# Hudspeth County Underground Water Conservation District No. 1

# Groundwater Management Plan

Adopted May 14, 2013

# Hudspeth County Underground Water Conservation District No. 1

## DRAFT Management Plan – Adopted May 14, 2014

This Management Plan was prepared in accordance with the requirements of Chapter 36 of the Texas Water Code and Title 31, Chapter 356, of the Texas Administrative Code and was made available for public comment prior to adoption by the Board of Directors of the Hudspeth County Underground Water Conservation District No. 1 (the District).

## 1. Estimate of Modeled Available Groundwater - 31 TAC § 356.52(a)(5)(A)

TWDB GAM Run 10-061 MAG (Appendix A) summarized the Modeled Available Groundwater based on the GMA 4 Adopted Desired Future Conditions as:

> *The modeled available groundwater for the Bone Spring–Victorio Peak Aquifer as a result of the desired future condition adopted by the members of Groundwater Management Area 4 is approximately 101,400 acre-feet per year. This is shown divided by county, regional water planning area, and river basin in Table 1 for use in the regional water planning process. The estimate was taken from the model simulation documented in Groundwater Availability Modeling Task 10-006, which the members of Groundwater Management Area 4 reviewed when developing their desired future condition. In this simulation, the "net pumping" that achieves the desired future condition was reported as approximately 71,000 acre-feet per year. For this report, an irrigation return flow factor of 30 percent was used to convert net pumping to total pumping. This factor was provided by the district and is consistent with its current rules.*

## 2. Amount of Groundwater Being Used 2007 through 2012 – 31 TAC §§ 356.52(a)(5)(B);356.10(2)

Irrigation water use makes up over 99% of the water use in Hudspeth County and in the District. The District requires by rule that all groundwater pumped under validation or operating permits must be metered. (Validation permits are basically those that recognize—"validate"—existing and historic use.) The District has issued approximately 55 validation permits which identify approximately 260 irrigation wells from which groundwater can be pumped. Approximately 120 of the irrigation wells identified in the validation permits are not equipped with a pump and thus are not required to have flow meters. Of the remaining 140 irrigation wells that are equipped with a pump, the District has received meter reading reports for 132 wells.

The reported amount of groundwater production for 2006 from 104 wells (132 less 28) is equal to approximately 56,000 acre-feet. The total production of groundwater is

estimated to be 75,000 acre-feet (56,000 x 140 / 104). Domestic, livestock, and municipal use is estimated to be less than 500 acre-feet.

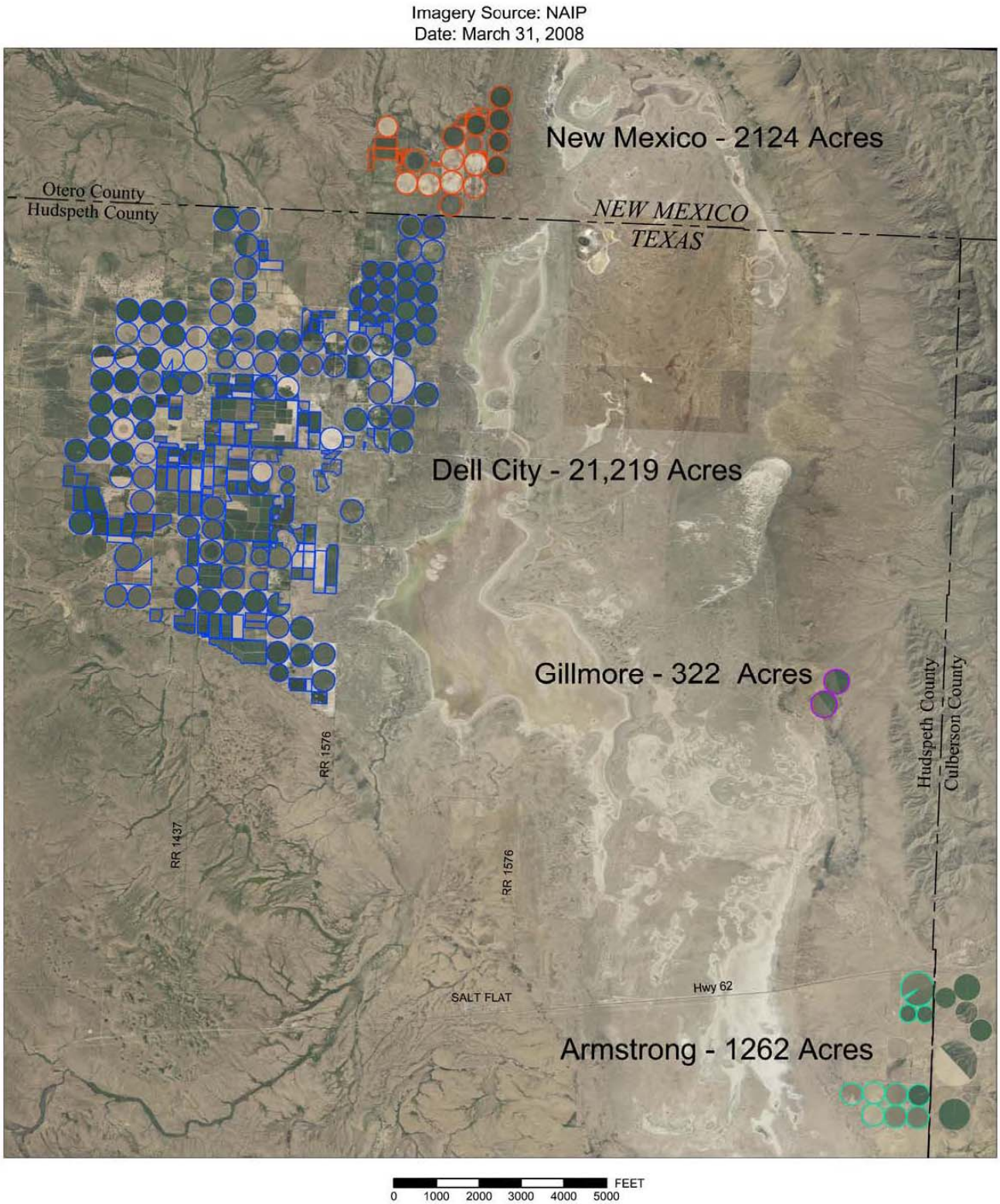
The total amount of acreage that was irrigated in 2006 in Hudspeth County was not reported by USDA, but based on interviews with local farmers and analysis of satellite imagery (USGS Landsat7 Image for June 4, 2006), the District estimates that approximately 15,396 acres of land was irrigated within the District in 2006. The large majority of the irrigated land was used for production of alfalfa hay. For 2006, the average water use per acre of irrigated land was 4.9 acre-feet per acre (75,000 / 15,396) and the average water use per acre of land recognized in validation permits (approximately 34,000 acres) was 2.2 acre-feet per acre.

