



CITY OF OXNARD

MEMORANDUM

SEPTEMBER 30, 1969

To: PAUL WOLVEN - CITY MANAGER

From: JAMES J. MIMA - ASSISTANT PUBLIC WORKS DIRECTOR

SUBJECT: QUALITY WATER FOR OXNARD

ON AUGUST 5, 1969, THE CITY COUNCIL RAISED SOME QUESTIONS ABOUT THE QUALITY OF WATER BEING SERVED IN THE CITY. THIS OFFICE WAS DIRECTED TO SUBMIT VARIOUS ALTERNATIVES FOR SERVING AN IMPROVED QUALITY OF WATER ALONG WITH THE COSTS FOR EACH OF THESE ALTERNATIVES. THIS REQUEST BY THE COUNCIL CAME AT A TIME WHEN THE WATER DEPARTMENT WAS JUST COMPILING THE RETURNS FROM A WATER QUALITY SURVEY; THEREFORE, WE ARE ABLE TO INCLUDE THESE RESULTS IN OUR REPORT.

THIS SURVEY WAS PROVIDED FOR IN OUR 1968-1969 BUDGET BUT IT DID NOT GET UNDERWAY UNTIL DECEMBER OF 1968 WHEN WE ORDERED 2000 NUMBERED POSTCARDS. THE NUMBERING WAS APPLIED SO THAT GROUPS OF CARDS SENT TO DIFFERENT AREAS OF THE CITY COULD BE IDENTIFIED GEOGRAPHICALLY WHEN RETURNED. IN THIS WAY WE COULD DETERMINE IF THOSE PERSONS LIVING IN HIGHER INCOME NEIGHBORHOODS EXPRESSED A DIFFERENT PREFERENCE THAN THOSE LIVING IN A LOWER INCOME NEIGHBORHOOD. A XEROX COPY OF THE SURVEY CARD IS ATTACHED AS APPENDIX I.

SINCE THE SURVEY WAS BEGINNING IN JANUARY OF 1969 AND THE QUESTIONNAIRE MADE REFERENCE TO INCREASED WATER COSTS, WE WERE AFRAID THE CHRISTMAS SHOPPING BILLS COMING DUE AT THAT TIME MIGHT AFFECT THE RESULTS. WE DECIDED TO EXTEND THE TIME OF THE SURVEY BUT THIS EXTENSION CARRIED US TO THE INCOME TAX DUE DATE AND PROMPTED A FURTHER EXTENSION. AS A RESULT THE SURVEY WAS CARRIED OUT OVER A SIX MONTH PERIOD OF TIME, FROM JANUARY 30 THROUGH JULY 31. REPLIES WERE RECEIVED AS LATE AS AUGUST 11, 1969.

WE ATTEMPTED TO KEEP THE CARDS AS SIMPLE AS POSSIBLE IN ORDER TO ELICIT A GOOD RESPONSE. IN A TRIAL RUN OF CITY HALL EMPLOYEES, SO MANY QUESTIONS WERE ASKED ABOUT THE PROPOSED QUALITY THAT WE FOUND IT IMPORTANT TO ADD COMMENTS ABOUT HARDNESS AND DISSOLVED SOLIDS. WHILE THIS ASSISTED SOME PEOPLE IN RENDERING THEIR DECISION, WE BELIEVE IT CONFUSED OTHERS. FOR EXAMPLE, IN THE EARLY PERIOD OF THE SURVEY WE RECEIVED COMMENTS TO THE EFFECT THAT AN IMPROVED QUALITY WOULD BE A WASTE OF MONEY SINCE PEOPLE HAD ALREADY PURCHASED WATER SOFTENERS. THIS CERTAINLY INDICATES A LACK OF UNDERSTANDING ABOUT THE BENEFITS OF BETTER WATER. THE SURVEY CARD WAS MADE UP OF

TWO PARTS WITH PERFORATIONS PROVIDED FOR EASY SEPARATION. THE FIRST PART CARRIED A SHORT EXPLANATION OF THE SURVEY AND OF THE TERMS USED ON THE CARD. THE SECOND PART PROVIDED FOR FOUR CHOICES OF WATER QUALITY. THESE CHOICES RANGED FROM CONTINUING THE SAME WATER QUALITY AS IS BEING DELIVERED TODAY TO DELIVERING PURE, UNBLENDED, IMPORTED WATER.

IF OUR CUSTOMERS EXPRESSED A STRONG PREFERENCE FOR PURE IMPORTED WATER AND THE COUNCIL VOTED TO SUPPLY THIS, WE ESTIMATED IT WOULD TAKE MORE THAN TWO YEARS TO CONSTRUCT ALL THE FACILITIES NECESSARY TO PROVIDE THIS WATER. BY THIS TIME, NORTHERN CALIFORNIA WATER WOULD BE AVAILABLE; THEREFORE, WE BASED OUR SURVEY CALCULATIONS ON THE QUALITY EXPECTED FROM THAT SOURCE. THE INFORMATION ON THE HARDNESS AND TOTAL DISSOLVED SOLID CONTENT OF NORTHERN WATER WAS OBTAINED FROM THE STATE DEPARTMENT OF WATER RESOURCES. THIS IMPORT WATER IS EXPECTED TO RANGE FROM 70 PPM (4 GPG) TO 150 PPM (9 GPG) HARDNESS AND HAVE A TOTAL DISSOLVED SOLID CONTENT OF 220 PPM.

