

Eureka County Diamond Valley GID Feasibility Analysis

June 18th, 2013

Hansford Economic Consulting

Presentation Outline

- Purpose of the Study
- Issue Summary
- Diamond Valley Hay Industry
- Water Rights Retirement Program
- Set Aside Program
- GID Costs
- Financing
- Revenue Collection
- Conclusions and Questions

Purpose of the Study

- Financial feasibility of a General Improvement District (GID) to execute a water management program to enhance the sustainability of underground water supply and storage for Basin 153

Issue Summary

- Basin 153 Over-Appropriated
- Water Table declining at a rate of 1 to 3 feet per Year
- Unsustainable future for Farming Irrigated Crops
- Must Retire Water Rights to reduce groundwater use
- Possibility Basin 153 declared a Critical Management Area (CMA)
- Under CMA the State Engineer could curtail pumping, starting with most junior right holders

Idea of a GID

- GID provides a financing vehicle to manage a locally-controlled water management program to reduce groundwater consumption
- Local control; voluntary action
- Ability to reduce irrigation pumping by some other means / not by seniority of water rights
- Compensation to farmers relinquishing water rights

What is a GID?

- Authorized by Nevada Revised Statutes 318
- Quasi-municipal to serve a public use promoting health, safety, prosperity, security and general welfare of inhabitants and the State
- Not intended to provide a method for financing costs of developing private property
- Authorized to provide many services such as water, sewer, flood control, street lighting
- Physical boundary need not be contiguous

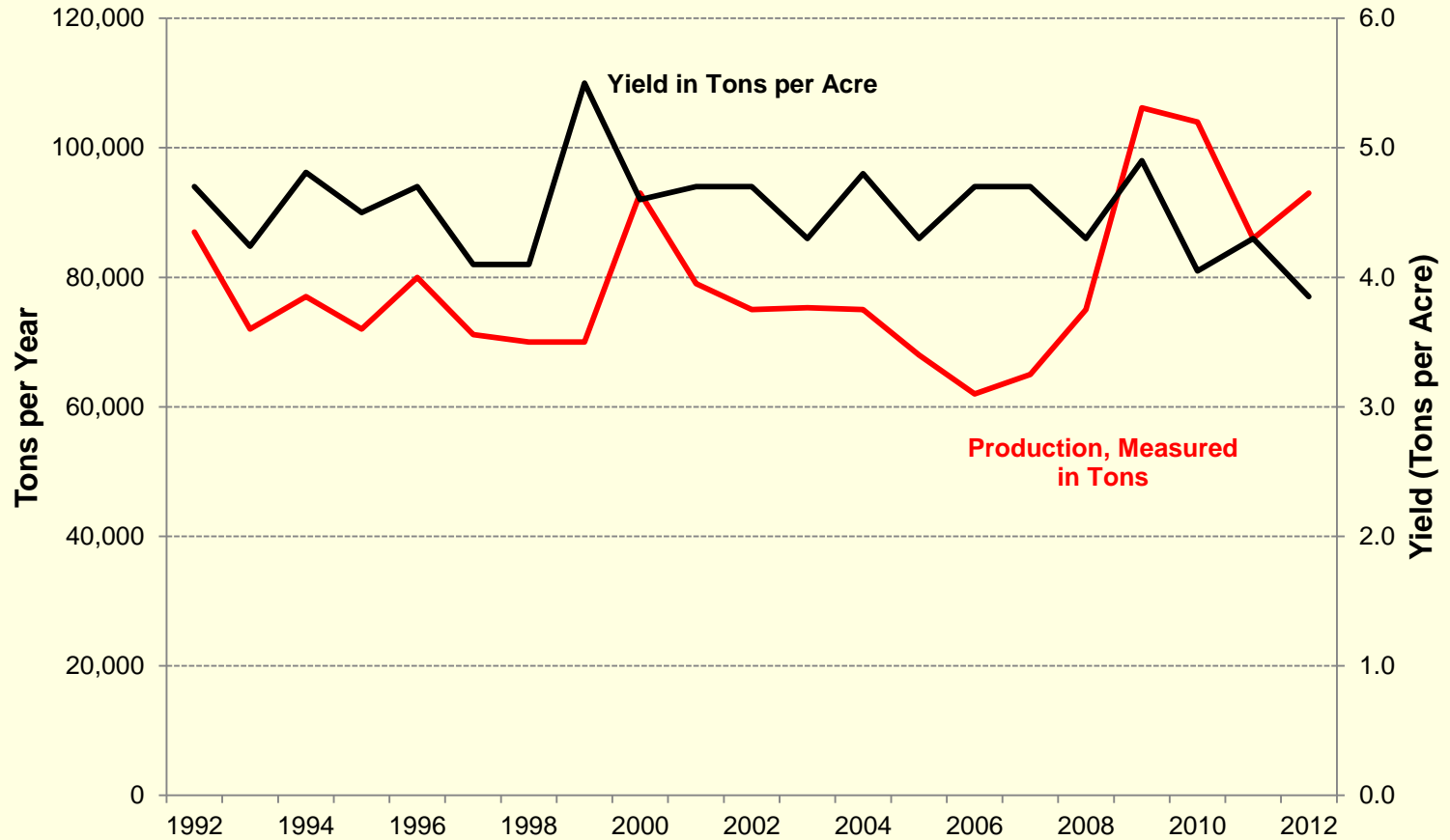
Organization / Operation of a GID

- Managed by a Board of Trustees, most likely the County Commissioners
- Set rates, tolls and charges for services of the district within its service territory
- Separate legal entity / can accept funding contributions from other parties such as the County

