229
Contingencies @ 8.0%					\$18,000
Total Construction Cost					\$243,229
Design Engineering Services @ 7.0%					\$17,000
Construction Engineering Services @ 6.0%					\$14,600
Administrative & Legal @ 4.0%					\$9,700
Total					\$284,529
Construction Costs Net Present Worth					\$120,836

Alternative SS-C-5 Table 2

Spring Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Spring Street 8-inch PVC Sewer Replacement	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	8" PVC Sewer	\$58,900	\$300
3	PVC Lateral	\$13,325	\$400
11	Asphalt Patching 330 lbs/Syd	\$28,380	\$200
12	48" Sanitary MH	\$21,600	\$250
Total Additional Annual Costs			\$1,150
Total Current Annual Costs:			\$300
Operations and Maintenance Costs Net Present Worth			\$19,067

Alternative SS-C-5 Table 3

Spring Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>Spring Street 8-inch PVC Sewer Replacement</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
8" PVC Sewer	\$58,900	85%	50	\$1,001
PVC Lateral	\$13,325	90%	50	\$240
Asphalt Patching 330 lbs/Syd	\$28,380	100%	20	\$1,419
48" Sanitary MH	\$21,600	90%	40	\$486
Annual Replacement Reserve:				\$3,146
Reserve Net Present Worth:				\$41,372

Alternative SS-C-5 Table 4

Spring Street 8-inch PVC Sewer Replacement

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Spring Street 8-inch PVC Sewer Replacement
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
2	8" PVC Sewer	\$58,900	60%	50	\$35,340	\$15,008
3	PVC Lateral	\$13,325	33%	30	\$4,442	\$1,886
11	Asphalt Patching 330 lbs/Syd	\$28,380	0%	20	\$0	\$0
12	48" Sanitary MH	\$21,600	50%	40	\$10,800	\$4,587
Salvage Value Present Worth:						\$21,481

Alternative SS-C-5 Table 5

Spring Street 8-inch PVC Sewer Replacement

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Spring Street 8-inch PVC Sewer Replacement
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$120,836
Present Worth of Operation & Maintenance	\$19,067
Present Worth of Reserve	\$41,372
Total Construction, O & M, and Reserve	\$181,275
Present Worth Salvage Value	\$21,481
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$159,794

Alternative SS-C-6 Table 1

Spring Street 8-inch VCP Sewer Replacement

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Spring Street 8-inch VCP Sewer Replacement

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" VCP	1550	Lft	\$4	\$6,200
2	8" VCP Sewer	1550	Lft	\$70	\$108,500
3	Lateral	41	ea	\$325	\$13,325
4	Pavement Removal	1033	Syd	\$8	\$8,264
5	Manhole Casting	6	ea	\$600	\$3,600
6	Maintaining Flow / ByPass Pumping	1	ls	\$6,000	\$6,000
7	Traffic Control	1	ls	\$1,000	\$1,000
8	Mobilization	1	ls	\$7,000	\$7,000
9	Trenching	1550	ea	\$28	\$43,400
10	Special Backfill	100	Cyd	\$24	\$2,400
11	Asphalt Patching 330 lbs/Syd	172	Ton	\$165	\$28,380
12	48" Sanitary MH	45	Vft	\$480	\$21,600
13	Structure Rem	6	ea	\$750	\$4,500
14	Aggregate Base 8'	1033	Syd	\$20	\$20,660
Sub Total					\$274,829
Contingencies @ 8.0%					\$22,000
Total Construction Cost					\$296,829
Design Engineering Services @ 7.0%					\$20,800
Construction Engineering Services @ 6.0%					\$17,800
Administrative & Legal @ 4.0%					\$11,900
Total					\$347,329
Construction Costs Net Present Worth					\$147,507

Alternative SS-C-6 Table 2

Spring Street 8-inch VCP Sewer Replacement

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Spring Street 8-inch VCP Sewer Replacement	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	8" VCP Sewer	\$108,500	\$55
3	Lateral	\$13,325	\$30
11	Asphalt Patching 330 lbs/Syd	\$28,380	\$100
12	48" Sanitary MH	\$21,600	\$25
Total Additional Annual Costs			\$210
Total Current Annual Costs:			\$300
Operations and Maintenance Costs Net Present Worth			\$6,706

Alternative SS-C-6 Table 3

Spring Street 8-inch VCP Sewer Replacement

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number:	<u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date:	<u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer:	<u>OJD/AJR</u>
Type of Work:	<u>Spring Street 8-inch VCP Sewer Replacement</u>	Checked By:	<u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
8" VCP Sewer	\$108,500	85%	50	\$1,845
Lateral	\$13,325	90%	80	\$150
Asphalt Patching 330 lbs/Syd	\$28,380	100%	20	\$1,419
48" Sanitary MH	\$21,600	90%	40	\$486
Annual Replacement Reserve:				\$3,899
Reserve Net Present Worth:				\$51,277

Alternative SS-C-6 Table 4

Spring Street 8-inch VCP Sewer Replacement

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Spring Street 8-inch VCP Sewer Replacement
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
2	8" VCP Sewer	\$108,500	60%	50	\$65,100	\$27,647
3	Lateral	\$13,325	75%	80	\$9,994	\$4,244
11	Asphalt Patching 330 lbs/Syd	\$28,380	0%	20	\$0	\$0
12	48" Sanitary MH	\$21,600	50%	40	\$10,800	\$4,587
Salvage Value Present Worth:						\$36,478

Alternative SS-C-6 Table 5

Spring Street 8-inch VCP Sewer Replacement

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Spring Street 8-inch VCP Sewer Replacement
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$147,507
Present Worth of Operation & Maintenance	\$6,706
Present Worth of Reserve	\$51,277
Total Construction, O & M, and Reserve	\$205,490
Present Worth Salvage Value	\$36,478
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$169,012

Alternative SS-D-4

Table 1

Black Cat Alley - Increase Size with PVC

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Black Cat Alley - Increase Size with PVC

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" Sewer	762	Lft	\$6	\$4,572
2	10" PVC Sewer	762	Lft	\$38	\$28,956
3	PVC Lateral	5	ea	\$325	\$1,625
4	Pavement Removal	25	Syd	\$8	\$200
5	Manhole Casting	3	ea	\$600	\$1,800
6	Maintaining Flow / ByPass Pumping	1	ls	\$5,000	\$5,000
7	Traffic Control	1	ls	\$2,000	\$2,000
8	Mobilization	1	ls	\$4,000	\$4,000
9	Trenching	762	ea	\$28	\$21,336
10	Special Backfill	50	Cyd	\$24	\$1,200
11	Asphalt Patching 330 lbs/Syd	4	Ton	\$165	\$660
12	48" Sanitary MH	18	Vft	\$480	\$8,640
13	Structure Rem	3	ea	\$750	\$2,250
14	Aggregate Base 8'	847	Syd	\$20	\$16,940
Sub Total					\$99,179
Contingencies @ 8.0%					\$7,900
Total Construction Cost					\$107,079
Design Engineering Services @ 7.0%					\$7,500
Construction Engineering Services @ 6.0%					\$6,400
Administrative & Legal @ 4.0%					\$4,300
Total					\$125,300
Construction Costs Net Present Worth					\$53,213

Alternative SS-D-4 Table 2

Black Cat Alley - Increase Size with PVC

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Black Cat Alley - Increase Size with PVC	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	10" PVC Sewer	\$28,956	\$150
3	PVC Lateral	\$1,625	\$50
11	Asphalt Patching 330 lbs/Syd	\$660	\$100
12	48" Sanitary MH	\$8,640	\$50
Total Additional Annual Costs			\$350
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$7,890

Alternative SS-D-4 Table 3

Black Cat Alley - Increase Size with PVC

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Black Cat Alley - Increase Size with PVC
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
10" PVC Sewer	\$28,956	85%	50	\$492
PVC Lateral	\$1,625	90%	50	\$29
Asphalt Patching 330 lbs/Syd	\$660	100%	20	\$33
48" Sanitary MH	\$8,640	90%	40	\$194
Annual Replacement Reserve:				\$749
Reserve Net Present Worth:				\$9,848

Alternative SS-D-4 Table 4

Black Cat Alley - Increase Size with PVC

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Black Cat Alley - Increase Size with PVC
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	10" PVC Sewer	\$28,956	60%	50	\$17,374	\$7,378
3	PVC Lateral	\$1,625	60%	50	\$975	\$414
11	Asphalt Patching 330 lbs/Syd	\$660	0%	20	\$0	\$0
12	48" Sanitary MH	\$8,640	50%	40	\$4,320	\$1,835
Salvage Value Present Worth:						\$9,627

Alternative SS-D-4 Table 5

Black Cat Alley - Increase Size with PVC

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Black Cat Alley - Increase Size with PVC
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$53,213
Present Worth of Operation & Maintenance	\$7,890
Present Worth of Reserve	\$9,848
Total Construction, O & M, and Reserve	\$70,951
Present Worth Salvage Value	\$9,627
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$61,324

Alternative SS-D-5

Table 1

Black Cat Alley - Increase Size with HDPE

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Black Cat Alley - Increase Size with HDPE

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" Sewer	762	Lft	\$6	\$4,572
2	12" HDPE Sewer	762	Lft	\$25	\$19,050
3	Lateral	5	ea	\$325	\$1,625
4	Pavement Removal	25	Syd	\$8	\$200
5	Manhole Casting	3	ea	\$600	\$1,800
6	Maintaining Flow / ByPass Pumping	1	ls	\$5,000	\$5,000
7	Traffic Control	1	ls	\$2,000	\$2,000
8	Mobilization	1	ls	\$4,000	\$4,000
9	Trenching	762	ea	\$28	\$21,336
10	Special Backfill	50	Cyd	\$24	\$1,200
11	Asphalt Patching 330 lbs/Syd	4	Ton	\$165	\$660
12	48" Sanitary MH	18	Vft	\$480	\$8,640
13	Structure Rem	3	ea	\$750	\$2,250
14	Aggregate Base 8'	847	Syd	\$20	\$16,940
Sub Total					\$89,273
Contingencies @ 8.0%					\$7,100
Total Construction Cost					\$96,373
Design Engineering Services @ 7.0%					\$6,700
Construction Engineering Services @ 6.0%					\$5,800
Administrative & Legal @ 4.0%					\$3,900
Total					\$112,773
Construction Costs Net Present Worth					\$47,893

Alternative SS-D-5 Table 2

Black Cat Alley - Increase Size with HDPE

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Black Cat Alley - Increase Size with HDPE	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	12" HDPE Sewer	\$19,050	\$250
3	Lateral	\$1,625	\$100
11	Asphalt Patching 330 lbs/Syd	\$660	\$50
12	48" Sanitary MH	\$8,640	\$100
Total Additional Annual Costs			\$500
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$9,862