IN CONDUCTING THE SURVEY WE DECIDED TO PICK STREETS AT RANDOM THROUGHOUT THE CITY AND AT THE SAME TIME COVER ALL SECTIONS UNIFORMLY. WE WERE CONCERNED ABOUT ACCIDENTALLY SLANTING THE SURVEY RESULTS SO WE WERE CAREFUL TO AVOID SENDING EXCESSIVE NUMBERS OF CARDS TO NORTH OR SOUTH OXNARD, HIGH OR LOW INCOME NEIGHBORHOODS, OR AREAS RECEIVING BLENDED OR UNBLENDED WATER. A MAP SHOWING THE STREETS THAT WERE INCLUDED IN THE SURVEY IS ATTACHED AS APPENDIX II. TO SATISFY OUR CURIOSITY, WE DID SEND CARDS TO A LIST OF TWENTY-FOUR PEOPLE WHO HAD RECENTLY COMPLAINED ABOUT HIGH BILLS. SINCE THE QUESTIONNAIRE PROVIDED FOR BETTER QUALITY WATER BUT AT AN EVEN HIGHER COST, WE WONDERED IF THESE CUSTOMERS WOULD BE UNANIMOUSLY OPPOSED TO THE HIGHER COSTS. WE RECEIVED SEVEN REPLIES FROM THE TWENTY-FOUR CARDS SENT AND FOUND THE RESULTS COMPARED VERY FAVORABLY TO THE REST OF THE SURVEY.

WE DID NOT EXTEND OUR SURVEY TO OUR INDUSTRIAL CUSTOMERS. FROM TIME TO TIME DURING THE PAST NINE MONTHS WE HAVE HAD OCCASION TO TALK TO SOME OF THESE CUSTOMERS ABOUT THE SURVEY AND WE HAVE FOUND THEM UNANIMOUSLY IN FAVOR OF THE BEST WATER QUALITY POSSIBLE. THIS IS PROBABLY DUE TO THE FACT THAT VERY FREQUENTLY A BETTER QUALITY OF WATER WOULD REDUCE THE COST OF THEIR OPERATION.

WHEN WE WERE ABOUT 60% THROUGH OUR SURVEY, WE CONCLUDED THAT THE POSTCARD INFORMATION WAS CONFUSING. WE DECIDED TO SUPPLEMENT THE CARD INFORMATION WITH A LETTER GIVING A MORE DETAILED EXPLANATION OF THE PROPOSED WATER QUALITY. A COPY OF THIS LETTER IS ATTACHED AS APPENDIX III.

AT ABOUT THIS SAME TIME WE WONDERED IF THE PASSING OF THE CHRISTMAS BILL SEASON AND THE TAX PAYMENT PERIOD WOULD AFFECT THE SURVEY RESULTS. THE BEST WAY TO DETERMINE IF OPINIONS VARIED SEASONALLY WOULD BE TO SURVEY AREAS ADJACENT TO THOSE PREVIOUSLY SURVEYED. ON THE SURVEY TALLY SHEET (APPENDIX IV), THE STREETS RECEIVING THE LETTER AND THE COMPARABLE CONTROL AREA ARE DESIGNATED BY THE LETTER "A". FOR EXAMPLE, ZONE NO. 28 WAS SENT A LETTER AND THE ADJACENT CONTROL ZONE IS NO. 1.

THE ATTACHED WATER QUALITY SURVEY TALLY SHEET (APPENDIX IV) CONTAINS THE RESULTS OF THE SURVEY. ZONE NUMBER 13 WAS A DEPARTURE

FROM OUR RANDOM SAMPLING SINCE WE WERE CURIOUS AS TO HOW HIGH BILL COMPLAINTS WOULD RESPOND. ZONE NUMBER 28 REPRESENTS THE REPEAT ORDER AND THE POINT AT WHICH THE LETTER WAS INCLUDED WITH THE POSTCARD. ITEM "E" ON THE SURVEY CARD PROVIDED SPACE FOR COMMENTS THE CUSTOMER MIGHT WISH TO ADD TO HIS SELECTION. SOME OF THESE REMARKS IN THEIR ORDER OF FREQUENCY ARE AS FOLLOWS:

1. EMPHASIS ON THEIR SELECTION.
2. INTEREST IN ELIMINATING THE NEED FOR WATER SOFTENERS.
3. DISAPPOINTMENT IN NOT RECEIVING HIGHER QUALITY WATER AFTER JOINING MWD AND AFTER THE BOND ISSUES.
4. FEEL THEY SHOULD HAVE BETTER QUALITY WATER AT NO ADDITIONAL COST.
5. REQUEST FOR FLUORIDE TO BE ADDED.

THERE ARE ITEMS OF SPECIAL INTEREST THAT ARE AVAILABLE FROM THIS SURVEY AND THESE ARE SHOWN BELOW.

RESPONSE

- I. GENERAL - OF THE 2000 CARDS MAILED, 642 OR 32% WERE RETURNED. BEFORE THE LETTER THE RESPONSE WAS 33%, AFTER THE LETTER, 30%.
- II. BY AREAS - THE HIGHEST RESPONSE WAS FROM RODERICK AVENUE (53%). THE LOWEST RESPONSE WAS FROM ALPINE AND MCKINLEY STREETS (3%).

