

## LINING OF MAIN CANAL

### Assumptions:

15% of main canal could be lined 21120 feet  
 water saved per sq ft per day 0.65 0.85 ft<sup>3</sup>/ft<sup>2</sup>/day  
 Irrigation period 120 days

### Determined from calculations:

Cost per foot to line canal that ranges from 65 to 300 cfs 50 70 \$/ft  
 wetted perimeter range 20 40 feet

### Cost:

\$/foot	x	feet	=	Total Cost (\$)
50	x	21120	=	1056000
70	x	21120	=	1478400

### Water Saved:

water saved	x	length	x	wetted per.	x days =	Water Saved (ftA 3)	=	Water Saved (AF)
0.65	x	21120	x	20	x 120 =	32947200	=	756
0.85	x	21120	x	40	x 120 =	86169600	=	1978

### Cost per AF

Cost	Water Saved (AF)	Cost per AF (\$/AF)
1056000	1978.16181818	534
1478400	756.363636364	1955

## LINING OF LATERALS (20 to 35 cfs)

Identified Laterals: 7.2, 13.8, 15.8

### Assumptions:

Total length 25533 feet (Portion of laterals w/ capacity greater than 20 cfs)  
 Range of water saved as a % 50 75  
 Lining will be 160 mil. asphalt only applied to bottom section of lateral

### Given data:

Average loss (AF) / foot 0.0177  
 Cost per sq ft (\$) = 2  
 Bottom width range (ft) 5 8

### Cost:

\$/ft <sup>2</sup>	x	width	x	length	= Total Cost(\$)
2	x	5	x	25533	= 255330
2	x	8	x	25533	= 408528

### Water Saved:

water saved / foot	x	length	=	Water Saved (AF)
0.00885	x	25533	=	226
0.013275	x	25533	=	339

### Cost per AF

Cost	Water Saved	Cost per AF (\$/AF)
255330	338.95058	753.3
408528	225.96705	1808

## CONVERTING LATERALS TO PIPE (6 to 20 cfs)

### Laterals Identified in Priority:

- 1) 5.5
- 2) 16.1
- 3) 29.6
- 4) 18.4
- 5) 1.9

### Given:

Total length 41687 ft

### Assumptions:

All water saved                      880 AF

### Determined from calculations:

Range of cost per foot (installed) to pipe in identified laterals 28 42 \$/ft

### Cost:

\$/ft x feet = cost

			Total Cost (\$)
28	x	41687 =	1167236
42	x	41687 =	1750854

### Cost per AF

Cost	/	Water Saved =	Cost per AF (\$/AF)
1167236	/	880 =	1326
1750854	/	880 =	1990

## IMPLEMENTING SURGE VALVES

Given:

8 to 10 devices may be implemented, use		9	
Irrigators allotted 2.5 ft per acre			
10" Surge Valves cost	2000		2500 \$ per unit

Assumptions:

Each device will irrigate 4		40 to 80 acres (by field size or field rotation)
Existing on-farm efficiency is 50%		
Range of attainable on-farm efficiency	70	90

Determined from Calculations:

Water currently delivered to fields	900	1800 AF
Range of total effected acres	360	720

Cost:

\$/unit	x	units	Total Cost (\$)
2000	x	9	18000
2500	x	9	22500

Water Saved:

AF delivered	x	Water Saved as %	x	Water Saved (AF)
900	x	20	x	180
1800	x	40	x	720

Cost per AF

Cost	/	Water Saved (AF)	= Cost per AF (\$/AF)
18000	/	720	= 25
22500	/	180	= 125

## CONVERTING TO CENTER PIVOTS

### Given:

18 to 20 units may be implemented 19  
 Range of cost per unit 30000 40000 \$ per unit

### Assumptions:

Each device serves 80 acres  
 Existing on-farm efficiency is 50%  
 Range of attainable on-farm efficiency 75 90

### Determined from Calculations:

Water currently delivered to field 3800 AF

### Cost:

\$/unit	x	units	= Total Cost (\$)
30000	x	19	= 570000
40000	x	19	= 760000

### Water Saved:

AF delivered	x	Water Saved as % =	Water Saved (AF)
3800	x	25 =	950
3800	x	40 =	1520

### Cost Per AF

Cost	/	Water Saved (AF)	= Cost per AF (\$/AF)
570000	/	1520	= 375
760000	/	950	= 800

## IMPLEMENTING GATED PIPE

### Given:

Feet possibly implemented	70000	
10" Gated Pipe cost	2.5	3.35\$ per foot

### Assumptions:

1500 acres to be served		
Existing on-farm efficiency is 50%		
Range of attainable on-farm efficiency	55	75

### Determined from Calculations:

Water currently delivered to field	3750 AF
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### Cost:

\$/foot	x	feet	= Total Cost (\$)
2.5	x	70000	= 175000
3.35	x	70000	= 234500

### Water Saved:

AF delivered	x	Water Saved as %	= Water Saved (AF)
3750	x	5	= 188
3750	x	25	= 938

### Cost per AF

Cost	/	Water Saved (AF)	= Cost per AF (\$/AF)
175000	/	937.5	= 187
234500	/	187.5	= 1251