WATER TANK REPLACEMENT

CC-20

Council was reminded that, at the Shirtsleeve Council meeting on July 2, 1986, Staff presented alternatives for the design and location of the replacement water tank on the Parks and Recreation Corporation Yard site. Council directed staff to:

1) coordinate the location with a new Master Plan for the site; and

2) investigate maintenance and all applicable costs for the various design alternatives.

Preparation of the site Master Plan has begun. In order for the consultant to work on the new tank location, a design should be selected as the various alternatives occupy different amounts of space.

A report on life cycle costs of each alternative was prepared and circulated to City management staff and to the Council for its perusal. The total life cycle (60 years) costs are:

Alternative 3 - Standard Tank with Legs	$262,000
Alternative 1 - Standpipe	267,000
Alternative 5 - Hydropillar	286,000
Alternative 4 - Pedestal	298,000
Alternative 2 - Standpipe with Aesthetics	315,000

A major factor not included in the cost analysis is the "risk factor" from unauthorized entry/climbing. Alternatives 4 and 5 are the most secure.

Comments received from staff all favored Alternatives 4 and 5 for the following reasons:

- security/safety
- interior access
- occupy least space
- aesthetics

Written comments from the City's engineering consultant, Psomas and Associates, were received and presented for Council's perusal. They point out, and staff concurs, that the additional cost of Alternative 4 or 5 over Alternative 3 is relatively small when considered on a life cycle basis. The difference between Alternative 5 and Alternative 3, the least expensive, is $24,000 or $400 per year in 60 years. Since the cost of Alternative 5 is less than Alternative 4, staff recommends its selection.

Following discussion, on motion of Council Member Pinkerton, Olson second, Council approved the hydropillar/fluter column (Alternative 5) design concept of the replacement water tank.

CITY OF LODI

PUBLIC WORKS DEPARTMENT

COUNCIL COMMUNICATION

TO: City Council

FROM: City Manager

MEETING DATE: November 19, 1986

SUBJECT: Water Tank Replacement - Select Alternative

RECOMMENDED ACTION: That the City Council approve the hydropillar/fluted column (Alternative 5) design concept of the replacement water tank.

BACKGROUND INFORMATION: At the Shirtsleeve Council meeting on July 2, 1986, staff presented alternatives for the design and location of the replacement water tank on the Parks and Recreation Corporation Yard site. Council directed staff to:

1) coordinate the location with a new Master Plan for the site; and
2) investigate maintenance and all applicable costs for the various design alternatives.

Preparation of the site Master Plan has begun. In order for the consultant to work on the new tank location, a design should be selected as the various alternatives occupy different amounts of space.

A report on life cycle costs of each alternative was prepared and circulated to City management staff. A copy of the report is attached. The total life cycle (60 years) costs are:

Alternative 3 - Standard Tank with Legs	$262,000
Alternative 1 - Standpipe	267,000
Alternative 5 - Hydropillar	286,000
Alternative 4 - Pedestal	298,000
Alternative 2 - Standpipe with Aesthetics	315,000

A major factor not included in the cost analysis is the "risk factor" from unauthorized entry/climbing. As noted in Exhibit 2, Alternatives 4 and 5 are the most secure.

Comments received from staff all favored Alternatives 4 and 5 for the following reasons:

- security/safety
- interior access
- occupy least space
- aesthetics

APPROVED: Thos. A. Peterson
THOMAS A. PETERSON, City Manager

FILE NO.

CWATTANK/TXTW.02M

November 11, 1986

Written comments from our engineering consultant, Psomas and Associates, were received and are attached. They point out, and staff concurs, that the additional cost of Alternative 4 or 5 over Alternative 3 is relatively small when considered on a life cycle basis. The difference between Alternative 5 and Alternative 3, the least expensive, is $24,000 or $400 per year in 60 years. Since the cost of Alternative 5 is less than Alternative 4, staff recommends its selection.

FOR Jack L. Ronsko
Public Works Director

JLR/ma

Attachments

cc: Chief Civil Engineer
Water/Wastewater Superintendent
Parks & Recreation Director
Psomas & Associates

MEMORANDUM, City of Lodi, Public Works Department

TO: City Manager
Assistant City Manager (Risk Management Committee)
Parks & Recreation Director
LJR & Associates, Chuck Gormely
City Attorney
Finance Director
Community Development Director
Police Chief
Electrical Utility Director

FROM: Public Works Director

DATE: September 11, 1986

SUBJECT: Water Tank Alternatives

At a recent Council shirtsleeve meeting, the design alternatives of the replacement water tank were discussed. The Council asked for data on maintenance and other related costs, in addition to construction costs. They also asked about security and liability.