Diamond Valley Hay Industry

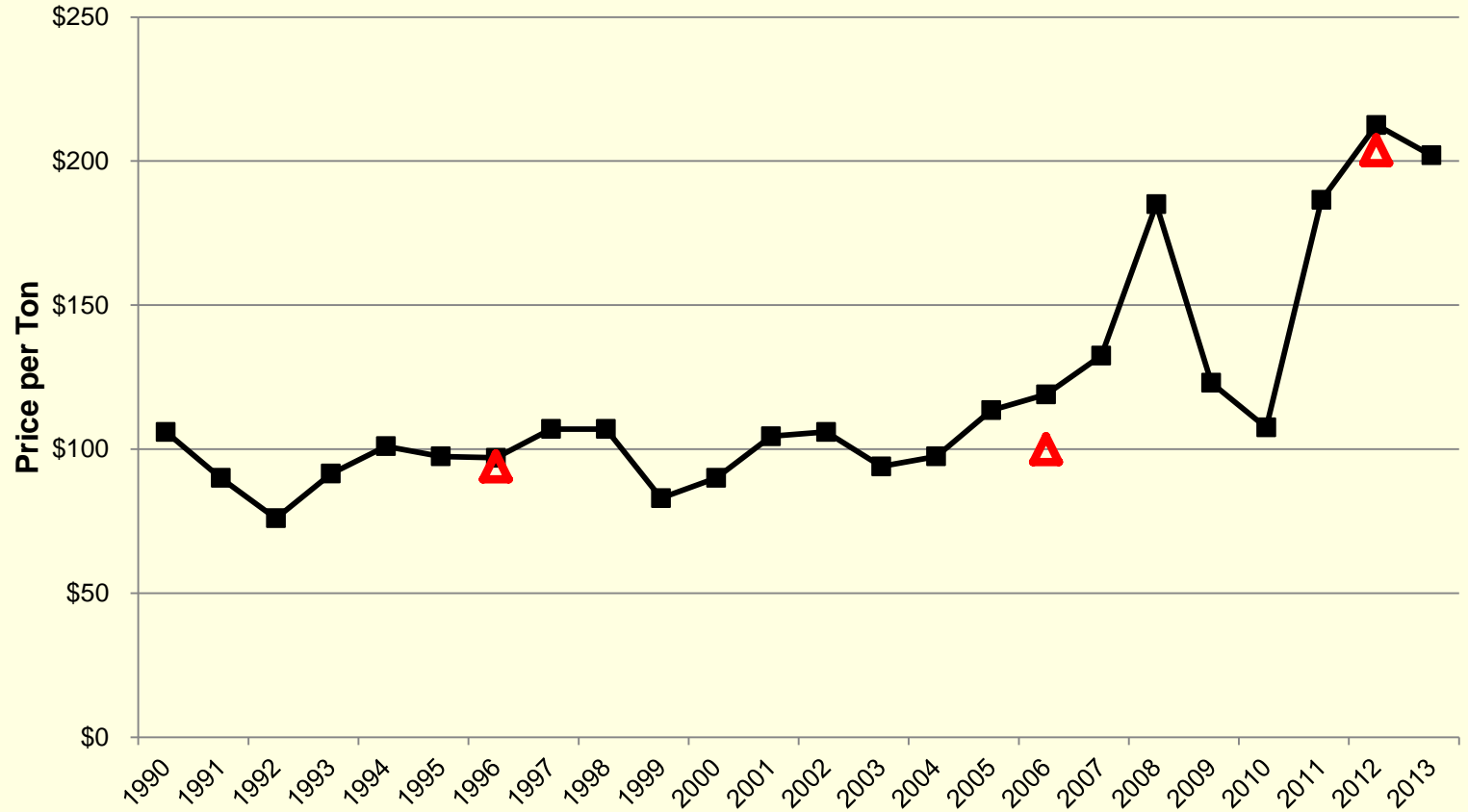
- Generates approximately \$22.4 million annual revenue in Diamond Valley
- Continues to be strong demand for high quality hay
- Hay prices on upward trend last few years

