

# Technical Report and Recommendations for Long Term Groundwater Supply

Prepared for the City of Las Vegas, NM



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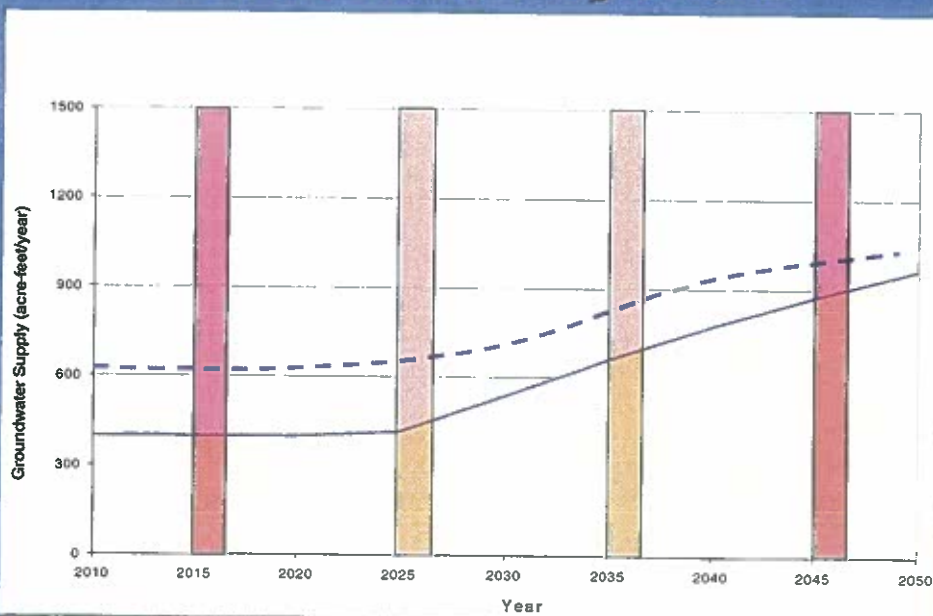
## Need for Groundwater

1. Non-Drought Years
  - Operational reserve
  - Peak demand
  - Population Growth
2. Drought
  - Offset shortages in surface water
  - 2 out of every 10 years

# GW Demand Projections

Projected Groundwater Demand (acre-feet)			
Year	Non-Drought Year	Drought Year	Average Annual
2010	400	1500	620
2015	400	1500	620
2020	400	1500	620
2025	414	1500	680
2030	538	1500	730
2035	661	1500	810
2040	773	1500	918
2045	874	1500	1000
2050	963	1500	1073

# GW Demand Projections



## Alternatives Evaluated

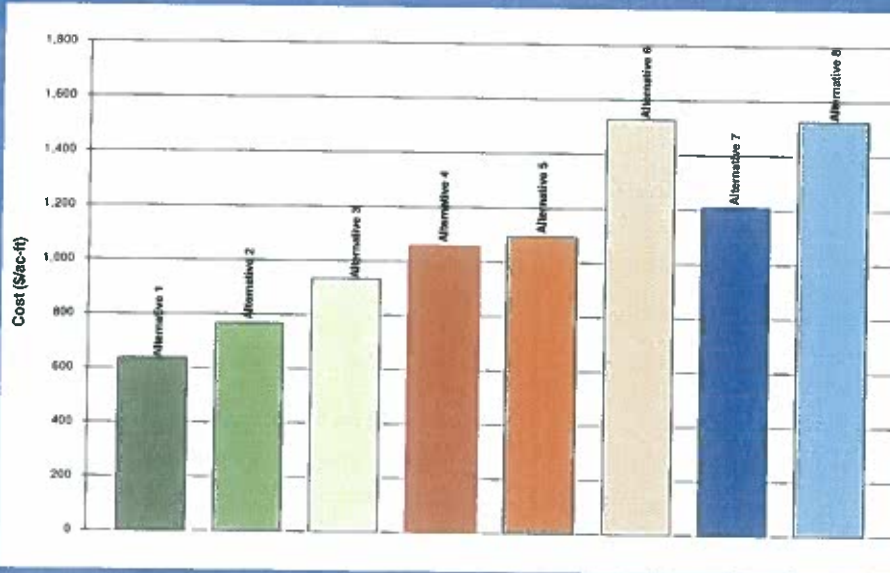
1. Replace Existing Wells in Taylor Well Field
2. New Wells West of Taylor Well Field
3. New Wells East of Taylor Well Field
4. Brackish Groundwater Desalination
5. Effluent Use for Aquifer Storage and Recovery
6. Effluent Exchange for Potable Supply
7. Groundwater Importation from Santa Rosa Area
8. Groundwater Importation from Ribera Area