Figure 1 below shows an aerial image of the irrigated area surrounding Dell City on March 31, 2008, and Figure 2 shows an image for August 11, 2012. The estimate of acreage of cultivated land in 2008 within the District is 21,219 acres and for 2012 is 24,181 acres. Because the 2008 image was taken on March 31, some of the cultivated fields had yet to be planted or irrigated. It is estimated that 90% of the cultivated land was irrigated in 2008 for a total irrigated acreage of 19,097. The 2012 image was taken on August 11, a time at which any land that was planted and irrigated would appear as such in the image. The 2012 image shows that approximately 3,000 acres of land was cultivated but not irrigated; the total irrigated acreage for 2012 was 21,181 acres. This increase in irrigated acreage from 2006 through 2012 is attributed to increases in agricultural commodity prices and new ownership of several large farms in the Dell City area.

The table below shows the estimated annual amount of groundwater pumping for the Dell City area and assumes for all years that 4.9 acre-feet of pumped water was used for each irrigated acre of land. The irrigated acreage for years 2007 and 2009 through 2011 were interpolated from the 2006, 2008, and 2012 values.

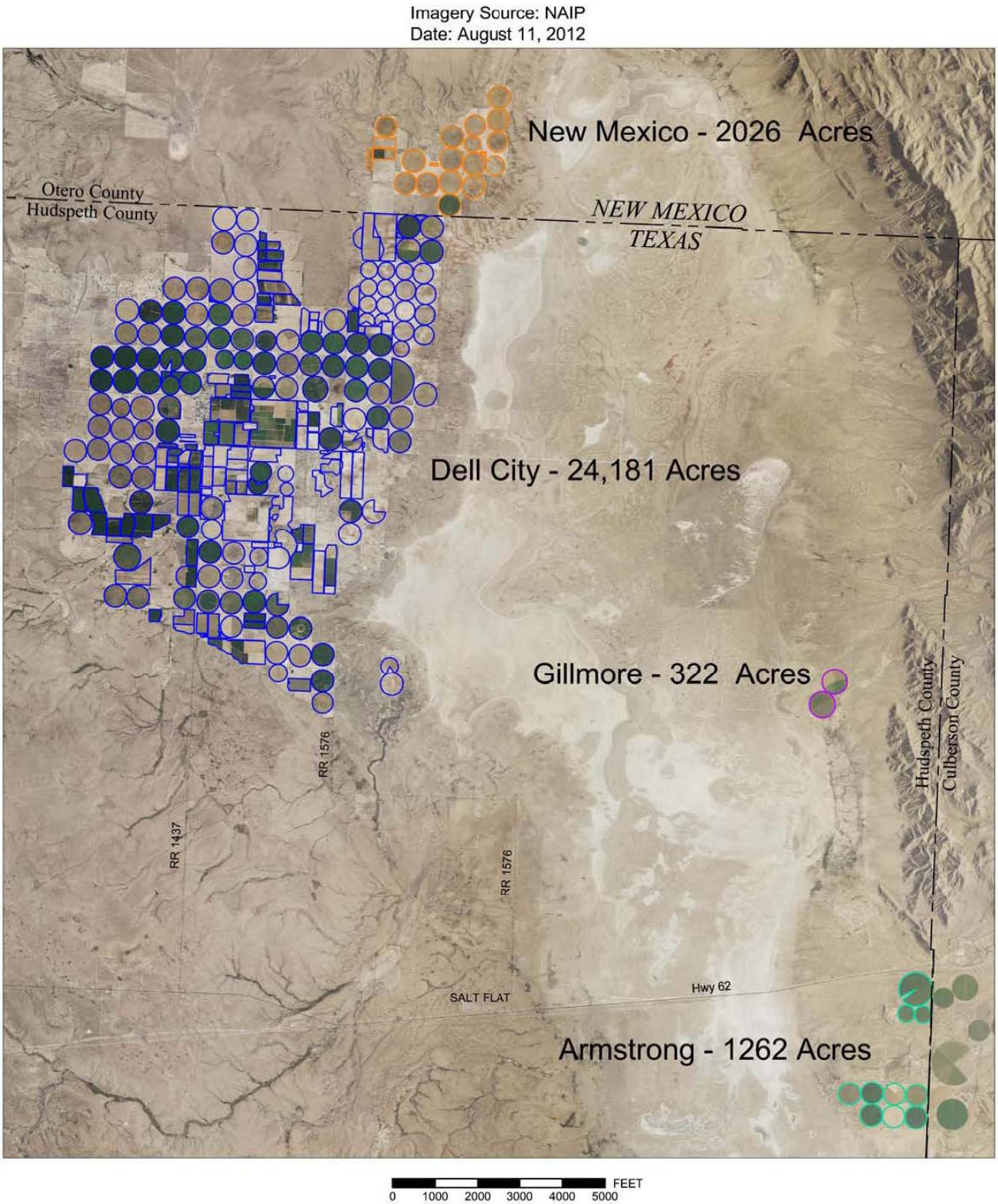
| | Irrigated Land | Groundwater Pumped |
|---|---|---|
| | acres | acre-feet |
| 2006 | 15,396 | 75,440 |
| 2007 | 17,247 | 84,508 |
| 2008 | 19,097 | 93,575 |
| 2009 | 19,618 | 96,128 |
| 2010 | 20,139 | 98,681 |
| 2011 | 20,660 | 101,234 |
| 2012 | 21,181 | 103,787 |