Eureka County Alfalfa Hay Annual Production and Yield



Median Alfalfa Price per Ton in Nevada 1990 to 2013

Unadjusted for Inflation

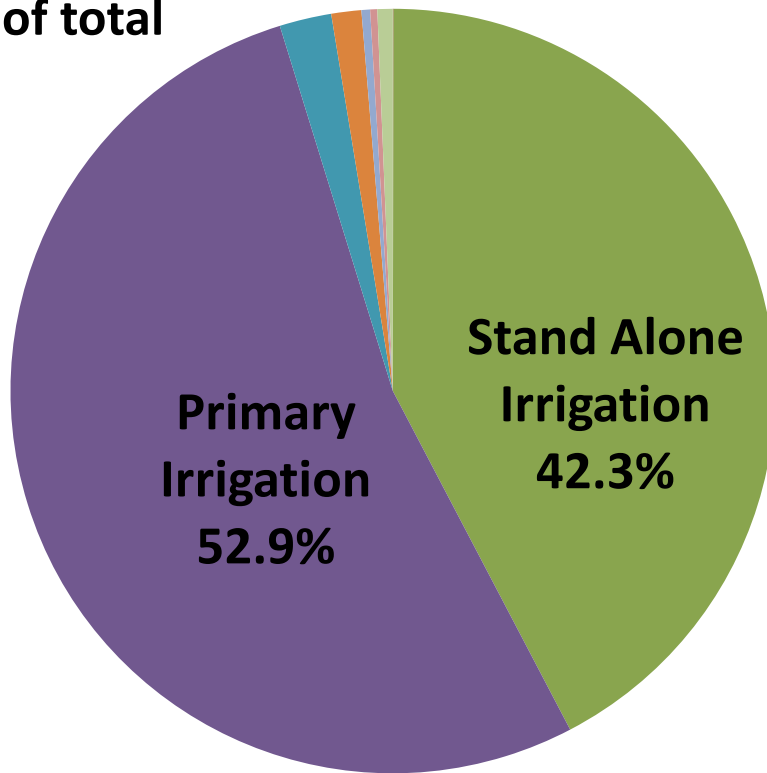


Water Rights Retirement Program

- GID purchases irrigation rights from farmers with permitted / certificated rights in Basin 153
- GID relinquishes rights to the State Engineer (timing of relinquishment not defined in model)
- Occurs over a period of time (50 Years in the financial feasibility model)
- Farmers compensated by the GID for loss of ability to irrigate land in perpetuity

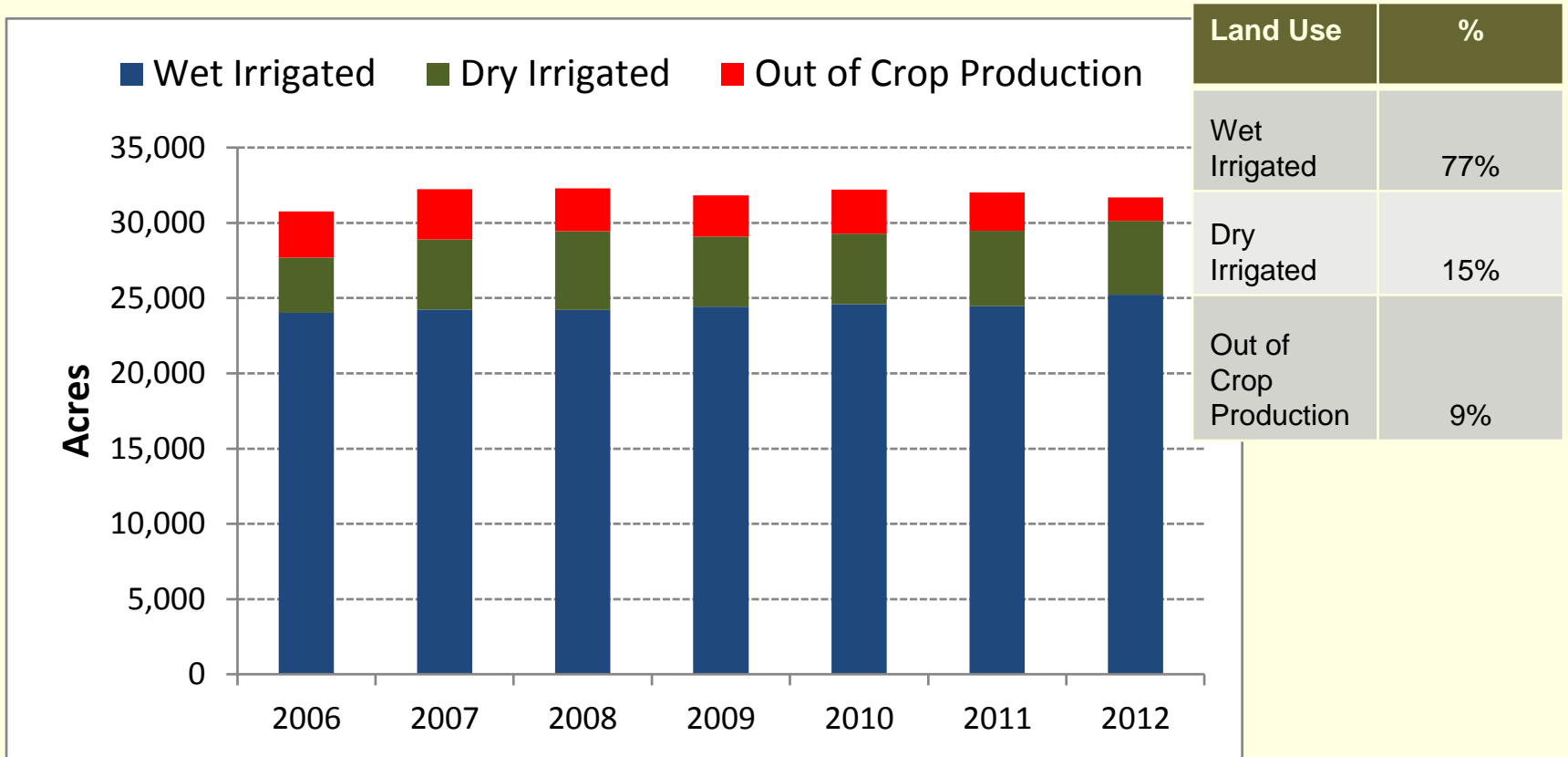
Committed Water Rights Basin 153 – April 10, 2013