OPTIONS DESIRED

I. GENERAL

A - 46.7%	
B - 6.4%	
C - 11.8%	VOTING FOR IMPROVED WATER 53.3%
D - 33.6%	
E - 1.4%	

II. BEFORE LETTER AND PRIOR TO JUNE

A - 52.3%	
B - 6.0%	
C - 11.7%	VOTING FOR IMPROVED WATER 47.7%
D - 29.1%	
E - 1.0%	

III. AFTER LETTER AND AFTER MAY

A - 36.3%	
B - 7.2%	
C - 12.1%	VOTING FOR IMPROVED WATER 63.7%
D - 42.2%	
E - 2.2%	

APPARENTLY THE LETTER SUPPLEMENTING THE CARD HAD SOME IMPACT ON THE PREFERENCES EXPRESSED. IT IS OBVIOUS THAT THE BETTER INFORMED THE CUSTOMER IS THE MORE LIKELY HE IS TO VOTE FOR IMPROVED WATER. THOSE CUSTOMERS WHO WERE INFORMED VERBALLY AND HAD THEIR QUESTIONS ANSWERED WERE ALMOST UNANIMOUS IN THEIR PREFERENCE FOR BETTER QUALITY WATER.

WE COULD DISCERN NO PATTERN DUE TO GEOGRAPHICAL LOCATION, RELATIVE INCOME, OR CHRONOLOGICAL QUESTIONING. PROBABLY THE MOST SIGNIFICANT PART OF THE SURVEY IS THE RESULT OBTAINED AFTER THE LETTER WAS INCLUDED. WE THEN HAD ALMOST TWO-THIRDS OF THE RESPONDENTS REQUESTING AN IMPROVED SUPPLY WITH THE LARGEST SINGLE VOTE BEING CAST FOR PURE IMPORTED WATER.

PRESENT OPERATIONS

IN 1962 THE MASTER PLAN FOR OXNARD'S MUNICIPAL WATER SYSTEM WAS ADOPTED BY THE CITY COUNCIL. THE PLAN PROPOSED, AMONG OTHER THINGS, THAT WE BLEND IMPORT WATER WITH OXNARD AQUIFER WATER AND WITH UWCD WATER. WATER FROM THE FOX CANYON AQUIFER WAS CONSIDERED TO BE OF ACCEPTABLE QUALITY AND NO BLENDING WAS PROPOSED. A COMPARISON OF THE WATER QUALITY FROM VARIOUS SOURCES IS SHOWN IN THE FOLLOWING TABLE.

	<u>TOTAL DISSOLVED SOLIDS IN PPM</u>	<u>TOTAL HARDNESS IN PPM</u>
1. OXNARD AQUIFER	1200	700
2. FOX CANYON AQUIFER	865	500
3. UWCD (A BLEND OF ABOVE TWO)	1000	600
4. COLORADO RIVER	770	127
5. NORTHERN CALIFORNIA	220	70

THESE FIGURES REPRESENT AVERAGES AND SOME VARIATION CAN BE EXPECTED OVER A PERIOD OF TIME. THE TOTAL DISSOLVED SOLIDS CONTENT OF THE WATER HAS BEEN THE ONLY THING CONSIDERED IN DETERMINING WHETHER WE WERE ADHERING TO OUR POLICY.

THE GOAL THAT WAS SET FORTH IN THE MASTER PLAN AND THE ONE WE HAVE BEEN FOLLOWING HAS BEEN TO DELIVER A WATER THAT WOULD NOT EXCEED 1000 PPM OF DISSOLVED MINERALS. THE TROUBLE WITH THIS POLICY IS THE WIDE VARIATION OF HARDNESS RESULTS IN A WIDE VARIATION OF QUALITY. SOME AREAS OF THE CITY HAVE RECEIVED A BLENDED WATER OF 360 PPM HARDNESS, OTHER AREAS RECEIVED FOX CANYON WATER WITH 470 PPM OF HARDNESS, AND STILL OTHER AREAS HAVE RECEIVED UWCD WATER WITH 600 PPM HARDNESS. ALL OF THESE WATERS MET OUR STANDARD OF HAVING LESS THAN 1000 PPM TOTAL MINERALS. THE CALIFORNIA STATE HEALTH DEPARTMENT STANDARDS ARE ATTACHED AS APPENDIX V. THERE HAVE BEEN A FEW TIMES WHEN OUR WATER QUALITY FELL BELOW THESE STANDARDS BUT FOR THE MOST PART WE HAVE BEEN ABLE TO ACHIEVE THIS GOAL. IF THE 1000 PPM

REQUIREMENT IS MET, THE WATER PURVEYOR IS ENTITLED TO A PERMANENT PERMIT FROM THE STATE. IF THE MINERAL CONTENT EXCEEDS 1000 PPM THE PURVEYOR IS GIVEN A TEMPORARY PERMIT TO OPERATE PROVIDING HE DILIGENTLY PURSUES A PLAN TO IMPROVE THE SUPPLY. THE MORE RIGID REQUIREMENTS OF THE UNITED STATES HEALTH DEPARTMENT REQUIRE A WATER SUPPLY TO NOT EXCEED 500 PPM OF TOTAL DISSOLVED SOLIDS.