Figure 1: Cultivated Acreage in Dell City, Texas, Area in 2008




Acres Under Cultivation 2008

Figure 2: Cultivated Acreage in Dell City, Texas, Area in 2012




Acres Under Cultivation 2012

Appendix F contains the "Estimated Historical Groundwater Use And 2012 State Water Plan Datasets" provided by the TWDB. The estimates of Historical Groundwater Use (acre-feet per year) in Appendix F significantly under-estimate the actual historical pumping in the District and other locations within Hudspeth County (see section 2).

## 3. Amount of Recharge from Precipitation – 31 TAC § 356.52(a)(5)(C)

TWDB GAM Run 11-020 estimated the recharge from precipitation over the District is 256 acre-feet per year. The primary recharge zone for the Bone Spring – Victorio Peak Aquifer is outside and north of the District in the Sacramento Mountains drainage area.

## 4. Amount of Water that Discharges to Springs – 31 TAC § 356.52(a)(5)(D)

Historically, water from the Bone Spring -Victorio Peak Aquifer discharged to the Alkali Lakes in the Crow Flat portions of the Salt Basin. The exact date that such discharge stopped is not known but was assumed to have occurred prior to 1970. Currently, there is no known spring flow from the aquifer.

## 5. Estimate of Annual Volumes of Flow – 31 TAC § 356.52(a)(5)(E)

There is only one aquifer in the district and it is in a closed basin. Table 1 below was prepared by the Texas Water Development Board in the document GAM Run 11-020: Hudspeth County Underground Water Conservation District Management Plan.

**Table 1: TWDB GAM Run 11-020 Recharge, Inflows and Outflows**

| *Management Plan requirement* | *Aquifer or confining unit* | *Results* |
|---|---|---|
| Estimated annual amount of recharge from precipitation to the district | Bone Spring-Victorio Peak Aquifer | 256 |
| Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers | Bone Spring-Victorio Peak Aquifer | 0 |
| Estimated annual volume of flow into the district within each aquifer in the district | Bone Spring-Victorio Peak Aquifer | 110,805 |
| Estimated annual volume of flow out of the district within each aquifer in the district | Bone Spring-Victorio Peak Aquifer | 39,825 |
| Estimated net annual volume of flow between each aquifer in the district | Bone Spring-Victorio Peak Aquifer | 0 |

## 6. Projected Surface Water Supply – 31 TAC § 356.52(a)(5)(F)

The 2012 State Water Plan (see Appendix F) shows 161 acres-feet of surface water being available from the Rio Grande in Hudspeth County during the drought of record. No

water from the Rio Grande is available to water users within the District. There are four recharge and flood control dams located within the District that do capture storm runoff, but during the drought-of-record the estimated amount of runoff is zero.

## 7. Projected Total Demand for Water –31 TAC § 356.52(a)(5)(G)

Appendix F contains the "Estimated Historical Groundwater Use And 2012 State Water Plan Datasets" provided by the TWDB. The project Total Demand for Hudspeth County shown in Appendix F for 2010 for Hudspeth County is 35,886 acre feet. Hudspeth County contains three primary areas of irrigated agriculture: 1) the Hudspeth County Conservation and Reclamation District No. 1 near Ft. Hancock, Texas (approximately 18,000 acres of irrigated land); 2) the Hudspeth County Underground Water Conservation District No. 1 (approximately 34,000 acres of permitted historical irrigated land); and the Salt Flat – Diablo Farms area (approximately 5,000 acres of irrigated land). The approximate total amount of irrigated land in Hudspeth County is 57,000 acres of which it is typical to apply between 3 to 4 feet or water per year to produce and agricultural crop.