Irrigation
>95% of total
rights

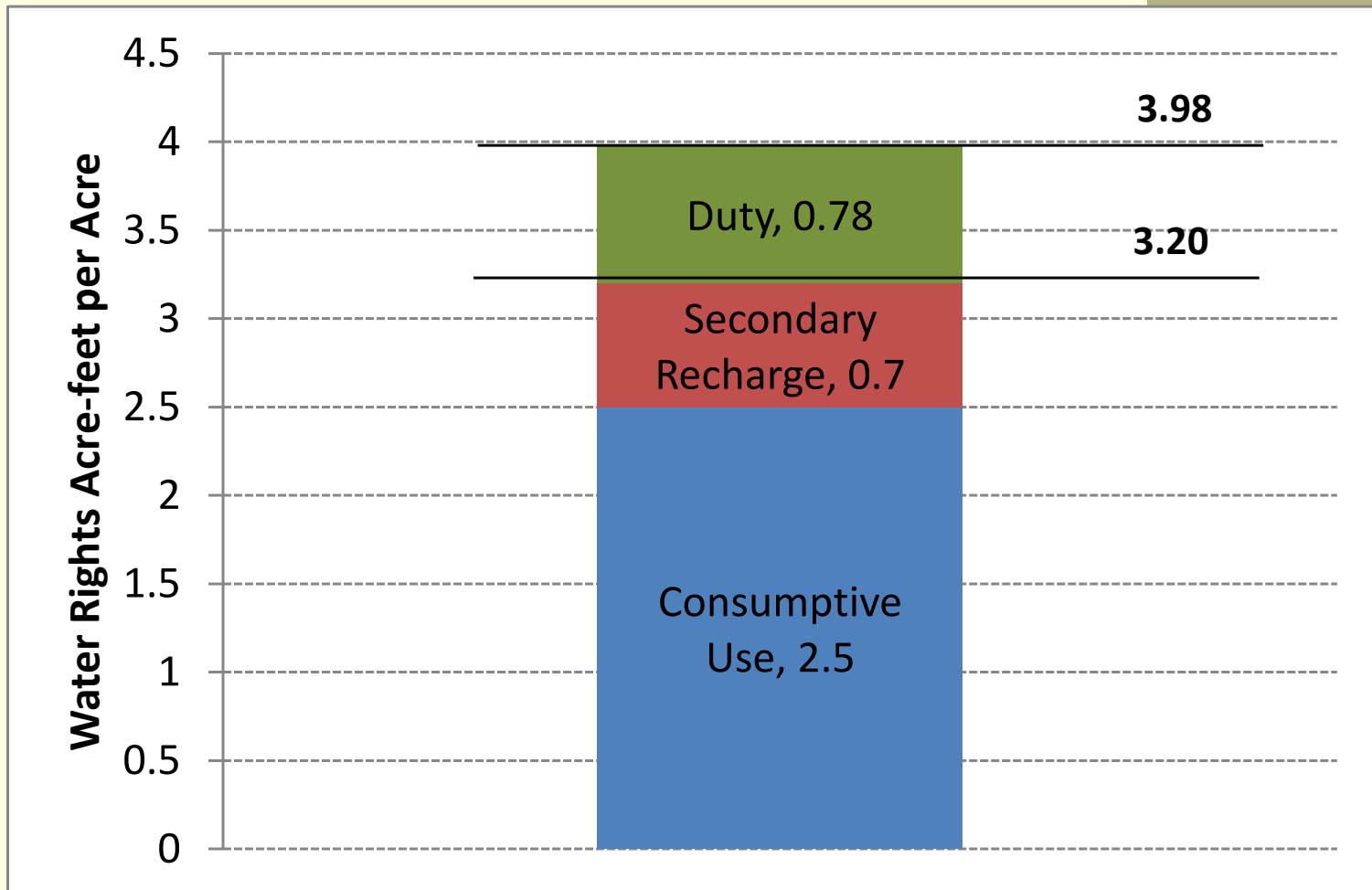


Manner of Use	Acre-Feet
Commercial	2.79
Domestic	33.60
Mining and Milling	3,307.43
Municipal / Quasi-Municipal	2,162.25
Stockwater	858.72
Stand Alone Irrigation	56,033.61
Primary with Supplemental Irrigation	70,087.58