Alternative SS-D-5 Table 3

Black Cat Alley - Increase Size with HDPE

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Black Cat Alley - Increase Size with HDPE
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
12" HDPE Sewer	\$19,050	85%	50	\$324
Lateral	\$1,625	90%	50	\$29
Asphalt Patching 330 lbs/Syd	\$660	100%	20	\$33
48" Sanitary MH	\$8,640	90%	40	\$194
Annual Replacement Reserve:				\$581
Reserve Net Present Worth:				\$7,634

Alternative SS-D-5 Table 4

Black Cat Alley - Increase Size with HDPE

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Black Cat Alley - Increase Size with HDPE
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	12" HDPE Sewer	\$19,050	60%	50	\$11,430	\$4,854
3	Lateral	\$1,625	60%	50	\$975	\$414
11	Asphalt Patching 330 lbs/Syd	\$660	0%	20	\$0	\$0
12	48" Sanitary MH	\$8,640	50%	40	\$4,320	\$1,835
Salvage Value Present Worth:						\$7,103

Alternative SS-D-5 Table 5

Black Cat Alley - Increase Size with HDPE

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Black Cat Alley - Increase Size with HDPE
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$47,893
Present Worth of Operation & Maintenance	\$9,862
Present Worth of Reserve	\$7,634
Total Construction, O & M, and Reserve	\$65,389
Present Worth Salvage Value	\$7,103
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$58,287

Alternative SS-E-4 Table 1

Holiday Inn - Increase from 8" to 12" PVC

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Holiday Inn - Increase from 8" to 12" PVC

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" Sewer	300	Lft	\$6	\$1,800
2	12" PVC Sewer	300	Lft	\$52	\$15,600
3	PVC Lateral	2	ea	\$325	\$650
4	Pavement Removal	333	Syd	\$8	\$2,664
5	Manhole Casting	2	ea	\$600	\$1,200
6	Maintaining Flow / ByPass Pumping	1	ls	\$4,200	\$4,200
7	Traffic Control	1	ls	\$2,000	\$2,000
8	Mobilization	1	ls	\$4,000	\$4,000
9	Trenching	300	ea	\$28	\$8,400
10	Special Backfill	50	Cyd	\$24	\$1,200
11	Asphalt Patching 330 lbs/Syd	55	Ton	\$165	\$9,075
12	48" Sanitary MH	18	Vft	\$480	\$8,640
13	Structure Rem	2	ea	\$750	\$1,500
14	Aggregate Base 8'	333	Syd	\$20	\$6,660
Sub Total					\$67,589
Contingencies @ 8.0%					\$5,400
Total Construction Cost					\$72,989
Design Engineering Services @ 7.0%					\$5,100
Construction Engineering Services @ 6.0%					\$4,400
Administrative & Legal @ 4.0%					\$2,900
Total					\$85,400
Construction Costs Net Present Worth					\$36,268

Alternative SS-E-4 Table 2

Holiday Inn - Increase from 8" to 12" PVC

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Holiday Inn - Increase from 8" to 12" PVC	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	12" PVC Sewer	\$15,600	\$100
3	PVC Lateral	\$650	\$25
11	Asphalt Patching 330 lbs/Syd	\$9,075	\$50
12	48" Sanitary MH	\$8,640	\$25
Total Additional Annual Costs			\$200
Total Current Annual Costs:			\$100
Operations and Maintenance Costs Net Present Worth			\$3,945

Alternative SS-E-4 Table 3

Holiday Inn - Increase from 8" to 12" PVC

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Holiday Inn - Increase from 8" to 12" PVC
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
12" PVC Sewer	\$15,600	85%	50	\$265
PVC Lateral	\$650	90%	50	\$12
Asphalt Patching 330 lbs/Syd	\$9,075	100%	20	\$454
48" Sanitary MH	\$8,640	90%	40	\$194
Annual Replacement Reserve:				\$925
Reserve Net Present Worth:				\$12,164

Alternative SS-E-4 Table 4

Holiday Inn - Increase from 8" to 12" PVC

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Holiday Inn - Increase from 8" to 12" PVC
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	12" PVC Sewer	\$15,600	60%	50	\$9,360	\$3,975
3	PVC Lateral	\$650	60%	50	\$390	\$166
11	Asphalt Patching 330 lbs/Syd	\$9,075	0%	20	\$0	\$0
12	48" Sanitary MH	\$8,640	50%	40	\$4,320	\$1,835
Salvage Value Present Worth:						\$5,975

Alternative SS-E-4 Table 5

Holiday Inn - Increase from 8" to 12" PVC

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Holiday Inn - Increase from 8" to 12" PVC
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$36,268
Present Worth of Operation & Maintenance	\$3,945
Present Worth of Reserve	\$12,164
Total Construction, O & M, and Reserve	\$52,378
Present Worth Salvage Value	\$5,975
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$46,402

Alternative SS-E-5

Table 1

Holiday Inn - Increase from 8" to 12" HDPE

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Holiday Inn - Increase from 8" to 12" HDPE

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 8" Sewer	300	Lft	\$6	\$1,800
2	12" HDPE Sewer	300	Lft	\$48	\$14,400
3	PVC Lateral	2	ea	\$325	\$650
4	Pavement Removal	333	Syd	\$8	\$2,664
5	Manhole Casting	2	ea	\$600	\$1,200
6	Maintaining Flow / ByPass Pumping	1	ls	\$4,200	\$4,200
7	Traffic Control	1	ls	\$2,000	\$2,000
8	Mobilization	1	ls	\$4,000	\$4,000
9	Trenching	300	ea	\$28	\$8,400
10	Special Backfill	50	Cyd	\$24	\$1,200
11	Asphalt Patching 330 lbs/Syd	55	Ton	\$165	\$9,075
12	48" Sanitary MH	18	Vft	\$480	\$8,640
13	Structure Rem	2	ea	\$750	\$1,500
14	Aggregate Base 8'	333	Syd	\$20	\$6,660
Sub Total					\$66,389
Contingencies @ 8.0%					\$5,300
Total Construction Cost					\$71,689
Design Engineering Services @ 7.0%					\$5,000
Construction Engineering Services @ 6.0%					\$4,300
Administrative & Legal @ 4.0%					\$2,900
Total					\$83,889
Construction Costs Net Present Worth					\$35,627

Alternative SS-E-5 Table 2

Holiday Inn - Increase from 8" to 12" HDPE

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Holiday Inn - Increase from 8" to 12" HDPE	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	12" HDPE Sewer	\$14,400	\$100
3	PVC Lateral	\$650	\$25
11	Asphalt Patching 330 lbs/Syd	\$9,075	\$50
12	48" Sanitary MH	\$8,640	\$25
Total Additional Annual Costs			\$200
Total Current Annual Costs:			\$100
Operations and Maintenance Costs Net Present Worth			\$3,945

Alternative SS-E-5 Table 3

Holiday Inn - Increase from 8" to 12" HDPE

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project Location: City of Three Rivers
Type of Work: Holiday Inn - Increase from 8" to 12" HDPE
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
12" HDPE Sewer	\$14,400	85%	50	\$245
PVC Lateral	\$650	90%	50	\$12
Asphalt Patching 330 lbs/Syd	\$9,075	100%	20	\$454
48" Sanitary MH	\$8,640	90%	40	\$194
Annual Replacement Reserve:				\$905
Reserve Net Present Worth:				\$11,896

Alternative SS-E-5 Table 4

Holiday Inn - Increase from 8" to 12" HDPE

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Holiday Inn - Increase from 8" to 12" HDPE
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	12" HDPE Sewer	\$14,400	60%	50	\$8,640	\$3,669
3	PVC Lateral	\$650	60%	50	\$390	\$166
11	Asphalt Patching 330 lbs/Syd	\$9,075	0%	20	\$0	\$0
12	48" Sanitary MH	\$8,640	50%	40	\$4,320	\$1,835
Salvage Value Present Worth:						\$5,670

Alternative SS-E-5 Table 5

Holiday Inn - Increase from 8" to 12" HDPE

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Holiday Inn - Increase from 8" to 12" HDPE
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$35,627
Present Worth of Operation & Maintenance	\$3,945
Present Worth of Reserve	\$11,896
Total Construction, O & M, and Reserve	\$51,468
Present Worth Salvage Value	\$5,670
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$45,798

Alternative SS-F-4 Table 1

Portage River - CIPP Sewer Relining

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Portage River - CIPP Sewer Relining

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	CIPP Liner 12"	825	Lft	\$88	\$72,600
2	CIPP Insertion Point Setup	4	ea	\$1,250	\$5,000
3	CIPP Lateral Cutout/Restoration	8	ea	\$125	\$1,000
4	CIP Manhole Lining	42	Lft	\$577	\$24,234
5	CIP Manhole Setup	7	ea	\$600	\$4,200
6	Maintaining Flow / ByPass Pumping	1	ls	\$16,000	\$16,000
7	Traffic Control	1	ea	\$2,000	\$2,000
8	Mobilization	1	ea	\$4,000	\$4,000
Sub Total					\$129,034
Contingencies @ 8.0%					\$10,300
Total Construction Cost					\$139,334
Design Engineering Services @ 7.0%					\$9,800
Construction Engineering Services @ 6.0%					\$8,400
Administrative & Legal @ 4.0%					\$5,600
Total					\$163,100
Construction Costs Net Present Worth					\$69,267

Alternative SS-F-4 Table 2

Portage River - CIPP Sewer Relining

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Portage River - CIPP Sewer Relining	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
1	CIPP Liner 12"	\$72,600	\$250
4	CIP Manhole Lining	\$24,234	\$200
Total Additional Annual Costs:			\$450
Total Current Annual Costs:			\$300
Operations and Maintenance Costs Net Present Worth			\$9,862

Alternative SS-F-4 Table 3

Portage River - CIPP Sewer Relining

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Portage River - CIPP Sewer Relining
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
CIPP Liner 12"	\$72,600	100%	50	\$1,452
CIP Manhole Lining	\$24,234	100%	50	\$485
Annual Replacement Reserve:				\$1,937
Reserve Net Present Worth:				\$25,467

Alternative SS-F-4 Table 4

Portage River - CIPP Sewer Relining

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Portage River - CIPP Sewer Relining
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
1	CIPP Liner 12"	\$72,600	60%	50	\$43,560	\$18,499
4	CIP Manhole Lining	\$24,234	60%	50	\$14,540	\$6,175
Salvage Value Present Worth:						\$24,675

Alternative SS-F-4 Table 5

Portage River - CIPP Sewer Relining

Cost Effective Analysis

Jones & Henry Engineers, Ltd.