Since the District does not cover all of Hudspeth County, county-wide data are not representative data for the District. The area within the District is approximately 19.62 percent of the total area of Hudspeth County.

## 8. Water Supply Needs – TWC § 36.1071(e)(4)

Appendix F contains the "Estimated Historical Groundwater Use And 2012 State Water Plan Datasets" provided by the TWDB. The Water Supply Needs for Hudspeth County shown in Appendix F for 2010 for Hudspeth County for irrigation is -98,643 acre feet.

## 9. Water Management Strategies –TWC § 36.1071(e)(4)

The water management strategies for the District include the following strategies obtained from the 2007 and 2011 Far West Texas Regional Water Plan:

- Volumetric Measurement of Water Use
- On-Farm Irrigation Audits
- Land Leveling
- Replacement of Irrigation Ditches with Pipelines
- Low Pressure Center Pivot Irrigation Systems

- Irrigation Scheduling
- Reuse of Irrigation Tailwater

The large majority of irrigated land in the District is planted with alfalfa for hay. Hay production requires repetitive field operations of irrigation, cutting or windrowing, raking, and bailing. The harvest operations are dependent on the alfalfa leaf area being relatively dry and the moisture of the cut hay must be optimal for bailing (neither too dry nor too wet). This sequence of irrigation, cutting, raking, and bailing is typically repeated 5 to 8 times per year. Because the scheduling of these harvest operations takes priority over crop water requirements, irrigation scheduling is seldom used in alfalfa hay production, and thus is not a useful conservation strategy for the District. Similarly, because alfalfa is a multi-year crop (3 to 6 years) between replanting, conservation tillage is of limited value for alfalfa production.

The majority of the irrigated land within the District is irrigated using low pressure center pivots. Currently, only high value crops in the District, such as grapes, are irrigated using drip irrigation. Several farms in the far south west area of New Mexico and eastern area of Arizona are using subsurface drip irrigation for alfalfa production. The irrigation water quality at these locations is typically much higher (less salt) than the quality of the groundwater in the District. Nonetheless, some potential exists within the District for increasing the amount of drip irrigation.

## 10. Management of Groundwater Supplies - 31 TAC § 356.52(a)(4)

The District will manage the production of groundwater from the Bone Spring-Victorio Peak aquifer within the District in a sustainable manner. The District will identify and engage in such practices that, if implemented, would result in more efficient use of groundwater. The District will monitor the TWDB and USGS groundwater level monitoring wells located within the District in order to gain additional information regarding changing storage conditions of groundwater supplies within the District. The District will work cooperatively with the TWDB and USGS investigations of the groundwater, and will make the results of such investigations available to the public.

The District shall prepare an annual report summarizing District activities to be approved by the Board of Directors during the first quarter of each year. A newsletter will be mailed to all validation and operational permit holders. The newsletter will contain a summary of the annual report and information regarding water conservation.

## 11. District Rules – TWC § 36.1071(e) (4)

The District will use the provisions of this plan as guidelines for District activities. Operations of the District, all agreements entered into by the District, and any additional planning activities in which the District participates will be consistent with this plan and with the District's rules.

## 12. Resolution Adopting 2013 Management Plan – 31 TAC § 356.53(a)(3)

A certified copy of the District Resolution adopting this Management Plan is attached as Appendix B.

## 13. Notice of Hearing on 2013 Management Plan – 31 TAC § 356.53(a)(3)

A hearing notice was published in the *Hudspeth County Herald*, a newspaper of general circulation in Hudspeth County, Texas, on the __ and ___ day of April 2013, and a copy of the published notice is attached as Appendix C. Also enclosed, as Appendices D and E, respectively, are copies of the posted agenda for the hearing and the minutes of the hearing.

## 14. Site Specific Information – 31 TAC § 356.52(c)

Section 19 list references for technical publication describing the characteristics of the groundwater resources with the District.

## 15. Management Goals, Objectives, and Performance Standards – 31 TAC § 356.51

### 15.1. Efficient Use of Groundwater

**Management Objective:** Each year the District will provide information to the general public about the status of the groundwater in the District.

**Performance Standard:** The District's annual newsletter that will be mailed to each of the existing validation and operating permit holders will include information on the status of groundwater in the District.

### 15.2. Controlling and Preventing Waste of Groundwater

**Management Objective:** The District will inform District water users about efficient use of water and methods to prevent waste.

**Performance Standard:** The District's annual newsletter that will be mailed to all validation and operating permit holders will include an article on irrigation water management.

### 15.3. Controlling and Preventing Subsidence

There is no known subsidence (as defined in Chapter 36 of the Texas Water Code) within the District caused by groundwater withdrawals, and this management item is not applicable to the District's Management Plan.

### 15.4. Conjunctive Surface Water Management Issues

There are no known conjunctive surface water management issues within the District, and this management item is not applicable to the District's Management Plan.

### 15.5. Natural Resource Issues

**Management Objective:** The amount of groundwater withdrawals permitted by the District shall be tied to the long-term sustainable amount of recharge to the portion of the aquifer within the District and the groundwater elevation measured in the District's monitoring well(s) in accordance with the District's rules, in such a way as to protect the historical and existing uses of groundwater withdrawn from the portion of the Bone Spring-Victorio Peak aquifer located within the District.