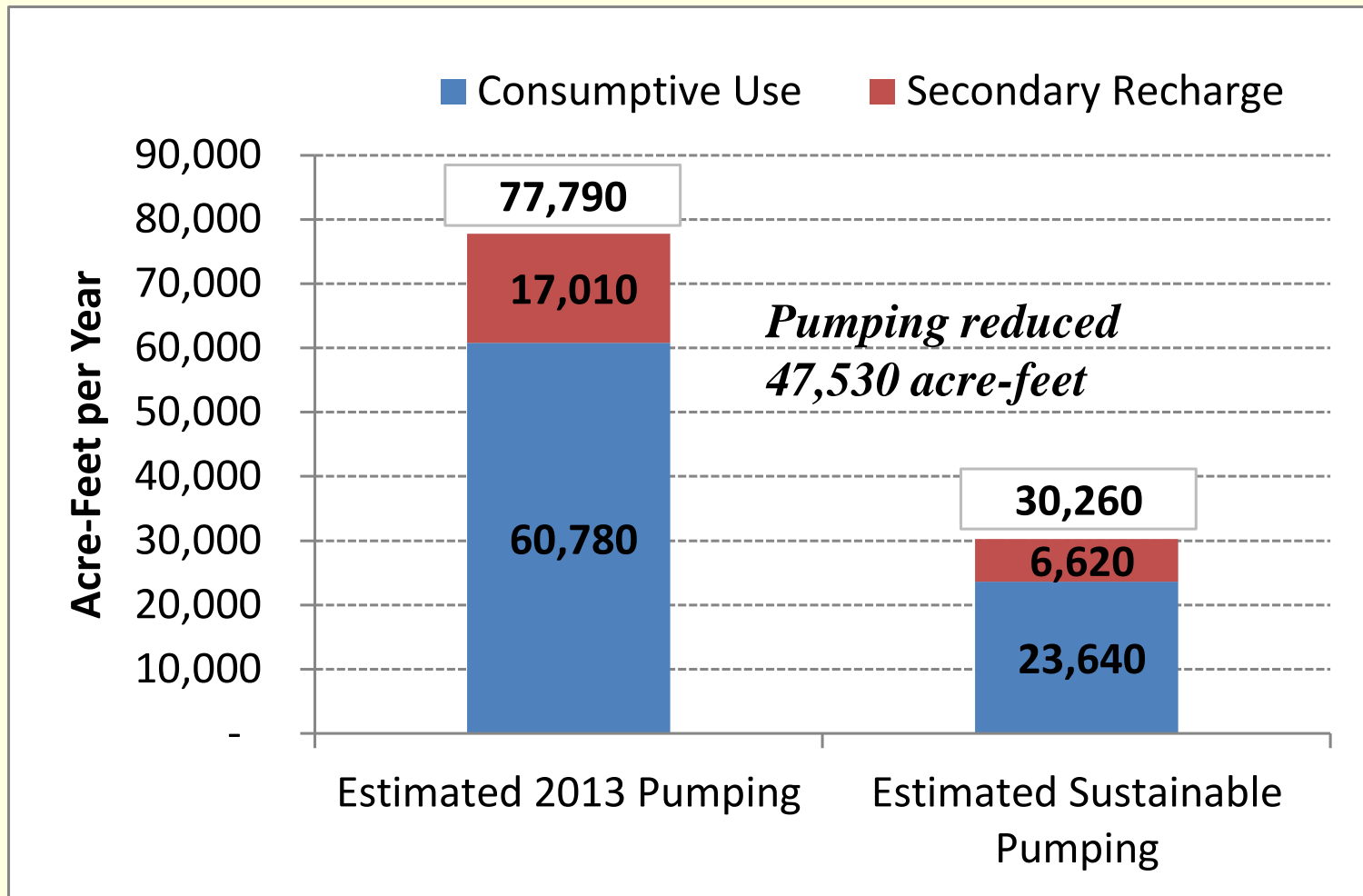
Historic Use of Permitted Acres



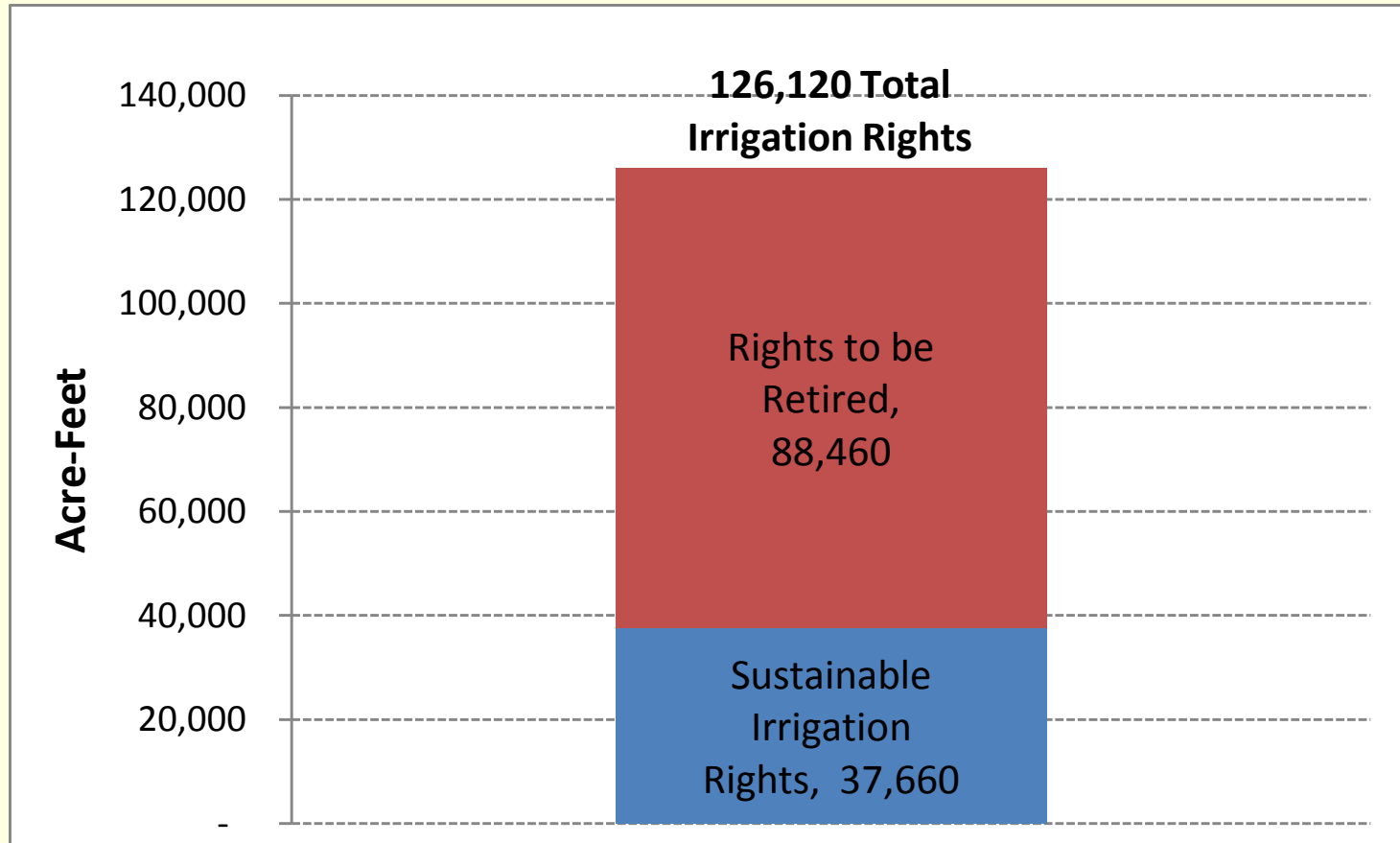
Irrigation Water Use



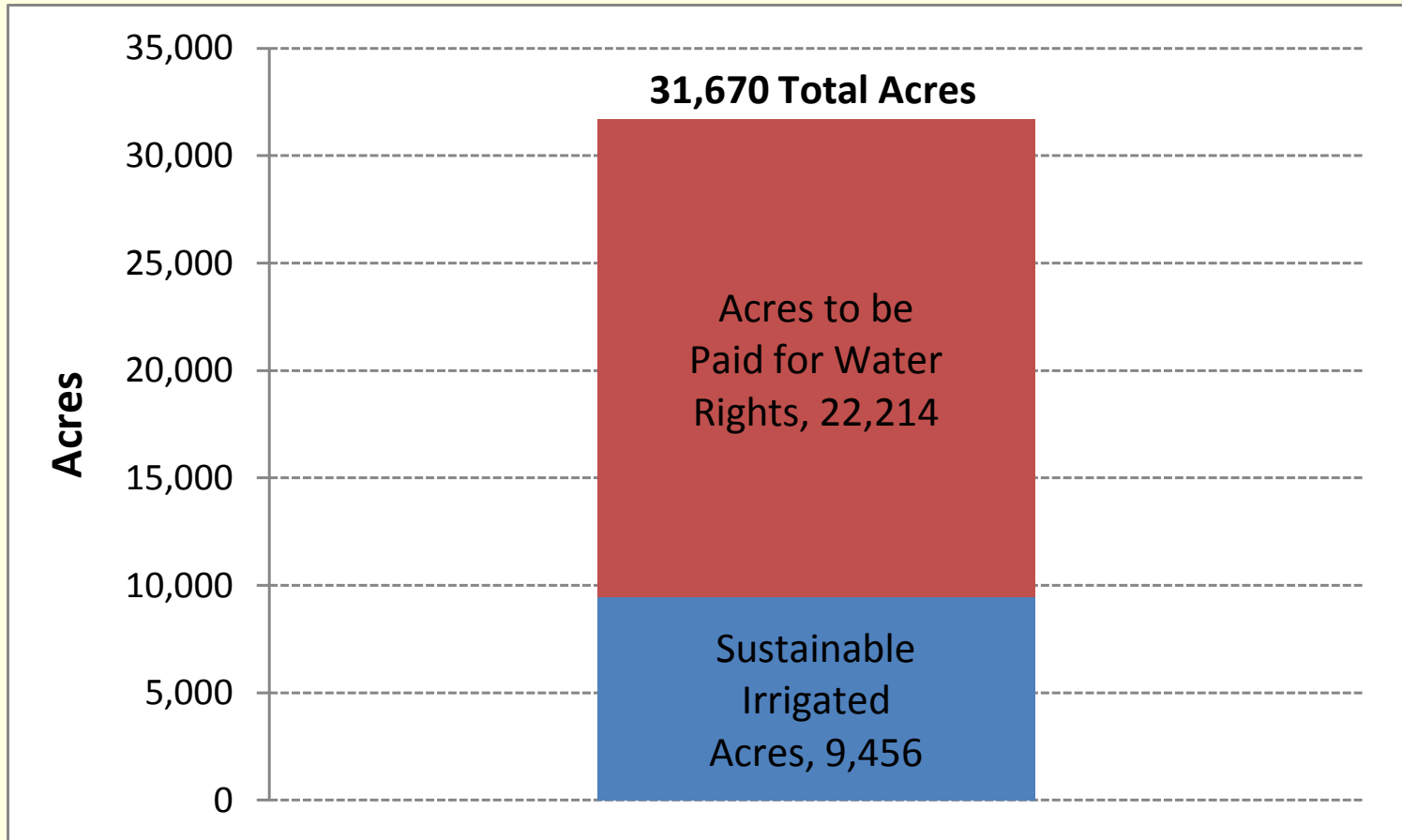
Estimated Current and Future Sustainable Annual Irrigation Pumping



Irrigation Right Retirement



Acres Retired from Irrigated Crop Production



50-Year Program Targets

Reduction in Annual Pumping from 2013 Level	Total Irrigation Rights Retired	Agricultural Land Compensated for Loss of Irrigation Water Rights
Acre-feet	Acre-feet	Acres
47,530	88,460	22,214