4791 Campus Drive

Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Portage River - CIPP Sewer Relining
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$69,267
Present Worth of Operation & Maintenance	\$9,862
Present Worth of Reserve	\$25,467
Total Construction, O & M, and Reserve	\$104,596
Present Worth Salvage Value	\$24,675
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$79,922

Alternative SS-F-5 Table 1

Portage River - CIPP Sewer Replacement

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Portage River - CIPP Sewer Replacement

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Remove 12" Sewer	825	Lft	\$8	\$6,600
2	12" PVC Sewer	1392	Lft	\$52	\$72,384
3	Dewatering	1	ls	\$16,000	\$16,000
4	Manhole Casting	7	ea	\$600	\$4,200
5	Maintaining Flow / ByPass Pumping	1	ls	\$12,800	\$12,800
6	Bank Stabilization	1	ls	\$15,400	\$15,400
7	Mobilization	1	ls	\$8,000	\$8,000
8	Open Cut Trenching	1392	Lft	\$36	\$50,112
9	Special Backfill	200	Cyd	\$24	\$4,800
10	Erosion Control	1	ls	\$9,800	\$9,800
11	48" Sanitary MH	42	Vft	\$480	\$20,160
12	Structure Rem	7	ea	\$750	\$5,250
Sub Total					\$225,506
Contingencies @ 8.0%					\$18,000
Total Construction Cost					\$243,506
Design Engineering Services @ 7.0%					\$17,000
Construction Engineering Services @ 6.0%					\$14,600
Administrative & Legal @ 4.0%					\$9,700
Total					\$284,806
Construction Costs Net Present Worth					\$120,954

Alternative SS-F-5 Table 2

Portage River - CIPP Sewer Replacement

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Portage River - CIPP Sewer Replacement	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	12" PVC Sewer	\$72,384	\$250
6	Bank Stabilization	\$15,400	\$150
10	Erosion Contro	\$9,800	\$100
11	48" Sanitary MH	\$20,160	\$100
Total Additional Annual Costs			\$600
Total Current Annual Costs:			\$250
Operations and Maintenance Costs Net Present Worth			\$11,177

Alternative SS-F-5 Table 3

Portage River - CIPP Sewer Replacement

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Portage River - CIPP Sewer Replacement
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
12" PVC Sewer	\$72,384	85%	50	\$1,231
Bank Stabilization	\$15,400	75%	50	\$231
Erosion Control	\$9,800	90%	50	\$176
48" Sanitary MH	\$20,160	90%	40	\$454
Annual Replacement Reserve:				\$2,092
Reserve Net Present Worth:				\$27,504

Alternative SS-F-5 Table 4

Portage River - CIPP Sewer Replacement

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Portage River - CIPP Sewer Replacement
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	12" PVC Sewer	\$72,384	60%	50	\$43,430	\$18,444
6	Bank Stabilization	\$15,400	60%	50	\$9,240	\$3,924
10	Erosion Contro	\$9,800	60%	50	\$5,880	\$2,497
11	48" Sanitary MH	\$20,160	50%	40	\$10,080	\$4,281
Salvage Value Present Worth:						\$29,147

Alternative SS-F-5 Table 5

Portage River - CIPP Sewer Replacement

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Portage River - CIPP Sewer Replacement
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$120,954
Present Worth of Operation & Maintenance	\$11,177
Present Worth of Reserve	\$27,504
Total Construction, O & M, and Reserve	\$159,635
Present Worth Salvage Value	\$29,147
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$130,488

Alternative PS-A-2 Table 1

Constantine St. Pump Station - Pump Replacements

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Constantine St. Pump Station - Pump Replacements

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Maintaining Flow / ByPass Pumping	1	ls	\$3,500	\$3,500
2	Mobilization	1	ls	\$2,500	\$2,500
3	Replace Existing 50 Hp 1,650 gpm Pumps	3	ea	\$30,000	\$90,000
4	Electrical/Control System Improvements	1	ls	\$8,000	\$8,000
5	Level Transducers	3	ea	\$1,500	\$4,500
Sub Total					\$108,500
Contingencies @ 8.0%					\$8,700
Total Construction Cost					\$117,200
Design Engineering Services @ 7.0%					\$8,200
Construction Engineering Services @ 6.0%					\$7,000
Administrative & Legal @ 4.0%					\$4,700
Total					\$137,100
Construction Costs Net Present Worth					\$58,225

Alternative PS-A-2 Table 2

Constantine St. Pump Station - Pump Replacements

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Constantine St. Pump Station - Pump Replacements	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
3	Replace Existing 50 Hp 1,650 gpm Pumps	\$90,000	\$1,200
4	Electical/Control System Improvements	\$8,000	\$250
5	Level Transducers	\$4,500	\$100
Total Additional Annual Costs			\$1,550
Total Current Annual Costs:			\$3,500
Operations and Maintenance Costs Net Present Worth			\$66,407

Alternative PS-A-2 Table 3

Constantine St. Pump Station - Pump Replacements

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>Constantine St. Pump Station - Pump Replacements</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Replace Existing 50 Hp 1,650 gpm Pumps	\$90,000	90%	30	\$2,700
Electical/Control System Improvements	\$8,000	85%	30	\$227
Level Transducers	\$4,500	100%	30	\$150
Annual Replacement Reserve:				\$3,077
Reserve Net Present Worth:				\$40,458

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative PS-A-2 Table 4

Constantine St. Pump Station - Pump Replacements

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Constantine St. Pump Station - Pump Replacements
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
3	Replace Existing 50 Hp 1,650 gpm Pumps	\$90,000	33%	30	\$30,000	\$12,741
4	Electical/Control System Improvements	\$8,000	33%	30	\$2,667	\$1,133
5	Level Transducers	\$4,500	33%	30	\$1,500	\$637
Salvage Value Present Worth:						\$14,510

Alternative PS-A-2 Table 5

Constantine St. Pump Station - Pump Replacements

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Constantine St. Pump Station - Pump Replacements
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$58,225
Present Worth of Operation & Maintenance	\$66,407
Present Worth of Reserve	\$40,458
Total Construction, O & M, and Reserve	\$165,090
Present Worth Salvage Value	\$14,510
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$150,580

Alternative PS-A-4 Table 1

Constantine St. Pump Station - Improvements

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Constantine St. Pump Station - Improvements

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	18" PVC Sewer	55	Lft	\$52	\$2,860
2	Pavement Removal	85	Syd	\$8	\$680
3	Maintaining Flow / ByPass Pumping	1	ls	\$4,200	\$4,200
4	Traffic Control	1	ls	\$1,000	\$1,000
5	Mobilization	1	ls	\$5,000	\$5,000
6	Dewatering for Excavation	1	ls	\$8,000	\$8,000
7	Connecting Sewer to Existing Structures	2	ea	\$3,500	\$7,000
8	Replace Existing 50 Hp 1,650 gpm Pumps	3	ea	\$30,000	\$90,000
9	Electrical/Control System Improvements	1	ls	\$8,000	\$8,000
10	Level Transducers	3	ea	\$1,500	\$4,500
11	Trenching	55	Lft	\$28	\$1,540
12	Special Backfill	200	Cyd	\$24	\$4,800
13	Asphalt Patching 330 lbs/Syd	85	Ton	\$165	\$14,025
14	Aggregate Base 8'	85	Syd	\$20	\$1,700
Sub Total					\$153,305
Contingencies @ 8.0%					\$12,300
Total Construction Cost					\$165,605
Design Engineering Services @ 7.0%					\$11,600
Construction Engineering Services @ 6.0%					\$9,900
Administrative & Legal @ 4.0%					\$6,600
Total					\$193,705
Construction Costs Net Present Worth					\$82,264

Alternative PS-A-4 Table 2

Constantine St. Pump Station - Improvements

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Constantine St. Pump Station - Improvements	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
1	18" PVC Sewer	\$2,860	\$250
7	Connecting Sewer to Existing Structures	\$7,000	\$250
8	Replace Existing 50 Hp 1,650 gpm Pumps	\$90,000	\$1,200
9	Electical/Control System Improvements	\$8,000	\$250
10	Level Transducers	\$4,500	\$100
13	Asphalt Patching 330 lbs/Syd	\$14,025	\$50
Total Additional Annual Costs:			\$2,100
Total Current Annual Costs:			\$3,500
Operations and Maintenance Costs Net Present Worth			\$73,640

Alternative PS-A-4 Table 3

Constantine St. Pump Station - Improvements

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project Location: City of Three Rivers
Type of Work: Constantine St. Pump Station - Improvements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
18" PVC Sewer	\$2,860	85%	50	\$49
Connecting Sewer to Existing Structures	\$7,000	90%	50	\$126
Replace Existing 50 Hp 1,650 gpm Pumps	\$90,000	90%	30	\$2,700
Electical/Control System Improvements	\$8,000	85%	30	\$227
Level Transducers	\$4,500	100%	30	\$150
Asphalt Patching 330 lbs/Syd	\$14,025	100%	20	\$701
Annual Replacement Reserve:				\$3,953
Reserve Net Present Worth:				\$51,976

Alternative PS-A-4 Table 4

Constantine St. Pump Station - Improvements

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Constantine St. Pump Station - Improvements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
1	18" PVC Sewer	\$2,860	60%	50	\$1,716	\$729
7	Connecting Sewer to Existing Structures	\$7,000	60%	50	\$4,200	\$1,784
8	Replace Existing 50 Hp 1,650 gpm Pumps	\$90,000	33%	30	\$30,000	\$12,741
9	Electical/Control System Improvements	\$8,000	33%	30	\$2,667	\$1,133
10	Level Transducers	\$4,500	33%	30	\$1,500	\$637
13	Asphalt Patching 330 lbs/Syd	\$14,025	0%	20	\$0	\$0
Salvage Value Present Worth:						\$17,023

Alternative PS-A-4 Table 5

Constantine St. Pump Station - Improvements

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Constantine St. Pump Station - Improvements
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$82,264
Present Worth of Operation & Maintenance	\$73,640
Present Worth of Reserve	\$51,976
Total Construction, O & M, and Reserve	\$207,880
Present Worth Salvage Value	\$17,023
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$190,857

Alternative PS-B-2 Table 1

Fourth St. Pump Station - Pump Replacements

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Fourth St. Pump Station - Pump Replacements