SEVERAL THINGS HAVE OCCURRED IN THE PAST THAT PREVENTED US FROM MEETING OUR QUALITY STANDARDS. OUR SUPPLY FROM UNITED IS USUALLY OF UNIFORM QUALITY BUT OCCASIONALLY IT WILL EXCEED 1000 PPM TDS. THIS HAS OCCURRED WHEN FARMS ADJACENT TO THE EL RIO PUMPING PLANT APPLIED HEAVY FEEDINGS OF FERTILIZER. THIS GRADUALLY LEACHED INTO THE GROUND AND MINGLED WITH THE WATER IN THE BASIN. WE HAVE CALLED THIS PROBLEM TO UNITED'S ATTENTION AND THEY HAVE BEEN COOPERATIVE IN TRYING TO ALLEVIATE THE SITUATION. DURING THE PERIODS OF TIME THAT THE O-H LINE IS DELIVERING DEGRADED WATER, WE ARE UNABLE TO SWITCH TO OUR BLENDED SUPPLY BECAUSE OF A LACK OF TRANSMISSION MAINS.

WE HAVE BEEN TRYING TO INSTALL ALL THE NECESSARY TRANSMISSION MAINS SINCE OUR MASTER PLAN WAS ADOPTED YEARS AGO. SOME OF THE FACILITIES WE HAVE CONSTRUCTED FOR THE PURPOSE OF IMPLEMENTING OUR PLAN HAVE BEEN:

1. MWD IMPORT LINE FROM SPRINGVILLE HILL TO OUR PUMPING PLANT.
2. VENTURA ROAD TRANSMISSION MAIN.
3. PUMPING PLANT MODIFICATION AND BLENDING STATION.
4. WOOLEY ROAD MAIN FROM VENTURA ROAD TO "J" STREET.
5. WOOLEY ROAD MAIN FROM RICHMOND TO DONLON.
6. MT. VIEW MAIN FROM RICHMOND TO ROSE.
7. OCEAN VIEW LINE IN HUENEME ROAD.
8. INDUSTRIAL LINE FROM FIFTH STREET TO ORMOND BEACH.
9. "A" STREET MAIN FROM THIRD STREET TO SIXTH STREET.

FOR A SHORT TIME AFTER A RATE INCREASE, WE ARE ABLE TO MAINTAIN OUR CAPITAL IMPROVEMENT PROGRAM. AFTER TWO OR THREE YEARS HOWEVER, THE COSTS OF OPERATION RISE TO SUCH AN EXTENT THAT OUR CAPITAL IMPROVEMENT FUNDS ARE DEPLETED AND WE FALL BEHIND IN OUR SCHEDULE.

PROPOSALS

IF WE ARE TO ASSURE OUR CUSTOMERS OF A GOOD QUALITY OF WATER AND A UNIFORMITY OF SUPPLY, WE MUST BUILD CERTAIN FACILITIES. THESE FACILITIES WILL BE NECESSARY NO MATTER WHICH OF THE VARIOUS ALTERNATIVES ARE CHOSEN BY THE COUNCIL. BESIDE THESE COMMON FACILITIES THERE ARE CERTAIN OTHER COSTS THAT WILL BE REQUIRED, AND THESE WILL VARY WITH EACH ALTERNATIVE. THE COST OF THE FACILITIES THAT MUST BE BUILT IN ORDER TO DELIVER A UNIFORM QUALITY OF WATER TO ALL PARTS OF THE CITY ARE SHOWN ON THE SUMMARY SHEET.

ALTERNATIVE I

THIS ALTERNATIVE WOULD SUPPLY A BLENDED WATER OF A FAIRLY UNIFORM QUALITY THROUGHOUT THE CITY. THE BLEND WOULD BE ONE PART OF IMPORT

WATER TO ONE PART OF LOCAL WATER. THIS QUALITY WOULD VARY BECAUSE THE LOCAL WATER WOULD BE EITHER OXNARD AQUIFER WATER OR Q-H LINE WATER. THE TOTAL DISSOLVED MINERAL CONTENT OF THIS BLENDED WATER WOULD RANGE FROM 600 TO 700 PARTS PER MILLION. THE TOTAL HARDNESS WOULD BE ABOUT 360 PPM.

THE TOTAL BUDGET REQUIREMENT FOR THE PURCHASE OF WATER WOULD BE \$465,000. SINCE OUR CURRENT BUDGET PROVIDES FOR WATER COSTS OF \$302,500 WE WOULD NEED AN ADDITIONAL AMOUNT OF \$162,500 TO SUPPLY ALTERNATIVE I. WE WOULD BE REQUIRED TO PAY A PENALTY OF \$18,200 TO UNITED WITH THIS PROPOSAL.

ALTERNATIVE II

THIS PROPOSAL PROVIDES FOR A BLEND OF MWD AND LOCAL WATER ON A TWO TO ONE RATIO. HERE AGAIN WE WOULD UTILIZE BOTH OXNARD AQUIFER AND UWCD WATER TO BLEND WITH THE IMPORT WATER. THE RESULTING BLEND WOULD RANGE FROM 480 PPM TO 547 PPM IN TOTAL MINERALS AND HAVE 263 PPM HARDNESS.