Set Aside Program

- *Concept: Land is rotated through wet and dry cycles*
 - Portions of currently irrigated land are not irrigated for a specified time period (such as 3 or 5 years). Land not irrigated rotated so that water rights remain in beneficial use
 - Farmer enters into a forbearance agreement with the GID not to irrigate specified land over specified time period
 - Farmers paid not to irrigate during dry cycle

Feasibility Model Scenarios

- *All Scenarios – Only Agricultural Properties with Permitted/Certificated Irrigation Water Rights in Basin 153 Included in GID service territory (physical boundary)*
- **BASE CASE:**
 - Scenario A – No Set Aside Program, No Debt Financing**
- Other Scenarios:
 - Scenario B – Set Aside Program, No Debt Financing
 - Scenario C – No Set Aside Program, Debt Financing
 - Scenario D – Set Aside Program, Debt Financing

GID Total Costs

- GID Formation and Operating Costs
- Water Rights Retirement Cost
- Set Aside Program Cost
- Financing Cost (if necessary for cash flow)
- Delinquency and Administration Charges

GID Formation and Operating Costs

- Formation Costs Estimated \$25,000
- Annual Operating Costs Estimated \$31,000
 - Model assumes the County absorbs all formation costs plus County staff time and materials costs to operate the GID
 - Costs reflect estimates of costs for professional (consultant) services such as a water rights and monitoring manager, planning, hydrology and other services and some basic supplies costs for the GID

Water Rights Retirement Cost

- Based on payment to farmers per acre of land that relinquishes water rights
- No collective market establishing the value of water per acre today; methodology developed for the analysis
- Methodology based on the economic value of each acre in irrigated crop production
- Economic value based on the estimated net farming income per acre of alfalfa hay

Key Income Assumptions

- Analysis assumes that all irrigated acres are in alfalfa hay production
 - \$204 per ton
 - 4.52 tons per acre (yield)
 - Average annual income of \$920 per acre

Calculation of Net Farming Income per Acre

Item	
Estimated Average Annual Diamond Valley Farming Income	\$22,371,784
Estimated Average Annual Farming Expenses	\$18,869,143
Estimated Net Farming Income	\$3,502,641
Estimated Wet Acres	24,310
Net Farming Income per Wet Acre	\$144

Valuing Ability to Irrigate

- Each farmer values their water rights differently depending on their individual personal circumstances and farming operations
- The analysis establishes a range of price using different discount factors (3% to 8%) and time period within which farmers think they will maintain their rights (5 years to perpetuity)

Discount Factors

- Discount factor reflects both the interest rate the farmer's money could be earning in an alternative activity (such as in a bank account) AND the farming family's rate of time-preference for present versus future income. Discount factors reflect – for example:
 - Family circumstances (future generation to pass land onto),
 - Seniority of water rights (expectation junior rights may be curtailed by State Engineer)
 - Expectations of how quickly the water table will decline and investment in wells will be needed

Range of Price per Acre

Discount Factor	Time					
	5 years	10 years	15 years	25 years	50 years	perpetuity
<i>Net Farm Operating Income per Acre [1] \$144</i>						
3%	\$660	\$1,229	\$1,720	\$2,509	\$3,707	\$4,803
4%	\$641	\$1,169	\$1,602	\$2,251	\$3,095	\$3,602
5%	\$624	\$1,113	\$1,496	\$2,031	\$2,630	\$2,882
6%	\$607	\$1,060	\$1,399	\$1,842	\$2,271	\$2,401
7%	\$591	\$1,012	\$1,312	\$1,679	\$1,988	\$2,058
8%	\$575	\$967	\$1,233	\$1,538	\$1,763	\$1,801
Median Value	\$615	\$1,087	\$1,447	\$1,936	\$2,451	\$2,642
Weight	0%	5%	15%	30%	10%	40%
Estimated Farmed Land Acre Value (Weighted Average of Median Values)						\$2,150
Average Acre-feet Duty per Acre						3.98
Calculated Value per Acre-Foot						\$540

Accounting for the Value of the Land

- Average Price of \$2,150 per Acre assumes Land has \$0 value without irrigation
- Land could be used for alternative agricultural uses
- Methodology to estimate decrease in value of the land with loss of irrigation based on ratio of assessed value 4th class cultivated land to 1st class cultivated land

Estimated Market Value Dry Acre

Estimated 2013 Market Value per Irrigated Acre	\$800
4 th Class Cultivated Land as % of 1 st Class Cultivated Land	38.8%
Estimated 2013 Market Value Dry Acre	\$300
Estimated Loss in Land Value due to Loss in Irrigation Ability	\$500

Estimated Water Retirements Program Total Cost

- Estimated Weighted Average Price per Acre to Retire Water Rights **\$2,150 per Acre**
- Reduction in Price to Account for Alternative Agricultural Activities Potential **\$500 per Acre**
- **Range of Price per Acre \$1,650 to \$2,150**
- **Acres to be paid for Water Rights – 22,214**
- Range of Total Estimated Cost **\$36.6 million to \$47.8 million**
- Feasibility Analysis uses mean of **\$42.2 million (\$1,900 per acre)**

Set Aside Program Cost

- Feasibility model discusses the concept and provides an example of funding the concept
- Example is very simple and only illustrative of the fact that a set aside program would add costs to a water management program
- Example given shows **high-end range of cost** for a set-aside program
 - \$461 per dry acre per year payment