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Maintaining Flow / ByPass Pumping	1	ls	\$3,500	\$3,500
2	Mobilization	1	ls	\$2,000	\$2,000
3	Replace Existing 15 Hp 870 gpm Pumps	2	ea	\$25,000	\$50,000
4	Replace Existing 20 Hp 1,400 gpm Pumps	1	ea	\$28,000	\$28,000
5	Electical/Control System Improvements	1	ls	\$8,000	\$8,000
6	Level Transducers	3	ea	\$1,500	\$4,500
Sub Total					\$96,000
Contingencies @ 8.0%					\$7,700
Total Construction Cost					\$103,700
Design Engineering Services @ 7.0%					\$7,300
Construction Engineering Services @ 6.0%					\$6,200
Administrative & Legal @ 4.0%					\$4,100
Total					\$121,300
Construction Costs Net Present Worth					\$51,515

Alternative PS-B-2 Table 2

Fourth St. Pump Station - Pump Replacements

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	Fourth St. Pump Station - Pump Replacements	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
3	Replace Existing 15 Hp 870 gpm Pumps	\$50,000	\$650
4	Replace Existing 20 Hp 1,400 gpm Pumps	\$28,000	\$250
5	Electical/Control System Improvements	\$8,000	\$250
6	Level Transducers	\$4,500	\$100
Total Additional Annual Costs			\$1,250
Total Current Annual Costs:			\$1,800
Operations and Maintenance Costs Net Present Worth			\$40,107

Alternative PS-B-2 Table 3

Fourth St. Pump Station - Pump Replacements

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project Location: City of Three Rivers
Type of Work: Fourth St. Pump Station - Pump Replacements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Replace Existing 15 Hp 870 gpm Pumps	\$50,000	90%	30	\$1,500
Replace Existing 20 Hp 1,400 gpm Pumps	\$28,000	100%	30	\$933
Electical/Control System Improvements	\$8,000	85%	30	\$227
Level Transducers	\$4,500	100%	20	\$225
Annual Replacement Reserve:				\$2,885
Reserve Net Present Worth:				\$37,938

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative PS-B-2 Table 4

Fourth St. Pump Station - Pump Replacements

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: Fourth St. Pump Station - Pump Replacements
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
3	Replace Existing 15 Hp 870 gpm Pumps	\$50,000	33%	30	\$16,667	\$7,078
4	Replace Existing 20 Hp 1,400 gpm Pumps	\$28,000	33%	30	\$9,333	\$3,964
5	Electical/Control System Improvements	\$8,000	33%	30	\$2,667	\$1,133
6	Level Transducers	\$4,500	0%	20	\$0	\$0
Salvage Value Present Worth:						\$12,174

Alternative PS-B-2 Table 5

Fourth St. Pump Station - Pump Replacements

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Fourth St. Pump Station - Pump Replacements
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$51,515
Present Worth of Operation & Maintenance	\$40,107
Present Worth of Reserve	\$37,938
Total Construction, O & M, and Reserve	\$129,560
Present Worth Salvage Value	\$12,174
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$117,385

Alternative PS-B-4 Table 1

Fourth St. Pump Station - Improvements

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: Fourth St. Pump Station - Improvements

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Maintaining Flow / ByPass Pumping	1	ls	\$4,000	\$4,000
2	Mobilization	1	ls	\$4,500	\$4,500
3	Replace Existing 15 Hp 870 gpm Pumps	2	ea	\$25,000	\$50,000
4	Replace Existing 20 Hp 1,400 gpm Pumps	1	ea	\$28,000	\$28,000
5	Level Transducers	3	ea	\$1,500	\$4,500
6	New Pump VFDs	3	ea	\$11,000	\$33,000
7	New Pump Controls/Electrical	1	ls	\$85,000	\$85,000
8	Replace All Interior Piping in Pump Station	1	ls	\$45,000	\$45,000
9	Pump Station Building Improvements	1	ls	\$80,000	\$80,000
10	Clean & Seal Wet Well	1	ls	\$25,000	\$25,000
Sub Total					\$359,000
Contingencies @ 8.0%					\$28,700
Total Construction Cost					\$387,700
Design Engineering Services @ 7.0%					\$27,100
Construction Engineering Services @ 6.0%					\$23,300
Administrative & Legal @ 4.0%					\$15,500
Total					\$453,600
Construction Costs Net Present Worth					\$192,639

Alternative PS-B-4 Table 2

Fourth St. Pump Station - Improvements

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project Location: City of Three Rivers
Type of Work: Fourth St. Pump Station - Improvements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
3	Replace Existing 15 Hp 870 gpm Pumps	\$50,000	\$650
4	Replace Existing 20 Hp 1,400 gpm Pumps	\$28,000	\$250
5	Level Transducers	\$4,500	\$50
6	New Pump VFDs	\$33,000	\$200
7	New Pump Controls/Electrical	\$85,000	\$300
8	Replace All Interior Piping in Pump Station	\$45,000	\$250
9	Pump Station Building Improvements	\$80,000	\$100
10	Clean & Seal Wet Well	\$25,000	\$50
Total Additional Annual Costs:			\$1,850
Total Current Annual Costs:			\$1,800
Operations and Maintenance Costs Net Present Worth			\$47,997

Alternative PS-B-4 Table 3

Fourth St. Pump Station - Improvements

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: Fourth St. Pump Station - Improvements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Replace Existing 15 Hp 870 gpm Pumps	\$50,000	90%	30	\$1,500
Replace Existing 20 Hp 1,400 gpm Pumps	\$28,000	90%	30	\$840
Level Transducers	\$4,500	100%	30	\$150
New Pump VFDs	\$33,000	90%	30	\$990
New Pump Controls/Electrical	\$85,000	85%	30	\$2,408
Replace All Interior Piping in Pump Station	\$45,000	85%	40	\$956
Pump Station Building Improvements	\$80,000	85%	50	\$1,360
Clean & Seal Wet Well	\$25,000	100%	30	\$833
Annual Replacement Reserve:				\$9,038
Reserve Net Present Worth:				\$118,848

Alternative PS-B-4 Table 4

Fourth St. Pump Station - Improvements

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: Fourth St. Pump Station - Improvements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
3	Replace Existing 15 Hp 870 gpm Pumps	\$50,000	33%	30	\$16,667	\$7,078
4	Replace Existing 20 Hp 1,400 gpm Pumps	\$28,000	33%	30	\$9,333	\$3,964
5	Level Transducers	\$4,500	33%	30	\$1,500	\$637
6	New Pump VFDs	\$33,000	33%	30	\$11,000	\$4,672
7	New Pump Controls/Electrical	\$85,000	33%	30	\$28,333	\$12,033
8	Replace All Interior Piping in Pump Station	\$45,000	50%	40	\$22,500	\$9,555
9	Pump Station Building Improvements	\$80,000	60%	50	\$48,000	\$20,385
10	Clean & Seal Wet Well	\$25,000	33%	30	\$8,333	\$3,539
Salvage Value Present Worth:						\$61,863

Alternative PS-B-4 Table 5

Fourth St. Pump Station - Improvements

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: Fourth St. Pump Station - Improvements
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$192,639
Present Worth of Operation & Maintenance	\$47,997
Present Worth of Reserve	\$118,848
Total Construction, O & M, and Reserve	\$359,484
Present Worth Salvage Value	\$61,863
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$297,622

Alternative CWP-A-2 Table 1

CWP Improvements - Preliminary Treatment

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - Preliminary Treatment

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$1,500	\$1,500
2	Mechanical Bar Screen	1	ea	\$48,000	\$48,000
3	Washer Compactor	2	ea	\$15,000	\$30,000
4	Improvements to Existing Perforated Plate Screen	1	ls	\$10,000	\$10,000
5	Automated Flow Control Gates	1	ls	\$12,000	\$12,000
6	Level Sensing Instrumentation	1	ls	\$7,000	\$7,000
7	Git Removal Upgrades (Redundant Classifiers & Pumps)	1	ls	\$180,000	\$180,000
8	Automated Flow Control for Constantine Equalization Tank	1	ls	\$18,000	\$18,000
9	Flow Proportioned Sampler	1	ls	\$10,000	\$10,000
10	Ventilation Improvements	1	ls	\$12,000	\$12,000
Sub Total					\$328,500
Contingencies @ 8.0%					\$26,300
Total Construction Cost					\$354,800
Design Engineering Services @ 7.0%					\$24,800
Construction Engineering Services @ 6.0%					\$21,300
Administrative & Legal @ 4.0%					\$14,200
Total					\$415,100
Construction Costs Net Present Worth					\$176,288

Alternative CWP-A-2 Table 2

CWP Improvements - Preliminary Treatment

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - Preliminary Treatment	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Mechanical Bar Screen	\$48,000	\$1,500
3	Washer Compactor	\$30,000	\$200
4	Improvements to Existing Perforated Plate Screen	\$10,000	\$150
5	Automated Flow Control Gates	\$12,000	\$800
6	Level Sensing Instrumentation	\$7,000	\$200
7	Git Removal Upgrades (Redundant Classifiers & Pumps)	\$180,000	\$300
8	Automated Flow Control for Constantine Equalization Tank	\$18,000	\$250
9	Flow Proportioned Sampler	\$10,000	\$500
10	Ventilation Improvements	\$12,000	\$250
Total Additional Annual Costs:			\$4,150
Total Current Annual Costs:			\$12,000
Operations and Maintenance Costs Net Present Worth:			\$212,372

Alternative CWP-A-2 Table 3

CWP Improvements - Preliminary Treatment

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>CWP Improvements - Preliminary Treatment</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Mechanical Bar Screen	\$48,000	90%	30	\$1,440
Washer Compactor	\$30,000	90%	20	\$1,350
Improvements to Existing Perforated Plate Screen	\$10,000	100%	20	\$500
Automated Flow Control Gates	\$12,000	100%	20	\$600
Level Sensing Instrumentation	\$7,000	100%	20	\$350
Git Removal Upgrades (Redundant Classifiers & Pumps)	\$180,000	100%	30	\$6,000
Automated Flow Control for Constantine Equalization Tank	\$18,000	100%	20	\$900
Flow Proportioned Sampler	\$10,000	100%	20	\$500
Ventilation Improvements	\$12,000	85%	20	\$510
Annual Replacement Reserve:				\$12,150
Reserve Net Present Worth:				\$159,772

Alternative CWP-A-2 Table 4

CWP Improvements - Preliminary Treatment

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - Preliminary Treatment
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	Mechanical Bar Screen	\$48,000	33%	30	\$16,000	\$6,795
3	Washer Compactor	\$30,000	0%	20	\$0	\$0
4	Improvements to Existing Perforated Plate Screen	\$10,000	0%	20	\$0	\$0
5	Automated Flow Control Gates	\$12,000	0%	20	\$0	\$0
6	Level Sensing Instrumentation	\$7,000	0%	20	\$0	\$0
7	Git Removal Upgrades (Redundant Classifiers & Pumps)	\$180,000	33%	30	\$60,000	\$25,481
8	Automated Flow Control for Constantine Equalization Tank	\$18,000	0%	20	\$0	\$0
9	Flow Proportioned Sampler	\$10,000	0%	20	\$0	\$0
10	Ventilation Improvements	\$12,000	0%	20	\$0	\$0
Salvage Value Present Worth:						\$32,276