**Performance Standard:** The District shall report annually to the Board on the amount of groundwater being withdrawn through non-exempt wells located within the District, measured through the District's flow metering program, for the quantification of existing and historical use of groundwater within the District's boundaries, and for the issuing of validation and operational permits for all nonexempt wells in operation.

### 15.6. Drought Conditions

**Management Objective:** The annual amount of groundwater permitted by the District for withdrawal from the portion of the Bone Spring-Victorio Peak aquifer located within the District may be curtailed during periods of extreme drought in the recharge zone of the aquifer or because of other conditions that cause significant declines in groundwater surface elevations. Such curtailment may be triggered by the District's Board based on the groundwater elevation measured in the District's monitoring well(s).

**Performance Standard:** The District's annual report will include a report on the District's monitoring well groundwater elevation at least one measurement per year and a

report on whether the permitted withdrawals were curtailed at any time during the year because of drought conditions.

### 15.7. Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control

**Management Objective:** The District shall promote the efficient application of irrigation water to field crops.

**Performance Standard:** The District shall assist in organizing the field demonstration of irrigation water conservation technology during one day every other year.

**Management Objective:** The District shall coordinate each year with Hudspeth County on the maintenance of the three existing recharge and flood control facilities located in the district.

**Performance Standard:** The District Manager shall report to the District's board of directors annually regarding the activities of Hudspeth County regarding the maintenance of the recharge and flood control facilities, and such report shall be reflected in the minutes of such board meeting.

**Management Objective:** The District shall promote rainwater harvesting, precipitation enhancement, and brush control.

**Performance Standard:** The District shall include articles on rainwater harvesting, precipitation enhancement, and brush control in its annual newsletter mailed to all of its validation and operating permit holders.

### 15.8. Modeled Available Groundwater and Desired Future Conditions

**Management Objective:** The District shall adopt a Modeled Available Groundwater and Desired Future Conditions value in accordance with the requirements of Chapter 36 of the Texas Water Code and Title 31, Chapter 356, of the Texas Administrative Code.

**Performance Standard:** The District has participated in the GMA 4 meetings with a minimum of one meeting per year, and will continue to work with GMA 4 and the Texas Water Development Board in determine the amount of Modeled Available Groundwater and the Desired Future Conditions within the District.

## 16. Desired Future Conditions

The GMA 4 Resolution 2010-01 set a Desired Future Condition for the Bone Spring – Victorio Peak Aquifer of 0 feet of change in the average groundwater elevation at the end

of 50 year planning period in 2060. The following objectives and performance standards will be used to address the District's Desired Future Conditions.

**Objective:** The District will review and calculate its total amount of groundwater pumped within the District and assess whether the District is on target to meet the DFC estimates submitted to the TWDB.

**Performance Standard**: The District's Annual Report will include a discussion of the amount of water pumped each year within the District and will evaluate the District's progress in achieving the DFCs of the groundwater resources within the boundaries of the District and whether the District is on track to maintain the DFC estimates over the fifty year planning period.

**Objective**: The District will continuously measure the water levels in at least one monitoring well and manually measure water levels each year in at least five monitoring wells within the District and will determine the average groundwater levels every two years. The District will compare the two-year water level averages to the corresponding two-year increment of its DFCs in order to track its progress in achieving the DFCs.

**Performance Standard**: The District's Annual Report will include the water level measurements taken each year for the purpose of measuring water levels to assess the District's progress towards achieving its DFCs. The District will include a discussion of its comparison of water level averages to the corresponding two-year increment of its DFCs in order to track its progress in achieving its DFCs.

## 17. Evidence of Coordination with Surface Water Entity

There are no surface water entities identified in the 2012 State Water Plan that are located within the District's boundaries.

## 18. Sharing with Regional Water Planning Group

Below is a copy of the transmittal letter for the copy of the plan that was sent by certified mail to the Chair of the Far West Regional Water Planning Group requesting the group's comments regarding this Management Plan.

## 19. References

Ashworth, John, (1995), Ground-water resources of the Bone Spring-Victorio Peak Aquifer in the Dell Valley Area, Texas, Texas Water Development Board Report No. 344, Austin, Texas, 43 pg.

Mace, Robert, et al (2001), Aquifers of West Texas, Texas Water Development Board Report No. 356, Austin, Texas, pg.135-152.

Blair, A.W., (2003), April 28, 2003 as revised on May 5, 2003. Report to the Far West Texas Regional Water Planning Group and the Texas Water Development Board. "Determination of Acres of Irrigated Land and Irrigation Water Use for the Year 2000 in Hudspeth County Texas.

Far West Texas Regional Water Plan, 2011, Rio Grande Council of Governments, http://www.riocog.org/EnvSvcs/FWTWPG/publishe.htm

Mayer, J.R., (1995), The role of fractures in regional groundwater flow: Field evidence and model results from the basin-and-range of Texas and New Mexico, M.S. Thesis from University of Texas, Austin.

Logan, H.H., (1984), A groundwater recharge project associated with a flood protection plan in Hudspeth County, Texas, Master Thesis – Texas Christian University, 110 pg. (as cited in Ashworth, 1995).