We have received some additional construction and maintenance cost data from our consulting engineers and have added additional information as shown on the attached cost analysis. The information summarized on Exhibit 1 is taken from the cost analysis.

We would appreciate receiving any comments you may have on our analysis by October 1st, in order to forward this material and a recommendation to the City Council as soon as possible. Additional background discussion on the cost analysis follows.

Item	Comment
First Cost	These are the median construction cost figures for the alternatives provided by Psomas & Associates.
Repainting	The cost shown is for one repainting. The tank will be repainted at least twice during its lifetime.
Ground Space	It was assumed all the ground space occupied by the tank would be lost for other purposes.
Land Value	We used $10.00 per square foot as the value for commercial land.
Cathodic Protection	This is an electrical system which prevents corrosion of the metal tank. The cost per year is for power.

Item	Comment
Security	The cost on the first three alternatives is for shields on the lower portions of the external ladders. The tank with legs (Alternative 3) has diagonal braces which could be climbed by most any determined individual.
Risk Factor	No dollar value has been assigned to the relative risk of unauthorized entry. It should be noted that all the designs would be an improvement over the existing tank.
Construction Space	The various designs will require different amounts of construction space. This space will be lost to Parks & Recreation. A value of 5% of the land value was assigned to this factor.
Present Worth of Future Costs/ Discount Rate	As indicated in Note 5 on Exhibit 2, we have estimated an interest rate. The effect of interest rate on the analysis is shown graphically for the tank alternatives on Exhibit 3. Note that the graph starts at $230,000, not 0.

Jack L. Ronsko
Public Works Director

Attachments

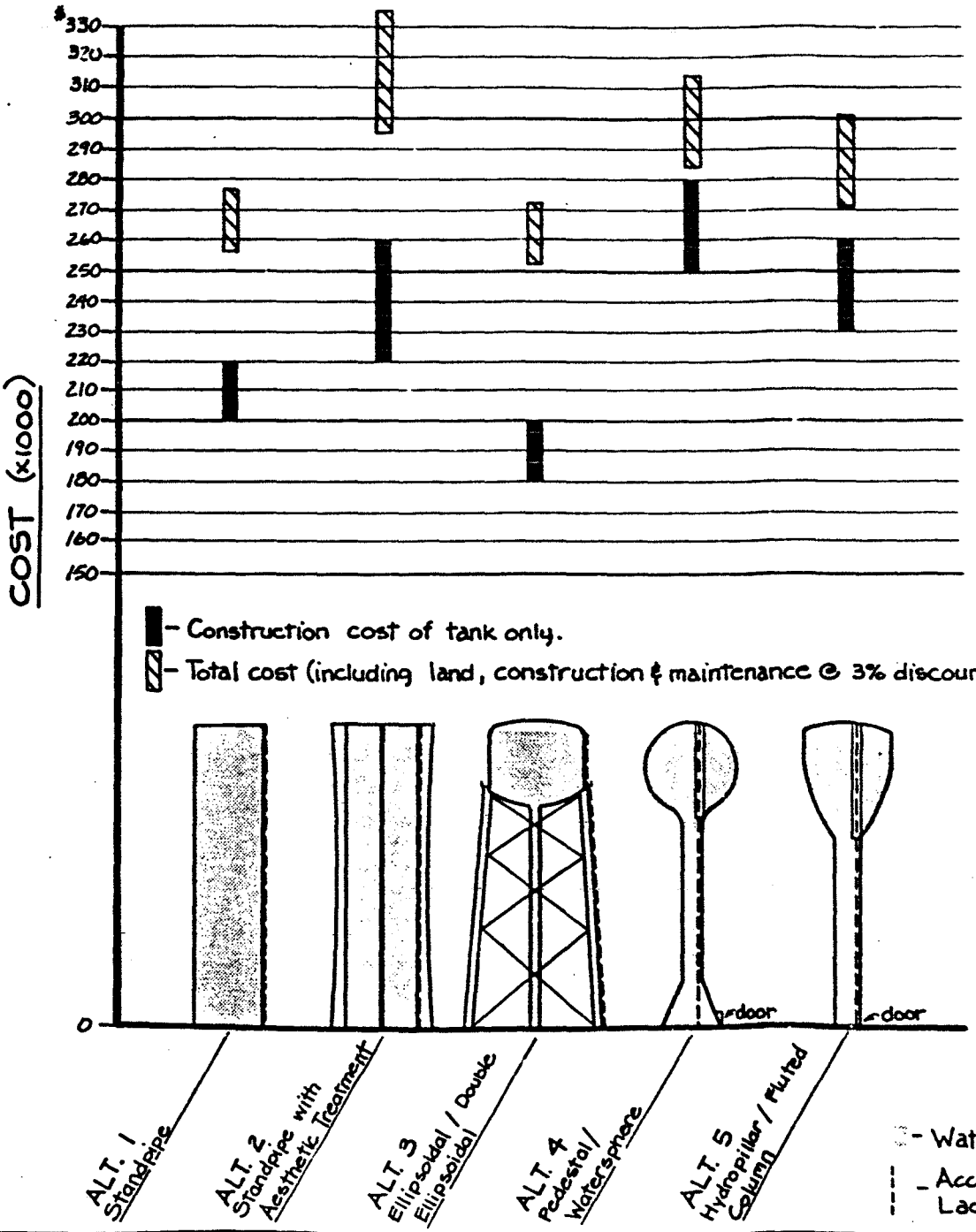
cc: Water Superintendent
Psomas & Associates, Harold Welborn