Alternative CWP-A-2 Table 5

CWP Improvements - Preliminary Treatment

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Preliminary Treatment
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$176,288
Present Worth of Operation & Maintenance	\$212,372
Present Worth of Reserve	\$159,772
Total Construction, O & M, and Reserve	\$548,433
Present Worth Salvage Value	\$32,276
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$516,156

Alternative CWP-A-4

Table 1

CWP Improvements - New Building Construction

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - New Building Construction

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$2,500	\$2,500
2	New Headworks Building	1	ls	\$200,000	\$200,000
3	Mechanical Bar Screen	2	ea	\$50,000	\$100,000
4	Washer Compactor	2	ea	\$18,000	\$36,000
5	Automated Flow Control Gates	2	ea	\$10,000	\$20,000
6	Level Sensing Instrumentation	2	ls	\$7,000	\$14,000
7	Git Removal System	1	ls	\$280,000	\$280,000
8	Automated Flow Control for Constantine Equalization Tank	1	ls	\$18,000	\$18,000
9	Flow Proportioned Sampler	1	ls	\$10,000	\$10,000
10	Electrical & Controls System	1	ls	\$80,000	\$80,000
11	Heating & Ventilation System	1	ls	\$65,000	\$65,000
Sub Total					\$825,500
Contingencies @ 8.0%					\$66,000
Total Construction Cost					\$891,500
Design Engineering Services @ 7.0%					\$62,400
Construction Engineering Services @ 6.0%					\$53,500
Administrative & Legal @ 4.0%					\$35,700
Total					\$1,043,100
Construction Costs Net Present Worth					\$442,992

Alternative CWP-A-4 Table 2

CWP Improvements - New Building Construction

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - New Building Construction	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	New Headworks Building	\$200,000	\$5,000
3	Mechanical Bar Screener	\$100,000	\$1,500
4	Washer Compactor	\$36,000	\$200
5	Automated Flow Control Gates	\$20,000	\$800
6	Level Sensing Instrumentation	\$14,000	\$200
7	Git Removal System	\$280,000	\$500
8	Automated Flow Control for Constantine Equalization Tank	\$18,000	\$250
9	Flow Proportioned Sampler	\$10,000	\$500
10	Electrical & Controls System	\$80,000	\$800
11	Heating & Ventilation System	\$65,000	\$2,000
Total Additional Annual Costs:			\$6,750
Total Current Annual Costs:			\$12,000
Operations and Maintenance Costs Net Present Worth:			\$246,562

Alternative CWP-A-4 Table 3

CWP Improvements - New Building Construction

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number:	<u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date:	<u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer:	<u>OJD/AJR</u>
Type of Work:	<u>CWP Improvements - New Building Construction</u>	Checked By:	<u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
New Headworks Building	\$200,000	85%	50	\$3,400
Mechanical Bar Screen	\$100,000	90%	30	\$3,000
Washer Compactor	\$36,000	90%	20	\$1,620
Automated Flow Control Gates	\$20,000	85%	30	\$567
Level Sensing Instrumentation	\$14,000	100%	20	\$700
Git Removal System	\$280,000	90%	30	\$8,400
Automated Flow Control for Constantine Equalization Tank	\$18,000	100%	20	\$900
Flow Proportioned Sampler	\$10,000	100%	20	\$500
Electrical & Controls System	\$80,000	90%	30	\$2,400
Heating & Ventilation System	\$65,000	90%	30	\$1,950
Annual Replacement Reserve:				\$20,037
Reserve Net Present Worth:				\$263,482

Alternative CWP-A-4 Table 4

CWP Improvements - New Building Construction

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - New Building Construction
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	New Headworks Building	\$200,000	60%	50	\$120,000	\$50,963
3	Mechanical Bar Screer	\$100,000	33%	30	\$33,333	\$14,156
4	Washer Compactor	\$36,000	0%	20	\$0	\$0
5	Automated Flow Control Gates	\$20,000	33%	30	\$6,667	\$2,831
6	Level Sensing Instrumentation	\$14,000	0%	20	\$0	\$0
7	Git Removal System	\$280,000	33%	30	\$93,333	\$39,638
8	Automated Flow Control for Constantine Equalization Tank	\$18,000	0%	20	\$0	\$0
9	Flow Proportioned Sampler	\$10,000	0%	20	\$0	\$0
10	Electrical & Controls System	\$80,000	33%	30	\$26,667	\$11,325
11	Heating & Ventilation System	\$65,000	33%	30	\$21,667	\$9,202
Salvage Value Present Worth:						\$77,152

Alternative CWP-A-4 Table 5

CWP Improvements - New Building Construction

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - New Building Construction
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$442,992
Present Worth of Operation & Maintenance	\$246,562
Present Worth of Reserve	\$263,482
Total Construction, O & M, and Reserve	\$953,036
Present Worth Salvage Value	\$77,152
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$875,885

Alternative CWP-B-2

Table 1

CWP Improvements - Primary Treatment

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - Primary Treatment

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$800	\$800
2	Instalation of Piping & Valves to Facilitate Pumping of Sludge & Scum	1	ls	\$45,000	\$45,000
Sub Total					\$45,800
Contingencies @ 8.0%					\$3,700
Total Construction Cost					\$49,500
Design Engineering Services @ 7.0%					\$3,500
Construction Engineering Services @ 6.0%					\$3,000
Administrative & Legal @ 4.0%					\$2,000
Total					\$58,000
Construction Costs Net Present Worth					\$24,632

Alternative CWP-B-2 Table 2

CWP Improvements - Primary Treatment

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - Primary Treatment	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Installation of Piping & Valves to Facilitate Pumping of Sludge & Scum	\$45,000	\$250
Total Additional Annual Costs:			\$250
Total Current Annual Costs:			\$2,000
Operations and Maintenance Costs Net Present Worth			\$29,587

Alternative CWP-B-2 Table 3

CWP Improvements - Primary Treatment

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>CWP Improvements - Primary Treatment</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Installation of Piping & Valves to Facilitate Pumping of Sludge & Scum	\$45,000	90%	30	\$1,350
Annual Replacement Reserve:				\$1,350
Reserve Net Present Worth:				\$17,752

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative CWP-B-2 Table 4

CWP Improvements - Primary Treatment

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: CWP Improvements - Primary Treatment
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	Instalation of Piping & Valves to Facilitate Pumping of Sludge & Scum	\$45,000	33%	30	\$15,000	\$6,370
Salvage Value Present Worth:						\$6,370

Alternative CWP-B-2 Table 5

CWP Improvements - Primary Treatment

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Primary Treatment
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$24,632
Present Worth of Operation & Maintenance	\$29,587
Present Worth of Reserve	\$17,752
Total Construction, O & M, and Reserve	\$71,972
Present Worth Salvage Value	\$6,370
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$65,602

Alternative CWP-B-4 Table 1

CWP Improvements - Positive Displacement Pumps

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: CWP Improvements - Positive Displacement Pumps

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$800	\$800
2	Instalation of Piping & Valves to Facilitate Pumping of Sludge & Scum	1	ls	\$45,000	\$45,000
3	New Positive Displacement Pumps	2	ea	\$9,500	\$19,000
Sub Total					\$64,800
Contingencies @ 8.0%					\$5,200
Total Construction Cost					\$70,000
Design Engineering Services @ 7.0%					\$4,900
Construction Engineering Services @ 6.0%					\$4,200
Administrative & Legal @ 4.0%					\$2,800
Total					\$81,900
Construction Costs Net Present Worth					\$34,782

Alternative CWP-B-4 Table 2

CWP Improvements - Positive Displacement Pumps

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - Positive Displacement Pumps	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Installation of Piping & Valves to Facilitate Pumping of Sludge & Scum	\$45,000	\$250
3	New Positive Displacement Pumps	\$19,000	\$400
Total Additional Annual Costs:			\$650
Total Current Annual Costs:			\$2,000
Operations and Maintenance Costs Net Present Worth			\$34,847

Alternative CWP-B-4 Table 3

CWP Improvements - Positive Displacement Pumps

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - Positive Displacement Pumps	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Installation of Piping & Valves to Facilitate Pumping of Sludge & Scum	\$45,000	90%	30	\$1,350
New Positive Displacement Pumps	\$19,000	100%	30	\$633
Annual Replacement Reserve:				\$1,983
Reserve Net Present Worth:				\$26,081

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative CWP-B-4 Table 4

CWP Improvements - Positive Displacement Pumps

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: CWP Improvements - Positive Displacement Pumps
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	Instalation of Piping & Valves to Facilitate Pumping of Sludge & Scum	\$45,000	33%	30	\$15,000	\$6,370
3	New Positive Displacement Pumps	\$19,000	33%	30	\$6,333	\$2,690
Salvage Value Present Worth:						\$9,060

Alternative CWP-B-4 Table 5

CWP Improvements - Positive Displacement Pumps

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Positive Displacement Pumps
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$34,782
Present Worth of Operation & Maintenance	\$34,847
Present Worth of Reserve	\$26,081
Total Construction, O & M, and Reserve	\$95,710
Present Worth Salvage Value	\$9,060
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$86,650

Alternative CWP-C-2

Table 1

CWP Improvements - Sec. Treatment Systems Auto.

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems Auto.

Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$3,500	\$3,500
2	Logic-Based D.O. Control & Blower Automation	1	ls	\$168,000	\$168,000
3	RAS & WAS Pump VFD Automation	1	ls	\$52,000	\$52,000
4	Flow Proportioning & Redundancy for the Primary Clarifiers	1	ls	\$18,000	\$18,000
Sub Total					\$241,500
Contingencies @ 8.0%					\$19,300
Total Construction Cost					\$260,800
Design Engineering Services @ 7.0%					\$18,300
Construction Engineering Services @ 6.0%					\$15,600
Administrative & Legal @ 4.0%					\$10,400
Total					\$305,100
Construction Costs Net Present Worth					\$129,572

Alternative CWP-C-2 Table 2

CWP Improvements - Sec. Treatment Systems Auto.