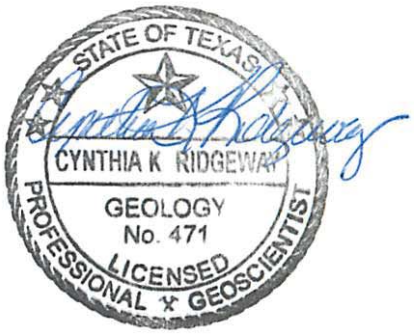
# Appendix A – TWDB GAM Run 10-061 MAG

# GAM Run 10-061 MAG

**By Mr. Wade Oliver**

Edited and finalized by Ian Jones, Ph.D., P.G. to reflect statutory changes effective September 1, 2011

Texas Water Development Board
Groundwater Availability Modeling Section
(512) 463-3132
December 6, 2011




Cynthia K. Ridgeway, the Manager of the Groundwater Availability Modeling Section and Interim Director of the Groundwater Resources Division, is responsible for oversight of work performed by employees under her direct supervision. The seal appearing on this document was authorized by Cynthia K. Ridgeway, P.G. 471 on December 6, 2011.

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## EXECUTIVE SUMMARY:

The modeled available groundwater for the Bone Spring–Victorio Peak Aquifer as a result of the desired future condition adopted by the members of Groundwater Management Area 4 is approximately 101,400 acre-feet per year. This is shown divided by county, regional water planning area, and river basin in Table 1 for use in the regional water planning process. The estimate was taken from the model simulation documented in Groundwater Availability Modeling Task 10-006, which the members of Groundwater Management Area 4 reviewed when developing their desired future condition. In this simulation, the "net pumping" that achieves the desired future condition was reported as approximately 71,000 acre-feet per year. For this report, an irrigation return flow factor of 30 percent was used to convert net pumping to total pumping. This factor was provided by the district and is consistent with its current rules.

## REQUESTOR:

Ms. Janet Adams of Jeff Davis County Underground Water Conservation District on behalf of Groundwater Management Area 4

## DESCRIPTION OF REQUEST:

In a letter dated August 13, 2010, Ms. Janet Adams provided the Texas Water Development Board (TWDB) with the desired future condition of the Bone Spring–Victorio Peak Aquifer adopted by the members of Groundwater Management Area 4. The desired future condition for the aquifer, as presented in Resolution No. R 2010-01 and adopted August 13, 2010 by the groundwater conservation districts within Groundwater Management Area 4, is shown below:

> *For Hudspeth County* [Underground Water Conservation District] *No.1* [zero] *0 foot drawdown for the Bone Springs–Victorio Peak Aquifer.*

In response to receiving the adopted desired future condition, the Texas Water Development Board has estimated the modeled available groundwater for the Bone Spring–Victorio Peak Aquifer in Groundwater Management Area 4.

## METHODS:

Groundwater Management Area 4 contains the Bone Spring–Victorio Peak Aquifer, a minor aquifer in Texas as defined in the 2007 State Water Plan (TWDB, 2007). The locations of the aquifer and Hudspeth County Underground Water Conservation District No. 1 are shown in Figure 1.

Using several groundwater flow models for the Bone Spring–Victorio Peak Aquifer (Hutchison, 2008), the Texas Water Development Board previously completed a series of simulations in order to assess the impact of different levels of pumping on the aquifer over a 50 year period. The simulations are documented in Groundwater Availability Modeling (GAM) Task 10-006 (Hutchison, 2010). See Hutchison (2010) for a full description of the methods, assumptions, and results of the model simulations. See Hutchison (2008) for details on the development, calibration, and applicability of the groundwater flow models.

In GAM Task 10-006, the "net pumping" that achieves zero drawdown after 50 years (which matches the desired future condition above) is approximately 71,000 acre-feet per year. Here, "net pumping" refers to the total volume of water pumped from the aquifer minus the portion that returns to the aquifer as irrigation return flow. Irrigation return flow is that portion of pumped groundwater that infiltrates past the root zone and recharges the aquifer.

The amount of irrigation return flow is estimated to be approximately 30 percent of the total volume of water pumped from the aquifer in the district. According to Hudspeth County Underground Water Conservation District No. 1, this is consistent with their current district rules. Using this factor, the net pumping reported in Hutchison (2010) was converted to total pumping for the results presented below. If the district believes a different irrigation return flow factor would be more appropriate, they may submit a revised factor, along with a description of how it was developed, to the Texas Water Development Board for consideration.

**Modeled Available Groundwater and Permitting**

As defined in Chapter 36 of the Texas Water Code, "modeled available groundwater" is the estimated average amount of water that may be produced annually to achieve a desired condition. This is distinct from "managed available groundwater," shown in the draft version of this report dated November 22, 2010, which was a permitting value and accounted for the estimated use of the aquifer exempt from permitting. This change was made to reflect changes in statute by the 82nd Texas Legislature, effective September 1, 2011.

Groundwater conservation districts are required to consider modeled available groundwater, along with several other factors, when issuing permits in order to manage groundwater production to achieve the desired future condition(s). The other factors districts must consider include annual precipitation and production patterns, the estimated amount of pumping exempt from permitting, existing permits, and a reasonable estimate of actual groundwater production under existing permits. The estimated amount of pumping exempt from permitting, which the Texas Water Development Board is now required to develop after soliciting input from applicable groundwater conservation districts, will be provided in a separate report.