JLR/RCP/ma

CITY OF LODI

PUBLIC WORKS DEPARTMENT

RELATIVE COSTS
WATER TANK ALTERNATIVES



Dr R.S.K.	No.	Date	Revision	App.	Approved by	Exhibit 1
Ch.						
Date 9/86					Public Works Director RCE Date	

Exhibit 2

WATER TANK COST ANALYSIS

Tank Design Alternate:

Item	Alt. 1 Standpipe	Alt. 2 S'pipe w/ aesthetics	Alt. 3 Std. Tank w/legs	Alt. 4 Pedestal w/sphere	Alt. 5 Hydropillar /fluted col.
First Cost (Average)	$210,000	$250,000	$190,000	$265,000	$245,000
Repainting	30,000	34,000	20,000	18,000	28,000
Ground space	34' Dia.	36' Sq.	60' Sq.	22' Dia.	18' Dia.
Land value @ $10.00 per sq. ft.	9,000	13,000	36,000	4,000	3,000
Cathodic Prot.					
Initial	8,000	8,000	6,000	6,000	6,000
$/yr	350	350	175	175	175
Security	2000	2000	2000	0	0
Risk Factor (See Note 4)	0 medium	0 medium	0 med/high	0 low	0 low
Const. space					
Area - sq ft	5600	6525	11900	5600	5600
Value @ 5% of Land Value	3,000	3,000	6,000	3,000	3,000
Tot First Cost	**$232,000**	**$276,000**	**$240,000**	**$278,000**	**$257,000**
Pres. Worth of future costs @ disc. rate = 3.0% (See note 5)	**$35,000**	**$39,000**	**$22,000**	**$20,000**	**$29,000**
Total Cost	**$267,000**	**$315,000**	**$262,000**	**$298,000**	**$286,000**

Notes:

1. Assumed 60 year life with two repaintings.
2. Construction space includes area of tank plus 100 feet on one side.
3. Security on first three alternates is cost to secure exterior ladder. Ability to totally secure tank with legs is questionable. Last two alternates have interior ladders behind locked doors.
4. Risk cost is difficult to estimate with any degree of confidence. Risk of unauthorized persons climbing the tank is indicated relative to the most secure designs (Alts. 4 & 5).
5. Future expenses are given in present day costs, thus the discount rate is a long term estimate of the percentage points interest rates on savings will exceed the rate of inflation.