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001
Date: 5/14/2010

Project Location: City of Three Rivers

Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems Auto.
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Logic-Based D.O. Control & Blower Automation	\$168,000	\$3,500
3	RAS & WAS Pump VFD Automation	\$52,000	\$1,500
4	Flow Proportioning & Redundancy for the Primary Clarifiers	\$18,000	\$800
Total Additional Annual Costs:			\$5,800
Total Current Annual Costs:			\$15,500
Operations and Maintenance Costs Net Present Worth			\$280,095

Alternative CWP-C-2 Table 3

CWP Improvements - Sec. Treatment Systems Auto.

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Project Location: City of Three Rivers

Estimator/Engineer: OJD/AJR

Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems Auto.
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Logic-Based D.O. Control & Blower Automation	\$168,000	100%	20	\$8,400
RAS & WAS Pump VFD Automation	\$52,000	90%	30	\$1,560
Flow Proportioning & Redundancy for the Primary Clarifiers	\$18,000	85%	30	\$510
Annual Replacement Reserve:				\$10,470
Reserve Net Present Worth:				\$137,680

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative CWP-C-2 Table 4

CWP Improvements - Sec. Treatment Systems Auto.

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems Auto.
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
2	Logic-Based D.O. Control & Blower Automation	\$168,000	0%	20	\$0	\$0
3	RAS & WAS Pump VFD Automation	\$52,000	33%	30	\$17,333	\$7,361
4	Flow Proportioning & Redundancy for the Primary Clarifiers	\$18,000	33%	30	\$6,000	\$2,548
Salvage Value Present Worth:						\$9,909

Alternative CWP-C-2 Table 5

CWP Improvements - Sec. Treatment Systems Auto.

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Sec. Treatment Systems Auto.

Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$129,572
Present Worth of Operation & Maintenance	\$280,095
Present Worth of Reserve	\$137,680
Total Construction, O & M, and Reserve	\$547,347
Present Worth Salvage Value	\$9,909
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$537,438

Alternative CWP-C-4 Table 1

CWP Improvements - Sec. Treatment Systems VFD

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems VFD

Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$3,500	\$3,500
2	Logic-Based D.O. Control & Blower Automation	1	ls	\$168,000	\$168,000
3	Blower Variable Frequency Drives	3	ea	\$11,000	\$33,000
4	RAS & WAS Pump Automatic Throttling Valves	2	ea	\$5,000	\$10,000
5	Flow Proportioning & Redundancy for the Primary Clarifiers	1	ls	\$18,000	\$18,000
Sub Total					\$232,500
Contingencies @ 8.0%					\$18,600
Total Construction Cost					\$251,100
Design Engineering Services @ 7.0%					\$17,600
Construction Engineering Services @ 6.0%					\$15,100
Administrative & Legal @ 4.0%					\$10,000
Total					\$293,800
Construction Costs Net Present Worth					\$124,773

Alternative CWP-C-4 Table 2

CWP Improvements - Sec. Treatment Systems VFD

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Estimator/Engineer: OJD/AJR

Project Location: City of Three Rivers

Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems VFD

Stage: Conceptual Preliminary Final

Interest Rate: 4.375%

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Logic-Based D.O. Control & Blower Automation	\$168,000	\$3,500
3	Blower Variable Frequency Drives	\$33,000	\$1,500
4	RAS & WAS Pump Automatic Throttling Valves	\$10,000	\$2,000
5	Flow Proportioning & Redundancy for the Primary Clarifiers	\$18,000	\$800
Total Additional Annual Costs:			\$7,800
Total Current Annual Costs:			\$15,500
Operations and Maintenance Costs Net Present Worth:			\$306,395

Alternative CWP-C-4 Table 3

CWP Improvements - Sec. Treatment Systems VFD

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Estimator/Engineer: OJD/AJR

Project Location: City of Three Rivers

Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems VFD
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Logic-Based D.O. Control & Blower Automation	\$168,000	100%	20	\$8,400
Blower Variable Frequency Drives	\$33,000	100%	20	\$1,650
RAS & WAS Pump Automatic Throttling Valves	\$10,000	90%	20	\$450
Flow Proportioning & Redundancy for the Primary Clarifiers	\$18,000	90%	30	\$540
Annual Replacement Reserve:				\$11,040
Reserve Net Present Worth:				\$145,176

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative CWP-C-4 Table 4

CWP Improvements - Sec. Treatment Systems VFD

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Sec. Treatment Systems VFD
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
2	Logic-Based D.O. Control & Blower Automation	\$168,000	0%	20	\$0	\$0
3	Blower Variable Frequency Drives	\$33,000	0%	20	\$0	\$0
4	RAS & WAS Pump Automatic Throttling Valves	\$10,000	0%	20	\$0	\$0
5	Flow Proportioning & Redundancy for the Primary Clarifiers	\$18,000	33%	30	\$6,000	\$2,548
Salvage Value Present Worth:						\$2,548

Alternative CWP-C-4 Table 5

CWP Improvements - Sec. Treatment Systems VFD

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Sec. Treatment Systems VFD

Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$124,773
Present Worth of Operation & Maintenance	\$306,395
Present Worth of Reserve	\$145,176
Total Construction, O & M, and Reserve	\$576,344
Present Worth Salvage Value	\$2,548
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$573,796

Alternative CWP-D-2

Table 1

CWP Improvements - Disinfect. System Auto. (Gas)

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.

4791 Campus Drive

Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Gas)

Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$3,500	\$3,500
2	Automated Chlorine & Sulfure Dioxide Feed Equipment	1	ls	\$180,000	\$180,000
3	Residual Chlorine Analyzers	2	ea	\$6,000	\$12,000
4	New Chlorine & Sulfur Dioxide Gas Storage Facilities	1	ls	\$60,000	\$60,000
5	Leak Detection Equipment & Alarms	1	ls	\$8,000	\$8,000
6	Logic-Based Chlorine & Sulfur Dioxide Feed Controls	1	ls	\$85,000	\$85,000
Sub Total					\$348,500
Contingencies @ 8.0%					\$27,900
Total Construction Cost					\$376,400
Design Engineering Services @ 7.0%					\$26,300
Construction Engineering Services @ 6.0%					\$22,600
Administrative & Legal @ 4.0%					\$15,100
Total					\$440,400
Construction Costs Net Present Worth					\$187,033

Alternative CWP-D-2 Table 2

CWP Improvements - Disinfect. System Auto. (Gas)

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Estimator/Engineer: OJD/AJR

Project Location: City of Three Rivers

Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Gas)
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Automated Chlorine & Sulfure Dioxide Feed Equipment	\$180,000	\$2,500
3	Residual Chlorine Analyzers	\$12,000	\$1,000
4	New Chlorine & Sulfur Dioxide Gas Storage Facilities	\$60,000	\$500
5	Leak Detection Equipment & Alarms	\$8,000	\$350
6	Logic-Based Chlorine & Sulfur Dioxide Feed Controls	\$85,000	\$1,000
Total Additional Annual Costs			\$5,350
Total Current Annual Costs:			\$8,500
Operations and Maintenance Costs Net Present Worth			\$182,127

Alternative CWP-D-2 Table 3

CWP Improvements - Disinfect. System Auto. (Gas)

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Estimator/Engineer: OJD/AJR

Project Location: City of Three Rivers

Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Gas)
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Automated Chlorine & Sulfure Dioxide Feed Equipment	\$180,000	90%	20	\$8,100
Residual Chlorine Analyzers	\$12,000	100%	20	\$600
New Chlorine & Sulfur Dioxide Gas Storage Facilities	\$60,000	85%	40	\$1,275
Leak Detection Equipment & Alarms	\$8,000	100%	30	\$267
Logic-Based Chlorine & Sulfur Dioxide Feec Controls	\$85,000	90%	20	\$3,825
Annual Replacement Reserve:				\$14,067
Reserve Net Present Worth:				\$184,976

Alternative CWP-D-2 Table 4

CWP Improvements - Disinfect. System Auto. (Gas)

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Gas)
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
2	Automated Chlorine & Sulfure Dioxide Feed Equipment	\$180,000	0%	20	\$0	\$0
3	Residual Chlorine Analyzers	\$12,000	0%	20	\$0	\$0
4	New Chlorine & Sulfur Dioxide Gas Storage Facilities	\$60,000	50%	40	\$30,000	\$12,741
5	Leak Detection Equipment & Alarms	\$8,000	33%	30	\$2,667	\$1,133
6	Logic-Based Chlorine & Sulfur Dioxide Feed Controls	\$85,000	0%	20	\$0	\$0
Salvage Value Present Worth:						\$13,873

Alternative CWP-D-2 Table 5

CWP Improvements - Disinfect. System Auto. (Gas)

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Disinfect. System Auto. (Gas)

Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$187,033
Present Worth of Operation & Maintenance	\$182,127
Present Worth of Reserve	\$184,976
Total Construction, O & M, and Reserve	\$554,136
Present Worth Salvage Value	\$13,873
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$540,263

Alternative CWP-D-2

Table 1

CWP Improvements - Disinfect. System Auto. (Liquid)

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.

4791 Campus Drive

Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Liquid)

Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$3,500	\$3,500
2	Automated Chlorine & Sulfure Dioxide Feed Equipment	1	ls	\$180,000	\$180,000
3	Residual Chlorine Analyzers	2	ea	\$6,000	\$12,000
4	New Liquid Chlorine & Sulfur Dioxide Gas Storage Facilities	1	ls	\$40,000	\$40,000
5	Leak Detection Equipment & Alarms	1	ls	\$6,000	\$6,000
6	Logic-Based Chlorine & Sulfur Dioxide Feed Controls	1	ls	\$85,000	\$85,000
Sub Total					\$326,500
Contingencies @ 8.0%					\$26,100
Total Construction Cost					\$352,600
Design Engineering Services @ 7.0%					\$24,700
Construction Engineering Services @ 6.0%					\$21,200
Administrative & Legal @ 4.0%					\$14,100
Total					\$412,600
Construction Costs Net Present Worth					\$175,226

Alternative CWP-D-2 Table 2

CWP Improvements - Disinfect. System Auto. (Liquid)

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Estimator/Engineer: OJD/AJR

Checked By: JJB

Project Location: City of Three Rivers

Type of Work: CWP Improvements - Disinfect. System Auto. (Liquid)
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Automated Chlorine & Sulfure Dioxide Feed Equipment	\$180,000	\$16,000
3	Residual Chlorine Analyzers	\$12,000	\$1,000
4	New Liquid Chlorine & Sulfur Dioxide Gas Storage Facilities	\$40,000	\$500
5	Leak Detection Equipment & Alarms	\$6,000	\$350
6	Logic-Based Chlorine & Sulfur Dioxide Feed Controls	\$85,000	\$1,000
Total Additional Annual Costs			\$18,850
Total Current Annual Costs:			\$8,500
Operations and Maintenance Costs Net Present Worth			\$359,652