**RESULTS:**

The modeled available groundwater for the Bone Spring–Victorio Peak Aquifer in Groundwater Management Area 4 consistent with the desired future condition is approximately 101,400 acre-feet per year. The estimated "net pumping" of 71,000 acre-feet per year (Hutchison, 2010) was converted to total pumping from the aquifer using the irrigation return flow factor of 30 percent as shown below:

$$Q_{Total} = \frac{Q_{Net}}{(1 - IRF)}$$

Where

$Q_{Total}$ = total pumping in acre-feet per year,

$Q_{Net}$ = net pumping in acre-feet per year, and

IRF = the irrigation return flow factor (unitless).

The modeled available groundwater is shown in Table 1 divided by county, regional water planning area, and river basin for use in the regional water planning process. Notice that all of the pumping is located within the Far West Texas Regional Water Planning Area (Region E) and the Rio Grande River Basin.

**LIMITATIONS:**

The groundwater model used in developing estimates of modeled available groundwater is the best available scientific tool that can be used to estimate the pumping that will achieve the desired future condition. Although the groundwater model used in this analysis is the best available scientific tool for this purpose, it, like all models, has limitations. In reviewing the use of models in environmental regulatory decision-making, the National Research Council (2007) noted:

> "Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results."

A key aspect of using the groundwater model to develop estimates of modeled available groundwater is the need to make assumptions about the location in the aquifer where future pumping will occur. As actual pumping changes in the future, it will be necessary to evaluate the amount of that pumping as well as its location in the context of the assumptions associated with this analysis. Evaluating the amount and location of future pumping is as important as evaluating the changes in groundwater levels, spring flows, and other metrics that describe the condition of the groundwater resources in the area that relate to the adopted desired future condition(s).

Given these limitations, users of this information are cautioned that the modeled available groundwater numbers should not be considered a definitive, permanent description of the amount of groundwater that can be pumped to meet the adopted desired future condition. Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations relating to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor future groundwater pumping as well as whether or not they are achieving their desired future conditions. Because of the limitations of the model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine the modeled available groundwater numbers given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future.

**REFERENCES:**

Hutchison, W.R., 2008. Preliminary Groundwater Flow Model, Dell City Area, Hudspeth and Culberson Counties, Texas. El Paso Water Utilities Hydrogeology Report 08-01, July 2008, 435 p.

Hutchison, W.R., 2010, GAM Task 10-006: Texas Water Development Board, GAM Task 10-006 Report, 7 p.

National Research Council, 2007, Models in Environmental Regulatory Decision Making. Committee on Models in the Regulatory Decision Process, National Academies Press, Washington D.C., 287 p.

Texas Water Development Board, 2007, Water for Texas – 2007—Volumes I-III; Texas Water Development Board Document No. GP-8-1, 392 p.

Table 1. Modeled available groundwater for the Bone Spring–Victorio Peak Aquifer in Groundwater Management Area 4. Results are in acre-feet per year and are divided by county, regional water planning area, and river basin.

| County | Regional Water Planning Area | Basin | Year | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
| Hudspeth | E | Rio Grande | 101,429 | 101,429 | 101,429 | 101,429 | 101,429 | 101,429 |