THE WATER COSTS TO MEET THIS BLEND WOULD BE APPROXIMATELY \$575,200. SINCE OUR CURRENT BUDGET PROVIDES FOR WATER COSTS OF \$302,500, WE WOULD NEED AN ADDITIONAL AMOUNT OF \$272,700 TO SUPPLY ALTERNATIVE II. THE PENALTY PAYMENT TO UNITED WOULD BE \$25,400.

ALTERNATIVE III

THIS PROPOSAL PROVIDES FOR A BLEND OF MWD AND LOCAL WATER ON A 3 TO 1 RATIO. NO UNITED WATER WOULD BE USED SO OUR BLENDED SUPPLY WOULD BE UNIFORM THROUGHOUT THE CITY. THE TOTAL DISSOLVED SOLIDS CONTENT OF THIS BLEND WOULD BE 465 PPM AND THE TOTAL HARDNESS 215 PPM.

THE WATER COSTS TO ACHIEVE THIS BLEND WOULD BE \$622,500 OR \$320,000 MORE THAN OUR CURRENT BUDGET OF \$302,500. THE PENALTY PAYMENT TO UNITED WOULD BE \$39,900.

ALTERNATIVE IV

THIS PROPOSAL WOULD PROVIDE A 7 TO 1 BLEND OF MWD WATER AND OXNARD AQUIFER WATER. NO UNITED WATER WOULD BE USED; THEREFORE, OUR PENALTY WOULD BE \$39,900 PER YEAR. THE TOTAL DISSOLVED SOLIDS CONTENT OF THIS BLEND WOULD BE 343 PPM AND THE TOTAL HARDNESS WOULD BE 143 PPM. THE WATER COST TO ACHIEVE THIS BLEND WOULD BE \$705,000. THIS WOULD BE \$402,500 MORE THAN OUR CURRENT ALLOCATION OF \$302,500.

ALTERNATIVE V

THIS PROPOSAL WOULD SUPPLY PURE, UNBLENDED, MWD WATER THROUGHOUT THE CITY. FULL PAYMENT OF \$39,900 PER YEAR WOULD BE MADE TO UNITED. THE TURNOUTS FROM THE Q-H LINE AND OUR WELLS WOULD BE KEPT IN STANDBY SERVICE TO PROTECT US FROM ANY EMERGENCY INTERRUPTION OF SERVICE.

THE TOTAL DISSOLVED SOLIDS CONTENT OF THIS SUPPLY WOULD BE 220 PPM BASED ON A 10 YEAR AVERAGE. DURING PROLONGED DRY SPELLS THE TDS MIGHT GET AS HIGH AS 440 PPM BUT THIS IS EXPECTED TO BE FOR ONLY SHORT PERIODS OF TIME. THE HARDNESS OF THIS WATER WOULD BE ABOUT 70 PPM. THIS WATER WOULD PROBABLY ELIMINATE THE USE OF WATER SOFTENERS THROUGHOUT OXNARD. THE COST OF THIS UNBLENDED WATER WOULD BE \$780,500 OR \$478,000 MORE THAN OUR CURRENT BUDGET OF \$302,500.

CONCLUSION

THE FOLLOWING PAGE CONTAINS A SUMMARY OF THE FEW ALTERNATIVES DESCRIBED HERE, BUT KEEP IN MIND THAT THERE IS AN INFINITE VARIETY OF ALTERNATIVES AVAILABLE, DEPENDING ON THE QUALITY DESIRED. THE FINAL CHOICE SHOULD BE MADE ON THE QUALITY DESIRED AND NOT ON ANY RATIO OF BLENDING. WATER QUALITY WILL CHANGE WITH TIME; THEREFORE, A FIXED BLENDING RATIO WILL NOT CONTINUE ANY PRESENTLY ADOPTED QUALITY. WATER THAT WOULD MEET UNITED STATES PUBLIC HEALTH STANDARDS WOULD APPEAR TO BE A GOOD COMPROMISE BETWEEN THOSE THAT WISH THE BEST QUALITY POSSIBLE AND THOSE THAT PREFER NO CHANGE. WE ARE FIRMLY CONVINCED THAT IF COUNCIL CHOOSES TO PROVIDE AN IMPROVED QUALITY OF WATER, NO MATTER WHAT QUALITY IS FINALLY CHOSEN, THE INCREASED COSTS TO OUR CUSTOMERS WILL BE MORE THAN OFFSET BY SAVINGS AS POINTED OUT IN OUR SURVEY LETTER.

RESPECTFULLY SUBMITTED,


JAMES J. MIMA
ASSISTANT PUBLIC WORKS DIRECTOR

SUMMARY SHEET

ALTERNATIVE	BLEND	T.D.S. PPM	HARDNESS PPM	TRANSMISSION MAIN COSTS	ADDITIONAL WATER COSTS	MONTHLY INCREASE PER CUSTOMER
I	1:1	710	360	\$544,000	\$162,500	\$0.90
II	2:1	547	263	544,000	272,700	1.50
III	3:1	465	215	401,000	320,000	1.80
IV	7:1	343	143	401,000	402,000	2.25
V	MWD	220	70	401,000	478,000	2.65

NOTE: THE TRANSMISSION MAIN COSTS FOR ALTERNATIVES I AND II UTILIZE UNITED WATER AND THEREFORE REQUIRE ADDITIONAL MAINS AND A BLENDING STATION. ALTERNATES III AND IV DO NOT UTILIZE UNITED WATER FOR THE PRESENT BUT MAY IN THE FUTURE.