## Cost Summary

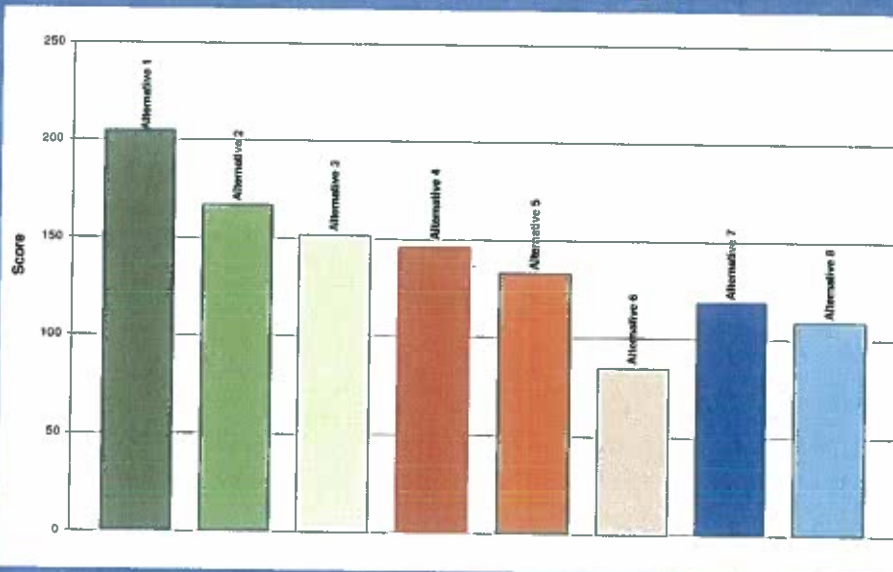
Alternative	Construction Cost	Non-Construction	Annual O&M Present Worth	Projected Planning Period Cost*	Acre-Feet per Year**	Cost per Acre-Foot
Alternative 1	\$7,704,475	\$1,646,796	\$3,394,062	\$12,745,333	500	\$637.27
Alternative 2	\$3,711,898	\$2,618,425	\$9,018,421	\$15,348,744	500	\$767.44
Alternative 3	\$12,546,529	\$2,721,771	\$3,394,062	\$18,662,362	500	\$933.12
Alternative 4	\$7,322,268	\$1,597,365	\$3,765,151	\$12,684,784	300	\$1,057.07
Alternative 5	\$2,293,238	\$592,725	\$10,269,438	\$13,155,401	300	\$1,096.28
Alternative 6	\$4,793,461	\$1,092,192	\$12,454,457	\$18,340,110	300	\$1,528.34
Alternative 7	\$10,056,538	\$2,305,116	\$7,009,476	\$19,371,130	400	\$1,210.70
Alternative 8	\$6,665,187	\$1,627,633	\$3,915,509	\$12,208,329	200	\$1,526.04

\* Planning Period Cost = Capital Cost + 40-Year (Planning Period) Present Worth of Annual O&M Costs  
 \*\* 1 Acre-Foot = 325,851.429 U.S. gallons

## 40 Year Cost per Acre-foot



## Overall Ranking



## Selected Alternatives

1. Replace Wells in Taylor Well Field
2. New Wells West of Taylor Well Field
3. New Wells East of Taylor Well Field
4. **Brackish Groundwater Desalination**
5. Effluent Use for Aquifer Storage and Recovery
6. Effluent Exchange for Potable Supply
7. Groundwater Importation from Santa Rosa Area
8. Groundwater Importation from Ribera Area

## Implementation of Alternatives

- Implementation in 3 Phases

  - Phase 1: Replace Taylor Wells (0-5 years)

  - Phase 2: New Wells West of Taylor (5-15 years)

  - Phase 3: New Wells East of Taylor (15-40 years)

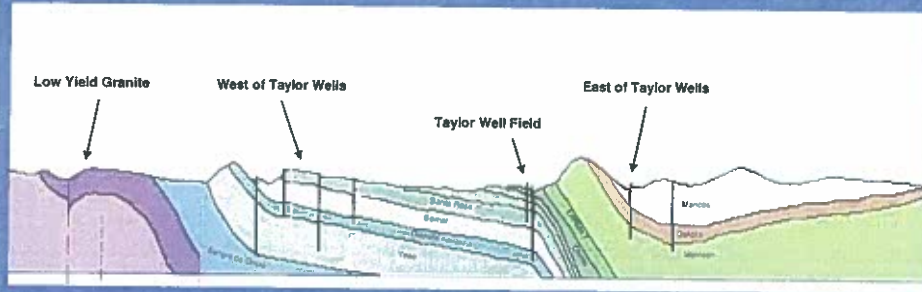
- Accomplishes:

  - rapid and least expensive means to meet drought year demand
  - gradual increase to meet population increases
  - minimizes impacts to any one area over time

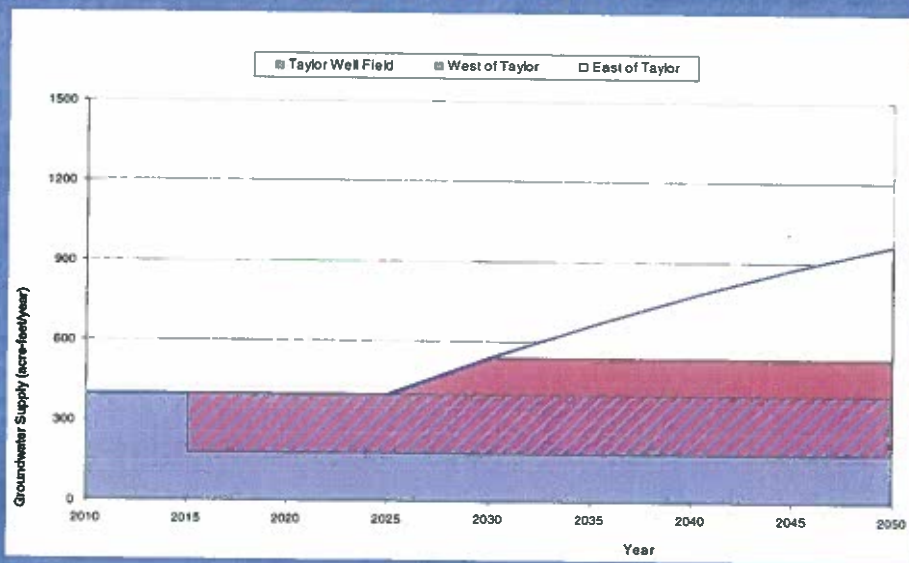
# Location of Groundwater Supplies

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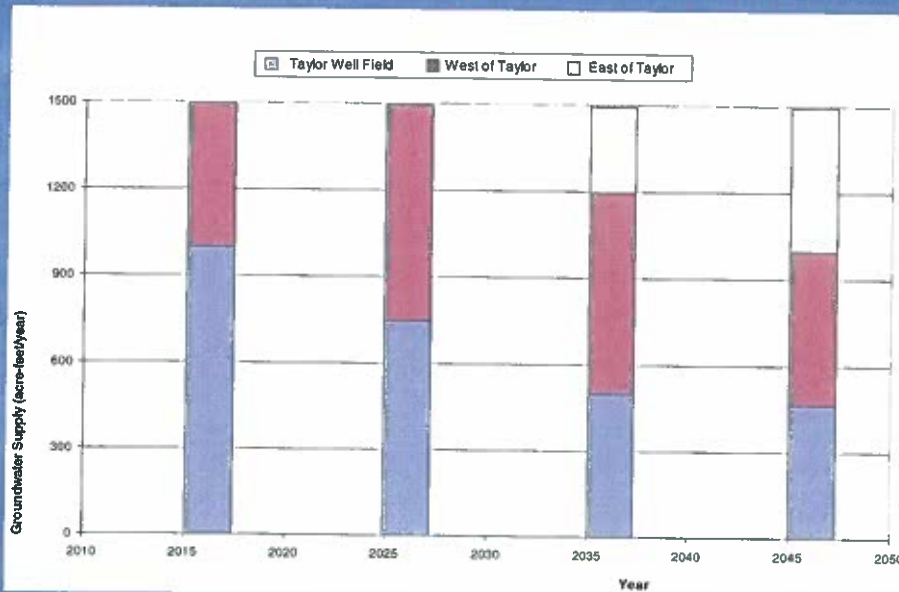
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# Source of Non-Drought Groundwater



## Source of Drought Groundwater



## Summary and Recommendations

- Pursue funding for Taylor Well Field
- Pursue access to well sites west of Taylor Well Field
- Pursue Funding for west of Taylor Wells
- Continue to evaluate emerging RO technologies & fund if cost effective
- Pursue Funding for east of Taylor wells