Alternative CWP-D-2

Table 3

CWP Improvements - Disinfect. System Auto. (Liquid)

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Number: 487-6463.001

Date: 5/14/2010

Estimator/Engineer: OJD/AJR

Project Location: City of Three Rivers

Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Liquid) Stage: Conceptual Preliminary Final
Interest Rate: 4.375%

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Automated Chlorine & Sulfure Dioxide Feed Equipment	\$180,000	100%	20	\$9,000
Residual Chlorine Analyzers	\$12,000	100%	20	\$600
New Liquid Chlorine & Sulfur Dioxide Gas Storage Facilities	\$40,000	85%	40	\$850
Leak Detection Equipment & Alarms	\$6,000	100%	30	\$200
Logic-Based Chlorine & Sulfur Dioxide Feec Controls	\$85,000	90%	20	\$3,825
Annual Replacement Reserve:				\$14,475
Reserve Net Present Worth:				\$190,346

Alternative CWP-D-2 Table 4

CWP Improvements - Disinfect. System Auto. (Liquid)

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB

Type of Work: CWP Improvements - Disinfect. System Auto. (Liquid)
Interest Rate: 4.375%

Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-yrs)	Equivalent Present Value
2	Automated Chlorine & Sulfure Dioxide Feed Equipment	\$180,000	0%	20	\$0	\$0
3	Residual Chlorine Analyzers	\$12,000	0%	20	\$0	\$0
4	New Liquid Chlorine & Sulfur Dioxide Gas Storage Facilities	\$40,000	50%	40	\$20,000	\$8,494
5	Leak Detection Equipment & Alarms	\$6,000	33%	30	\$2,000	\$849
6	Logic-Based Chlorine & Sulfur Dioxide Feed Controls	\$85,000	0%	20	\$0	\$0
Salvage Value Present Worth:						\$9,343

Alternative CWP-D-2 Table 5

CWP Improvements - Disinfect. System Auto. (Liquid)

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Disinfect. System Auto. (Liquid)

Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$175,226
Present Worth of Operation & Maintenance	\$359,652
Present Worth of Reserve	\$190,346
Total Construction, O & M, and Reserve	\$725,224
Present Worth Salvage Value	\$9,343
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$715,881

Alternative CWP-E-2 Table 1

CWP Improvements - Secondary Treatment Improvements

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: CWP Improvements - Secondary Treatment Improvements

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$2,500	\$2,500
2	Density Baffles on Final Clarifiers No. 3 & No. 4	2	ea	\$65,000	\$130,000
3	Larger Capacity Scum Pump	1	ls	\$18,000	\$18,000
4	Scum Piping/Valves & Scum Pit Improvements	1	ls	\$20,000	\$20,000
5	Mixed Liquor Flow Distribution Improvements	1	ls	\$55,000	\$55,000
6	Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	1	ls	\$12,000	\$12,000
7	Flow Proportioned Final Effluent Sampler Pump & Associated Piping	1	ls	\$12,000	\$12,000
Sub Total					\$249,500
Contingencies @ 8.0%					\$20,000
Total Construction Cost					\$269,500
Design Engineering Services @ 7.0%					\$18,900
Construction Engineering Services @ 6.0%					\$16,200
Administrative & Legal @ 4.0%					\$10,800
Total					\$315,400
Construction Costs Net Present Worth					\$133,947

Alternative CWP-E-2 Table 2

CWP Improvements - Secondary Treatment Improvements

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - Secondary Treatment Improvements	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Density Baffles on Final Clarifiers No. 3 & No. 4	\$130,000	\$500
3	Larger Capacity Scum Pump	\$18,000	\$1,000
4	Scum Piping/Valves & Scum Pit Improvements	\$20,000	\$200
5	Mixed Liquor Flow Distribution Improvements	\$55,000	\$500
6	Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	\$12,000	\$250
7	Flow Proportioned Final Effluent Sampler Pump & Associated Piping	\$12,000	\$250
Total Additional Annual Costs			\$2,700
Total Current Annual Costs			\$6,500
Operations and Maintenance Costs Net Present Worth			\$120,980

Alternative CWP-E-2 Table 3

CWP Improvements - Secondary Treatment Improvements

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>CWP Improvements - Secondary Treatment</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Improvement Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Density Baffles on Final Clarifiers No. 3 & No. 4	\$130,000	90%	30	\$3,900
Larger Capacity Scum Pump	\$18,000	85%	20	\$765
Scum Piping/Valves & Scum Pit Improvements	\$20,000	90%	30	\$600
Mixed Liquor Flow Distribution Improvements	\$55,000	90%	30	\$1,650
Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	\$12,000	100%	20	\$600
Flow Proportioned Final Effluent Sampler Pump & Associated Piping	\$12,000	100%	20	\$600
Annual Replacement Reserve:				\$8,115
Reserve Net Present Worth:				\$106,712

Alternative CWP-E-2 Table 4

CWP Improvements - Secondary Treatment Improvements

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: CWP Improvements - Secondary Treatment Improvements
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	Density Baffles on Final Clarifiers No. 3 & No. 4	\$130,000	33%	30	\$43,333	\$18,403
3	Larger Capacity Scum Pump	\$18,000	0%	20	\$0	\$0
4	Scum Piping/Valves & Scum Pit Improvements	\$20,000	33%	30	\$6,667	\$2,831
5	Mixed Liquor Flow Distribution Improvements	\$55,000	33%	30	\$18,333	\$7,786
6	Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	\$12,000	0%	20	\$0	\$0
7	Flow Proportioned Final Effluent Sampler Pump & Associated Piping	\$12,000	0%	20	\$0	\$0
Salvage Value Present Worth:						\$29,020

Alternative CWP-E-2 Table 5

CWP Improvements - Secondary Treatment Improvements

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Secondary Treatment Improvements
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$133,947
Present Worth of Operation & Maintenance	\$120,980
Present Worth of Reserve	\$106,712
Total Construction, O & M, and Reserve	\$361,639
Present Worth Salvage Value	\$29,020
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$332,618

Alternative CWP-E-4

Table 1

CWP Improvements - New Final Clarifiers

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project
Location: City of Three Rivers
Type of Work: CWP Improvements - New Final Clarifiers

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$2,500	\$2,500
2	New Final Clarifiers with all Equipment	2	ls	\$160,000	\$320,000
3	New Scum Pumping Facility	1	ls	\$50,000	\$50,000
4	Connecting Piping for Carifiers Scum Pumping Facility	1	ls	\$80,000	\$80,000
6	Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	1	ls	\$12,000	\$12,000
7	Flow Proportioned Final Effluent Sampler Pump & Associated Piping	1	ls	\$12,000	\$12,000
Sub Total					\$476,500
Contingencies @ 8.0%					\$38,100
Total Construction Cost					\$514,600
Design Engineering Services @ 7.0%					\$36,000
Construction Engineering Services @ 6.0%					\$30,900
Administrative & Legal @ 4.0%					\$20,600
Total					\$602,100
Construction Costs Net Present Worth					\$255,705

Alternative CWP-E-4 Table 2

CWP Improvements - New Final Clarifiers

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - New Final Clarifiers	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	New Final Clarifiers with all Equipment	\$320,000	\$500
3	New Scum Pumping Facility	\$50,000	\$1,000
4	Connecting Piping for Clarifiers Scum Pumping Facility	\$80,000	\$200
6	Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	\$12,000	\$250
7	Flow Proportioned Final Effluent Sampler Pump & Associated Piping	\$12,000	\$250
Total Additional Annual Costs			\$2,200
Total Current Annual Costs:			\$6,500
Operations and Maintenance Costs Net Present Worth			\$114,405

Alternative CWP-E-4 Table 3

CWP Improvements - New Final Clarifiers

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan

Project Location: City of Three Rivers
Type of Work: CWP Improvements - New Final Clarifiers
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
New Final Clarifiers with all Equipment	\$320,000	90%	40	\$7,200
New Scum Pumping Facility	\$50,000	85%	30	\$1,417
Connecting Piping for Clarifiers Scum Pumping Facility	\$80,000	90%	40	\$1,800
Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	\$12,000	100%	20	\$600
Flow Proportioned Final Effluent Sampler Pump & Associated Piping	\$12,000	100%	20	\$600
Annual Replacement Reserve:				\$11,617
Reserve Net Present Worth:				\$152,759

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative CWP-E-4

Table 4

CWP Improvements - New Final Clarifiers

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project: _____
 Location: City of Three Rivers
 Type of Work: CWP Improvements - New Final Clarifiers
 Interest Rate: 4.375%

Project Number: 487-6463.001
 Date: 5/14/2010
 Estimator/Engineer: OJD/AJR
 Checked By: JJB
 Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	New Final Clarifiers with all Equipment	\$320,000	50%	40	\$160,000	\$67,950
3	New Scum Pumping Facility	\$50,000	33%	30	\$16,667	\$7,078
4	Connecting Piping for Clarifiers Scum Pumping Facility	\$80,000	50%	40	\$40,000	\$16,988
6	Flow Proportioned Primary Effluent Sampler Pump & Associated Piping	\$12,000	0%	20	\$0	\$0
7	Flow Proportioned Final Effluent Sampler Pump & Associated Piping	\$12,000	0%	20	\$0	\$0
Salvage Value Present Worth:						\$92,016

Alternative CWP-E-4 Table 5

CWP Improvements - New Final Clarifiers

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - New Final Clarifiers
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$255,705
Present Worth of Operation & Maintenance	\$114,405
Present Worth of Reserve	\$152,759
Total Construction, O & M, and Reserve	\$522,869
Present Worth Salvage Value	\$92,016
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$430,853

Alternative CWP-F-2 Table 1

CWP Improvements - Solids Handling Improvements

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - Solids Handling Improvements

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$6,000	\$6,000
2	Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	1	ls	\$450,000	\$450,000
3	Hydraulic Drive Submerged Centrifugal Thickened Sludge Pump	1	ls	\$90,000	\$90,000
4	Valve & Operator on Thickened Sludge Decant System	1	ls	\$12,000	\$12,000
5	Biolfilter Odor Control Improvements & Expansion	1	ls	\$50,000	\$50,000
6	Rehabilitate Existing Piping & Valves on N. & S. Sludge Storage Tanks	2	ea	\$8,000	\$16,000
7	Flush Grit from Both Tanks & Clean as Necessary	2	ea	\$3,500	\$7,000
8	New Aluminum Covers for Both Tanks	2	ea	\$85,000	\$170,000
9	Sludge Mixers for Both Tanks	2	ea	\$35,000	\$70,000
10	New Internal Piping for Mixing in Both Tanks	2	ea	\$12,000	\$24,000
11	Sludge Aerators for Both Tanks	2	ea	\$18,000	\$36,000
12	Foam Sensors on ATAD System & PLC Integration	1	ls	\$20,000	\$20,000
13	Biolfilter Enclosure Building	1	ls	\$5,000	\$5,000
14	Pheonix Odor Control System Enclosure Building	1	ls	\$28,000	\$28,000
Sub Total					\$984,000
Contingencies @ 8.0%					\$78,700
Total Construction Cost					\$1,062,700
Design Engineering Services @ 7.0%					\$74,400
Construction Engineering Services @ 6.0%					\$63,800
Administrative & Legal @ 4.0%					\$42,500
Total					\$1,243,400
Construction Costs Net Present Worth					\$528,057