Water Tank Cost Analysis

Incl. Land, Const. & Maintenance Costs

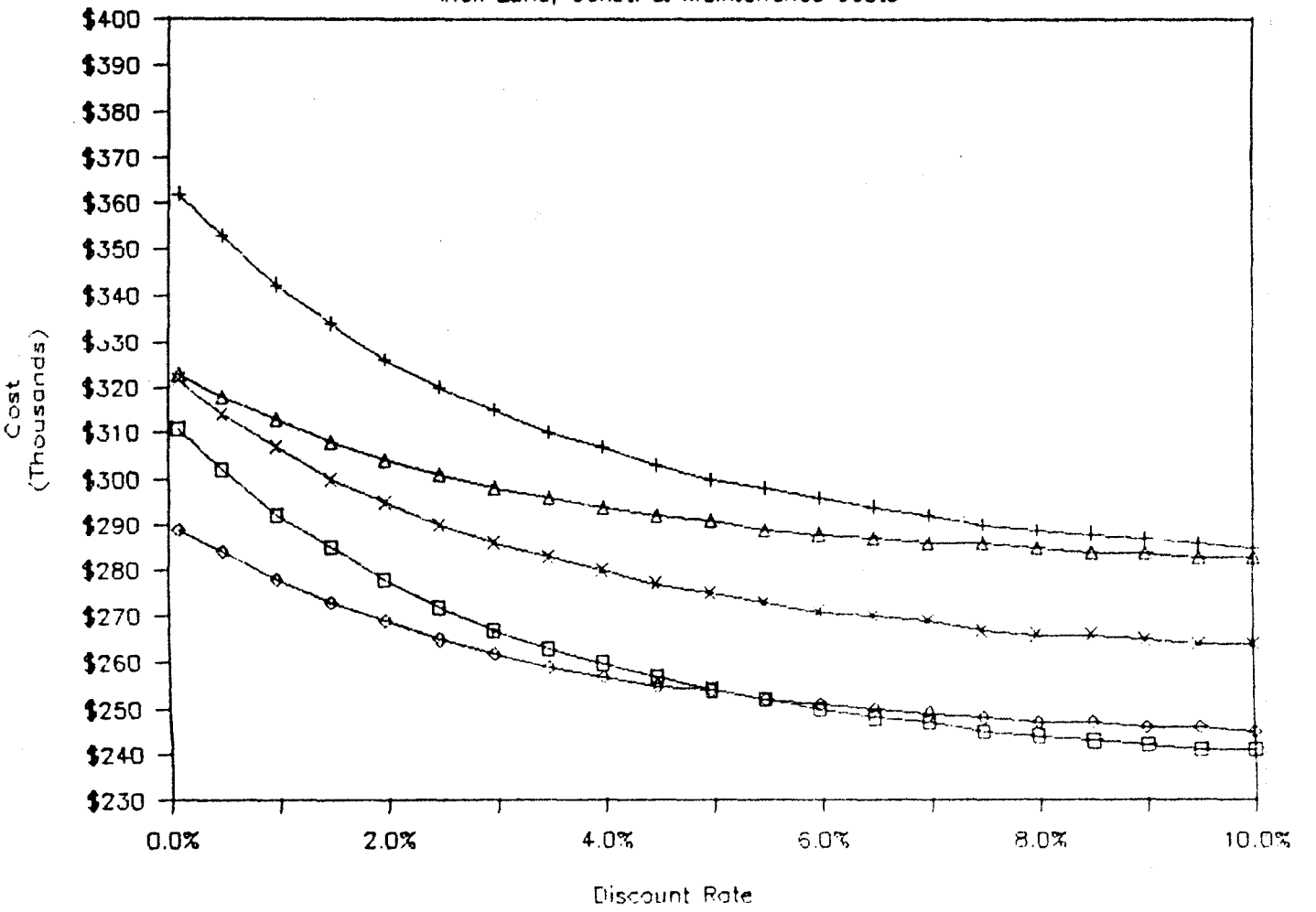


Exhibit 3

PSOMAS & ASSOCIATES

RECEIVED

SEP 26 1986

CITY OF LODI
PUBLIC WORKS DEPARTMENT

LOD 01 03

September 25, 1986

City of Lodi
Public Works Department
221 West Pine Street
Lodi, CA 95241

ATTN: Mr. Jack Ronsko, Director

RE: ELEVATED WATER TANK ALTERNATIVES

Gentlemen:

I have reviewed the "Water Tank Alternatives" memorandum dated September 11, 1986. I concur with the information presented. In addition, I would like to supplement the information sent to you previously by adding the following comments and recommendations.

1. During our research of tank manufacturers and tank costs it was evident that the major suppliers of elevated tanks were eager to supply information and experience about the "watersphere" type tank and somewhat reluctant to endorse the use of the "standpipe" type tank. They cited design uncertainties with the tank and foundation related to the Zone 3 earthquake forces.

   We believe that good competitive bids are more assured for Alt. 3, 4, and 5 Tanks than would be the case with the Alt. 1 or 2 Tanks.

2. We would recommend a tank alternative that has the least future cost due to the uncertainty or risk of those costs being greater than anticipated. This factor would favor Alt. 3 and 4.

3. While serving a vital function in the operation of the water distribution system, one of the most obvious impacts of the elevated tank will be long term visual. It will become a landmark. We believe that the modern designs of Alt. 4 and 5 are a definite asset in this area.

4. It is difficult to put a dollar value on the security and liability aspects of this kind of public facility. We feel this is a very important consideration. Although not so important to dictate a decision, it strongly favors the alternatives that do not have external ladders.

5. Considering the factors mentioned above and the relatively small difference in total life-cycle cost, our recommendation to the City would be for the Watersphere (Alt. 4) or Hydropillar (Alt. 5) design style structures.

If you, your staff, or members of the Council would care to discuss our conclusions we would be glad to meet with you or provide additional information.

Sincerely,

Psomas & Associates of Sacramento

Harold L. Welborn

HLW/law:10-34