Financing

Likely to be needed for cash flow unless additional outside sources such as grants or additional net mining proceeds can be applied

- Ability for County to sell General Obligations bonds with an Ad Valorem Tax
- Or, loan(s) from a bank in the rural community and agriculture business payable using any/all sources of GID revenues
- Typically financing charges will represent about 40% of total project costs (addition of about 67% of original cost)

50-Year GID Costs Estimate

Base Case

Cost Element	Estimated Cost over 50 Years
Water Rights Retirement	\$42,207,000
Set-Aside Program	\$0
Financing Charges	\$0
GID Operation	\$1,550,000
Delinquency and Administration	\$1,210,000
Total	\$44,967,000

Estimated GID Cost Burden

Base Case

Participants	Cost per Acre Over 50 Years	Cost per Acre per Year
GID Participants	\$420	\$8.41
County	\$1,000	\$19.99
Other	\$0	\$0.00
Total	\$1,420	\$28.40

4 Potential Revenue Collection Methodologies

	Collection Method	Pros	Cons
1.	Per Acre-Foot Pumped	Direct linkage to aquifer level. All irrigation water right holders on equal footing regardless of priority date of water right. Only farmers actively irrigating pay for the program.	Must have meters on each well (not the current case). Highly variable revenue stream - dependent on weather, and decreases as pumping decreases, increasing the burden for remaining farmers. Poor linkage between the right to pump and actual pumpage.
2.	Per Water Right	Easy collection / administration. All irrigation water right holders on equal footing regardless of priority date of water right. All potential irrigators pay. Known revenue stream with prepayment clause.	Not all water rights have equal duty; results in inequity in payments per acre for similar farming operations. Property owners not irrigating pay for something they receive no direct benefit from.

4 Potential Revenue Collection Methodologies

	Collection Method	Pros	Cons
3.	Assessed Value	Easy collection / administration, easy to forecast revenues, ability to sell GO bonds. All potential irrigators pay. All irrigation water right holders on equal footing regardless of priority date of water right.	Weak linkage between land value and water usage (potential difference in payments per acre for similar farming operations). Property owners not irrigating pay for something they receive no direct benefit from.
4.	Per Parcel Charge	Easy collection / administration. Direct linkage between land use and water use. Equal charge per acre of agricultural land puts all farmers on equal footing regardless of priority date of water right. All potential irrigators pay. Known revenue stream with prepayment clause.	Property owners not irrigating pay for something they receive no direct benefit from.

Revenue Collection – Parcel Charges

- Annual parcel charge per acre collected until water rights are relinquished for that acre
- At time of payment for water rights a prepayment amount is deducted
- The prepayment amount is equal to the remaining cost burden associated with that acre

<i>Illustration:</i> Total Burden	\$ 420.00
Payment per Year	\$ 8.41 -
5 Years Payments	\$ 42.05 -
Prepayment Amount	\$ 377.95
Water Rights Retirement cost	\$ 1,900.00
Net Payment to Farmer for Acre	\$ 1,522.05

Revenue Collection – Ad Valorem Taxes

- Method 2: Ad Valorem Taxes
 - Annual tax calculated by applying a tax rate per \$100 of assessed valuation (A.V)
 - Nevada tax cap \$3.64 per \$100 A.V
 - Eureka County currently \$1.77 per \$100 A.V.
 - Leaves maximum tax rate for the GID of \$1.87 per \$100 of A.V.

Conclusions

- Total Cost of Water Retirement Program is high – at least \$40 million
- Feasibility dependent on:
 - Timeframe to complete the program
 - Level of County or other (grants etc.) funding commitments / contributions
 - Prices paid to retire water rights
 - Farmers' willingness to participate
- GID can only reach program targets in a 50-year period with a per parcel charge, not with ad valorem taxes

Conclusions

- Actual management of a water right retirement program and a set-aside program would have to be worked out.
 - Costs and other assumptions of water right retirement program would have to be refined
 - This analysis provides only a very rough example of a possible set aside program at the high end of program cost

Conclusions

- Feasibility analysis provides a framework to model a water management program for Basin 153. The model would have to be refined to project the more detailed program and be updated periodically for changing circumstances
 - The model assumes a linear pattern of water rights retirement (same number retired each year)
 - Debt financing likely to be needed for cash flow
 - There will likely be circumstances under which certain properties are paid more or less than the bracketed range of price per acre to relinquish water rights

Conclusions

- County Cost Burden at 75% of Total Program Cost
 - \$31.5 million
 - Approximately \$633,100 per year for 50 years
- Participants Estimated Cost Burden
 - \$420 to \$486 per participating acre
 - \$8.41 minimum per acre per year for 50 years
- With Example Set-Aside (high-end of cost)
 - \$611 to \$677 per participating acre

Conclusions

- This feasibility analysis only captures readily quantifiable costs and monetary benefits to participating farmers based on currently available data
 - The benefits of a set aside program are not quantified
 - The costs and benefits of a water retirement program to other County citizens is not quantified

Parting Thought

- There may be benefit to having some portion of the County's financial commitment to the water issue in Diamond Valley spent on researching and supporting alternative farming practices and other economic activities that recognize value in the land as well as the water resources in Diamond Valley
 - Goal is continued income and jobs in Diamond Valley to maintain social fabric of the southern end of the County

Questions and Answers

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