Alternative CWP-F-2 Table 2

CWP Improvements - Solids Handling Improvements

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - Solids Handling Improvements	Checked By:	JJB
Interest Rate:	4.375%	Stage:	[X] Conceptual [] Preliminary [] Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	\$450,000	\$4,500
3	Hydraulic Drive Submerged Centrifugal Thickened Sludge Pump	\$90,000	\$300
4	Valve & Operator on Thickened Sludge Decan System	\$12,000	\$100
5	Biofilter Odor Control Improvements & Expansion	\$50,000	\$500
6	Rehabilitate Existing Piping & Valves on N. & S. Sludge Storage Tanks	\$16,000	\$100
8	New Aluminum Covers for Both Tanks	\$170,000	\$200
9	Sludge Mixers for Both Tanks	\$70,000	\$250
10	New Internal Piping for Mixing in Both Tanks	\$24,000	\$100
11	Sludge Aerators for Both Tanks	\$36,000	\$200
12	Foam Sensors on ATAD System & PLC Integration	\$20,000	\$800
13	Biofilter Enclosure Building	\$5,000	\$100
14	Pheonix Odor Control System Enclosure Building	\$28,000	\$200
Total Additional Annual Costs:			\$7,350
Total Current Annual Costs:			\$10,500
Operations and Maintenance Costs Net Present Worth:			\$234,727

Alternative CWP-F-2 Table 3

CWP Improvements - Solids Handling Improvements

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>CWP Improvements - Solids Handling Improvements</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	\$450,000	90%	30	\$13,500
Hydraulic Drive Submerged Centrifugal Thickened Sludge Pump	\$90,000	85%	20	\$3,825
Valve & Operator on Thickened Sludge Decan System	\$12,000	90%	30	\$360
Biofilter Odor Control Improvements & Expansion	\$50,000	90%	30	\$1,500
Rehabilitate Existing Piping & Valves on N. & S. Sludge Storage Tanks	\$16,000	100%	20	\$800
New Aluminum Covers for Both Tanks	\$170,000	85%	40	\$3,613
Sludge Mixers for Both Tanks	\$70,000	90%	20	\$3,150
New Internal Piping for Mixing in Both Tanks	\$24,000	85%	30	\$680
Sludge Aerators for Both Tanks	\$36,000	90%	20	\$1,620
Foam Sensors on ATAD System & PLC Integration	\$20,000	100%	20	\$1,000
Biofilter Enclosure Building	\$5,000	90%	30	\$150
Pheonix Odor Control System Enclosure Building	\$28,000	85%	40	\$595
Annual Replacement Reserve:				\$30,793
Reserve Net Present Worth:				\$404,921

Alternative CWP-F-2 Table 4

CWP Improvements - Solids Handling Improvements

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - Solids Handling Improvements
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	\$450,000	33%	30	\$150,000	\$63,703
3	Hydraulic Drive Submerged Centrifugal Thickened Sludge Pump	\$90,000	0%	20	\$0	\$0
4	Valve & Operator on Thickened Sludge Decant System	\$12,000	33%	30	\$4,000	\$1,699
5	Biofilter Odor Control Improvements & Expansion	\$50,000	33%	30	\$16,667	\$7,078
6	Rehabilitate Existing Piping & Valves on N. & S. Sludge Storage Tanks	\$16,000	0%	20	\$0	\$0
7	Flush Grit from Both Tanks & Clean as Necessary	\$7,000	50%	40	\$3,500	\$1,486
8	New Aluminum Covers for Both Tanks	\$170,000	0%	20	\$0	\$0
9	Sludge Mixers for Both Tanks	\$70,000	33%	30	\$23,333	\$9,909
10	New Internal Piping for Mixing in Both Tanks	\$24,000	0%	20	\$0	\$0
11	Sludge Aerators for Both Tanks	\$36,000	0%	20	\$0	\$0
12	Foam Sensors on ATAD System & PLC Integration	\$20,000	33%	30	\$6,667	\$2,831
13	Biofilter Enclosure Building	\$5,000	50%	40	\$2,500	\$1,062
14	Pheonix Odor Control System Enclosure Building	\$28,000	50%	40	\$14,000	\$5,946
Salvage Value Present Worth:						\$93,715

Alternative CWP-F-2 Table 5

CWP Improvements - Solids Handling Improvements

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - Solids Handling Improvements
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$528,057
Present Worth of Operation & Maintenance	\$234,727
Present Worth of Reserve	\$404,921
Total Construction, O & M, and Reserve	\$1,167,705
Present Worth Salvage Value	\$93,715
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$1,073,991

Alternative CWP-F-4

Table 1

CWP Improvements - New Solids Handling Facility

Engineer's Estimate of Probable Construction Costs

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - New Solids Handling Facility

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Mobilization	1	ls	\$8,000	\$8,000
2	Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	1	ls	\$490,000	\$490,000
3	Rehabilitate Existing <i>Vaugh</i> Thickened Sludge Pumps	2	ea	\$5,000	\$10,000
4	Vacuum Priming System	2	ea	\$5,000	\$10,000
5	New Sludge Transfer Piping	1	ls	\$65,000	\$65,000
6	New Odor Control Piping	1	ls	\$50,000	\$50,000
Sub Total					\$633,000
Contingencies @ 8.0%					\$50,600
Total Construction Cost					\$683,600
Design Engineering Services @ 7.0%					\$47,900
Construction Engineering Services @ 6.0%					\$41,000
Administrative & Legal @ 4.0%					\$27,300
Total					\$799,800
Construction Costs Net Present Worth					\$339,666

Alternative CWP-F-4 Table 2

CWP Improvements - New Solids Handling Facility

Engineer's Estimate of Operations & Maintenance

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	City of Three Rivers	Project Number:	487-6463.001
Project Name:	2010 State Revolving Fund Project Plan	Date:	5/14/2010
Project Location:	City of Three Rivers	Estimator/Engineer:	OJD/AJR
Type of Work:	CWP Improvements - New Solids Handling Facility	Checked By:	JJB
Interest Rate:	4.375%	Stage:	<input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item No.	Description	Costs	Annual Operations Cost (electrical, maintenance, supplies)
2	Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	\$490,000	\$4,500
3	Rehabilitate Existing VaughThickened Sludge Pumps	\$10,000	\$200
4	Vacuum Priming System	\$10,000	\$250
5	New Sludge Transfer Piping	\$65,000	\$150
6	New Odor Control Piping	\$50,000	\$500
Total Additional Annual Costs			\$5,600
Total Current Annual Costs:			\$10,500
Operations and Maintenance Costs Net Present Worth			\$211,715

Alternative CWP-F-4 Table 3

CWP Improvements - New Solids Handling Facility

Engineer's Estimate of Annual Reserve

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client:	<u>City of Three Rivers</u>	Project Number: <u>487-6463.001</u>
Project Name:	<u>2010 State Revolving Fund Project Plan</u>	Date: <u>5/14/2010</u>
Project Location:	<u>City of Three Rivers</u>	Estimator/Engineer: <u>OJD/AJR</u>
Type of Work:	<u>CWP Improvements - New Solids Handling Facility</u>	Checked By: <u>JJB</u>
Interest Rate:	<u>4.375%</u>	Stage: <input checked="" type="checkbox"/> Conceptual <input type="checkbox"/> Preliminary <input type="checkbox"/> Final

Item Description	Value	Factor	Useful Life	Annual Replacement Cost
Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	\$490,000	90%	30	\$14,700
Rehabilitate Existing VaughThickened Sludge Pumps	\$10,000	100%	20	\$500
Vacuum Priming System	\$10,000	100%	20	\$500
New Sludge Transfer Piping	\$65,000	90%	30	\$1,950
New Odor Control Piping	\$50,000	85%	30	\$1,417
Annual Replacement Reserve:				\$19,067
Reserve Net Present Worth:				\$250,726

Factor: The percentage of the item that will have to be replaced at the end of the useful life.

Alternative CWP-F-4 Table 4

CWP Improvements - New Solids Handling Facility

Engineer's Estimate of Salvage Value

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
Project Name: 2010 State Revolving Fund Project Plan
Project: _____
Location: City of Three Rivers
Type of Work: CWP Improvements - New Solids Handling Facility
Interest Rate: 4.375%

Project Number: 487-6463.001
Date: 5/14/2010
Estimator/Engineer: OJD/AJR
Checked By: JJB
Stage: Conceptual Preliminary Final

Item No.	Description	Costs	Salvage Value	Useful Life	Salvage Value (20-	Equivalent Present Value
2	Back-Up Dewatering Centrifuge, PLC, Integrated Alarm Server	\$490,000	33%	30	\$163,333	\$69,366
3	Rehabilitate Existing VaughThickened Sludge Pumps	\$10,000	0%	20	\$0	\$0
4	Vacuum Priming System	\$10,000	0%	20	\$0	\$0
5	New Sludge Transfer Piping	\$65,000	33%	30	\$21,667	\$9,202
6	New Odor Control Piping	\$50,000	33%	30	\$16,667	\$7,078
Salvage Value Present Worth:						\$85,645

Alternative CWP-F-4 Table 5

CWP Improvements - New Solids Handling Facility

Cost Effective Analysis

Jones & Henry Engineers, Ltd.
4791 Campus Drive
Kalamazoo, Michigan 49008

Phone (269)-353-9650

Fax (269)-353-9651

Client: City of Three Rivers
 Project Name: 2010 State Revolving Fund Project Plan
 Project Location: City of Three Rivers
 Type of Work: CWP Improvements - New Solids Handling Facility
 Date: 5/14/2010
 Stage: Conceptual Preliminary Final

Description	Net Present Worth
Present Worth of Construction Costs	\$339,666
Present Worth of Operation & Maintenance	\$211,715
Present Worth of Reserve	\$250,726
Total Construction, O & M, and Reserve	\$802,107
Present Worth Salvage Value	\$85,645
Present Value of Capitalized Interest and Revenue Generated	\$0
Total Net Present Worth:	\$716,461