APPENDIX I

NO 1987

- A. Keep the price and the quality of our water the same as it is now. The hardness varies from 23 gpg to 34 gpg and the mineral content is approx. 1000 TDS.
- B. I prefer a slightly better quality water. This will add no more than \$2.00 per month to my bill. The hardness will be approximately 18 gpg and the mineral content will be 560 ppm.
- C. I prefer a much better quality water. This will add no more than \$3.00 per month to my bill. The hardness will be approximately 13 gpg and the mineral content will be 440 ppm.
- D. I prefer the best quality of water available. This will add about \$4.00 per month to my bill. The hardness will be approximately 7 gpg and the mineral content will be 250 ppm.
- E. Other (please specify) _____

Portion of Postcard Returned to Water Department

Dear Water Customer,

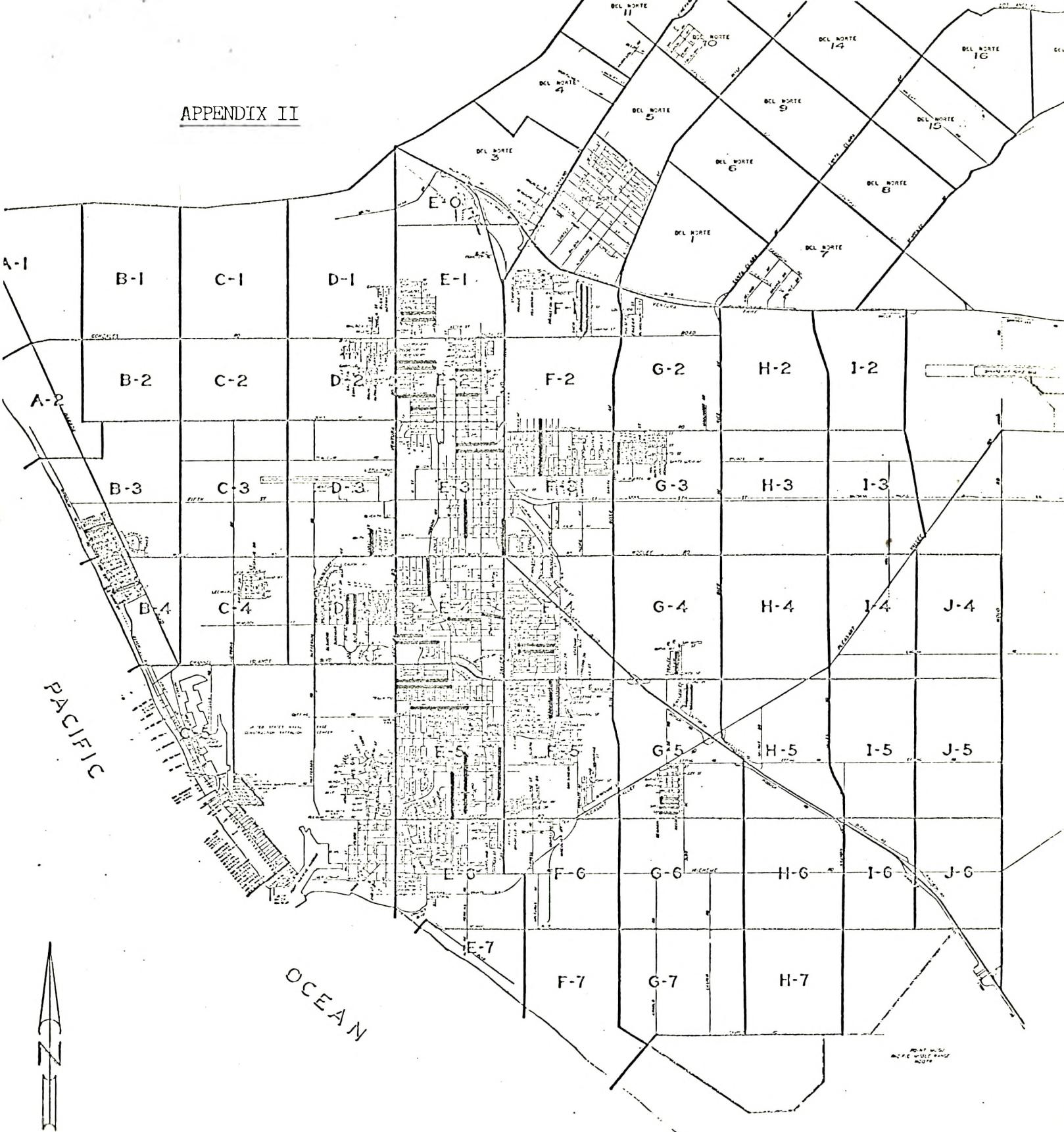
Your present water supply is a blend of high cost, good quality, imported water and low cost, poor quality, local water. This survey is to determine if you wish us to improve the quality by adjusting the blend. We can supply water that would taste better, be softer, have less minerals, and cause less corrosion, but this water would cost more.

This better water might enable you to eliminate bottled water and softening. If you continued to soften, your costs would be reduced with the better quality water.

The quality below is in parts per million of dissolved minerals (TDS) and grains per gallon of hardness (gpg). Please indicate your preference, detach the card, and return it to the Water Department. No postage stamp is necessary. The results of this survey will be made public in the near future. If you have any questions, please call 486-2601.

Portion of Postcard Retained by Customer

APPENDIX II





CITY OF OXNARD

CALIFORNIA

Dear Customer:

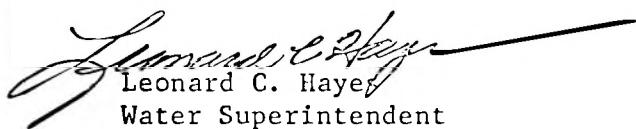
Your Water Department is conducting a survey to determine your feelings about a better quality water. There is a very great expense you are now bearing due to corrosion and wear on your plumbing, water heaters, washing machines, garbage grinders, and even on clothing. The United States Department of the Interior Report No. 260 points out some of the savings that can be realized by improving a municipal water supply.

For example, highly mineralized, hard water costs the average customer \$9.80 per month in decreased life of his facilities and in direct costs through his water supplier. If he uses bottled water, he spends an additional \$3.00 per month. Extra soap and detergent use adds another \$9.00 per month to his costs for a total of \$21.80. If he already owns a softener, he can save about \$6.00 per month in its operation. You are an average customer if your bi-monthly water bill averages \$10.00. If your bills are higher than \$10.00, your savings will be greater.

The additional cost of highly mineralized water for industry and commercial businesses is eventually passed on to the customer but this is not considered here. Considering only the direct costs to the average customer, it is possible to spend more money for a better quality water and save up to \$21.80 per month. The decision is yours.

Please fill in the enclosed survey card and mail it in today.

Sincerely yours,


Leonard C. Hayes
Water Superintendent

JJM:cae

Enclosure

APPENDIX IV

WATER QUALITY SURVEY TALLY SHEET - 1969

Zone No.	Location	No. Sent	Date Sent	Date Rec'd.		Response					% of Total Sent Received	Percentage of Total Rec'd						
				From	To	A	B	C	D	E		A	B	C	D	E		
1	1200 - 1400 Bluebell Street	30	1-30	2-3	2-25	6	-	2	5	-	13	43.3	46.2	-	15.4	38.5	-	
2	500 - 1000 Bryce Canyon Avenue	35	2-3	2-5	2-14	4	1	1	3	-	9	25.7	44.4	11.1	11.1	33.3	-	
3	100 - 450 W. Fir Street	40	2-5	2-10	2-28	8	-	-	3	-	11	27.5	72.7	-	-	27.3	-	
4	North Portion Oxnard Shores	39	2-13	2-19	4-17	7	-	2	9	1	19	48.7	36.8	-	10.5	47.4	5.3	
5	1300 - 1500 Huntswood Way	30	2-14	2-17	3-14	3	2	2	3	-	10	33.3	30.0	20.0	20.0	30.0	-	
6	700 - 1000 S. Oxnard Blvd.	35	2-18	2-24	3-6	9	-	-	3	1	13	37.1	69.2	-	-	23.1	7.7	
7	800 - 1200 Roderick Avenue	47	2-26	3-3	3-26	10	2	6	7	-	25	53.2	40.0	8.0	24.0	28.0	-	
8	400 - 660 Fernwood Drive	23	2-27	3-3	3-27	3	1	1	5	1	11	47.8	27.3	9.1	9.1	45.5	9.1	
9	4000 - 5000 So. "J" Street	50	3-6	3-10	3-24	2	2	2	8	-	14	28.0	14.3	14.3	14.3	57.1	-	
10	McLoughlin Avenue	36	3-7	3-10	4-2	9	2	-	4	-	15	41.7	60.0	13.3	-	26.7	-	
11	Vanetta & Abbott Streets	56	3-10	3-14	3-28	17	-	5	7	-	29	51.8	58.6	-	17.2	24.1	-	
12	1200 - 1400 W. Juniper Street	39	3-14	3-18	3-24	11	-	-	3	1	15	38.5	73.3	-	-	20.0	6.7	
13	Customers Complaining About High Bills	24	3-17	3-20	4-14	4	2	1	-	-	7	29.2	57.1	28.6	14.3	-	-	
14	Alpine Street	37	4-8	4-11	-	1	-	-	-	-	1	2.7	00.0	-	-	-	-	
15	800 - 1000 Saratoga Street	38	4-17	4-21	5-6	4	-	3	1	-	8	21.1	50.0	-	37.5	12.5	-	
16	Paula Street	50	4-23	4-28	5-7	9	1	1	-	-	11	22.0	81.8	9.1	9.1	-	-	
17	No. McKinley Street	60	4-29	5-1	5-7	2	-	-	-	-	2	3.3	00.0	-	-	-	-	
18	Palm Drive	55	5-9	5-12	5-19	18	2	1	6	-	27	40.1	66.7	7.4	3.7	22.2	-	
19	East Kamala Street	58	5-13	5-16	5-26	10	-	-	2	-	12	20.6	83.3	-	-	16.7	-	
20	Isabella Street	66	5-19	5-21	6-13	12	2	4	10	-	28	42.4	42.9	7.1	14.3	35.7	-	
21	Tulare Street	34	5-21	5-23	6-13	8	2	3	4	-	17	50.0	47.1	11.8	17.6	23.5	-	
22	South Portion Oxnard Shores	51	5-21	5-26	6-23	8	1	1	10	-	20	39.2	40.0	5.0	5.0	50.0	-	
23	3500 - 4200 So. "A" Street	53	5-21	5-26	6-26	10	-	3	9	-	22	41.5	45.5	-	13.6	40.9	-	
24	500 - 700 So. "E" Street	67	5-26	5-28	6-23	13	-	-	-	-	13	19.4	00.0	-	-	-	-	
25	Merced Place & Madera Place	73	5-27	5-29	6-16	12	2	7	9	-	30	41.1	40.0	6.7	23.3	30.0	-	
26	1100 - 1500 So. "J" Street	67	5-28	5-29	6-10	8	-	-	4	-	12	17.9	66.7	-	-	33.3	-	
27	800 - 1450 Redwood Street	70	6-3	6-6	6-23	11	3	4	7	-	25	35.7	44.0	12.0	16.0	28.0	-	
28(1A)	1200 - 1400 Camelia	29	6-12	6-16	6-26	4	-	2	1	-	7	24.1	57.1	-	28.6	14.3	-	
29(2A)	500 - 1400 W. Spruce Street	43	6-14	6-17	6-26	6	-	3	5	-	14	32.6	42.9	-	21.4	35.7	-	
30(3A)	700 - 1450 W. Guava Street	68	7-7	7-10	8-25	12	1	2	7	-	22	32.4	54.5	4.5	9.1	31.8	-	
31(5A)	900 - 1450 Ivywood Drive	50	7-11	7-14	8-5	11	1	1	11	-	24	48.0	45.8	4.2	4.2	45.8	-	
32(7-8A)	Devonshire Drive	92	7-15	7-16	8-5	10	4	3	19	1	37	40.2	27.0	10.8	8.1	51.4	2.7	
33(9&23A)	3300 - 4800 So. "F" Street	101	7-16	7-22	8-20	6	5	4	14	2	31	30.7	19.4	16.1	12.9	45.2	6.5	
34(10A)	Alturas Street	40	7-17	7-22	8-18	2	-	2	6	-	10	25.0	20.0	-	20.0	60.0	-	
35(11A)	Sanford & Sweetland Street	60	7-23	7-28	8-25	8	-	3	14	-	25	41.7	32.0	-	12.0	56.0	-	
36(12A)	800 - 1450 W. Kamala Street	65	7-23	7-28	8-13	6	2	3	4	1	16	24.6	37.5	12.5	18.8	25.0	6.2	
37(16A)	Fournier Street	56	7-25	7-30	8-20	4	-	-	4	-	8	14.3	50.0	-	-	50.0	-	
38(18A)	Magnolia Street	57	7-25	7-28	8-11	5	1	1	3	-	10	17.5	50.0	10.0	10.0	30.0	-	
39(19A)	E. Laurel Street	63	7-25	7-28	8-8	7	1	3	4	-	15	23.8	45.7	6.7	20.0	26.7	-	
40(20A)	Mono Street	12	7-31	8-4	8-11	-	1	-	2	1	4	33.3	-	25.0	-	50.0	25.0	
TOTALS				1,999	2-3	8-25	300	41	76	216	9	642	32.1	46.7	6.4	11.8	33.6	1.4

APPENDIX V

INTERIM POLICY ON MINERAL QUALITY OF DRINKING WATER
Adopted by the State Board of Public Health - September 4, 1959

1. Water supply permits may be issued for drinking and culinary purposes only when the Public Health Service Drinking Water Standards of 1946 and the State Board of Public Health Policy on Fluorides are fully met.
2. In view of the wide variation in opinion in this field, the uncertainty as to the long-time health effects, the uncertainty of public attitude concerning various mineral levels, and the obvious need for further study, temporary permits may be issued for drinking water supplies failing to meet the Drinking Water Standards if the mineral constituents do not exceed those listed under the heading "Temporary Permit" in the following tables=*

UPPER LIMITS OF TOTAL SOLIDS** AND SELECTED MINERALS IN
DRINKING WATER AS DELIVERED TO THE CONSUMER

	Permit	Temporary Permit			
Total Solids	500 (1000)***	1,500	Parts	per	million
Sulphates	250 (500)***	600	"	"	"
Chlorides	250 (500)***	600	"	"	"
Magnesium	125 (125)**	150	"	"	"

* This Interim Policy relates to potable water and is not intended to apply to a secondary mineralized water supply intended for domestic uses other than drinking and culinary purposes.

** Waters having less than 32 milliequivalents per liter of dissolved minerals or 1,600 microhms electrical conductance will usually have less than 1,000 parts per million total solids.

*** Numbers in parentheses are maximum permissible, to be used only where no other more suitable waters are available in sufficient quantity for use in the system.

3. Exception: No temporary permit for drinking water supplies in which the mineral constituents exceed those listed under the heading "Temporary Permit" as set forth in No. 2 above may be issued unless the Board determines after public hearing:
 - a. The water to be supplied will not endanger the lives or health of human beings: and
 - b. No other solution to meet the local situation is practicable and feasible: and
 - c. The applicant is making diligent effort to develop and has reasonable prospect of developing a supply of water which will warrant a regular permit within an acceptable period of time.

The burden of presenting evidence to fulfill the requirements as set forth in a., b., and c., above is upon the applicant.