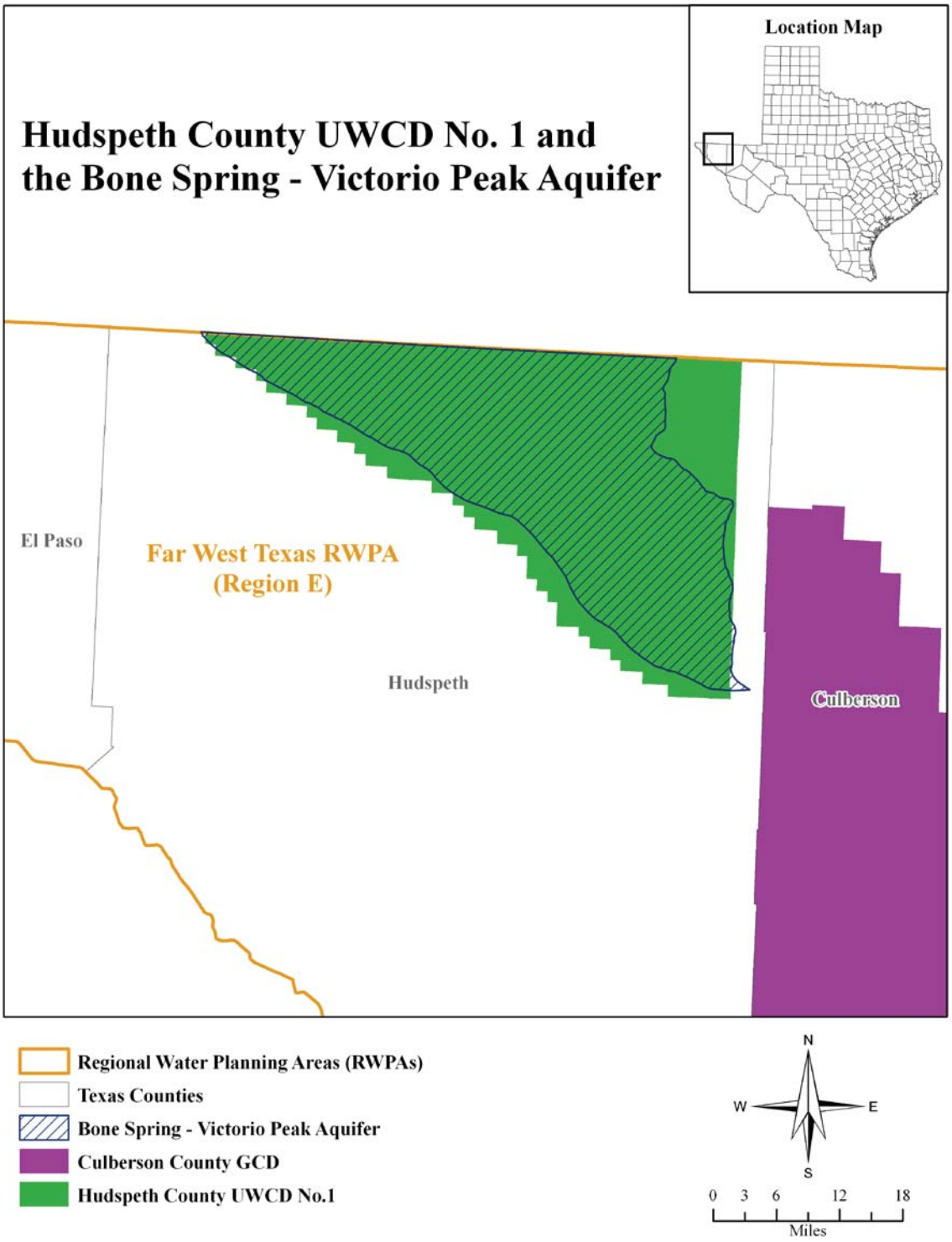


Figure 1. Map showing regional water planning areas (RWPAs), groundwater conservation districts (GCDs), and counties in the vicinity of the Bone Spring–Victorio Peak Aquifer in Groundwater Management Area 4.

RECEIVED

AUG 18 2010

TWDB

August 13, 2010

Mr. J. Kevin Ward, Executive Administrator
Texas Water Development Board
PO Box 13231
Austin, TX 78711-3231

Dear Mr. Ward,

As Administrator Groundwater Management Area 4, I am proud to announce that the District Committee Members of GMA 4 have formally adopted a Desired Future Condition for the following Aquifers: Capitan Reef, Edwards Trinity, Marathon. Rustler, Igneous, Upper Salt Basin, Bone Springs-Victorio Peak and West Texas Bolsons and Presidio-Redford Bolson.

Please find enclosed record of the meeting notice postings, minutes of the meetings, and Resolution R 2010-01 with signatures of the District Committee Members present, and record of their unanimous vote.

If there is any additional information that needs to be submitted, I can be contacted at: Jeff Davis County Underground Water Conservation District, P O Box 1203, Fort Davis, Texas 79734. Phone 432-426-3441. Cell 432-249-0340.

Respectfully,

Janet Adams
General Manager
Jeff Davis County Underground Water Conservation District

**RESOLUTION No. R 2010-01**

# RESOLUTION FOR THE ADOPTION OF THE DESIRED FUTURE CONDITIONS OF THE AQUIFERS IN GROUNDWATER MANAGEMENT AREA 4

**WHEREAS;** GROUNDWATER MANAGEMENT AREA (GMA) 4 IS COMPRISED OF DELEGATES FROM THE FOLLOWING GROUNDWATER CONSERVATION DISTRICTS LOCATED WHOLLY OR PARTIALLY WITHIN GMA 4: BREWSTER COUNTY GCD, CULBERSON COUNTY GCD, HUDSPETH COUNTY UWCD NO 1, JEFF DAVIS COUNTY UWCD, PRESIDIO COUNTY UWCD;

**WHEREAS;** CHAPTER 36.108 OF THE TEXAS WATER CODE, JOINT PLANNING IN MANAGEMENT AREA, REQUIRES THAT THE GROUNDWATER CONSERVATION DISTRICTS IN THE GMA ADOPT DESIRED FUTURE CONDITIONS OF ALL RELEVANT AQUIFERS IN THE GMA FOR THE NEXT FIFTY YEAR HORIZON, NO LATER THAN SEPTEMBER 1, 2010;

**WHEREAS;** THE COMMITTEE MEMBERS OF GMA 4 HAVE HELD PUBLIC MEETINGS NOTICED AND POSTED IN ACCORDANCE WITH STATE LAW, AND HAVE REVIEWED AND DISCUSSED GROUNDWATER AVAILABILITY MODEL (GAM) RUNS WITH INPUT AND COMMENT FROM STAKEHOLDERS WITHIN GMA 4;

**WHEREAS;** IN REFERENCE TO AQUIFER ASSESSMENT 09-08, 09-09, 09-10, 09-12 GAM TASK 10-006, 10-026, 10-028 (SCENARIO 3). THE COMMITTEE HAS CONSIDERED, THE DIFFERENT DRAWDOWNS

**NOW, THEREFORE, BE IT RESOLVED THAT,** THE DISTRICT MEMBERS OF GROUNDWATER MANAGEMENT AREA 4, ADOPT FOR BREWSTER COUNTY GCD 0 FOOT DRAWDOWN FOR THE CAPITAN REEF, EDWARDS TRINITY, MARATHON, AND THE RUSTLER, 10 FOOT DRAWDOWN FOR THE IGNEOUS, FOR CULBERSON COUNTY GCD 50 FOOT DRAWDOWN FOR THE CAPITAN REEF, EDWARDS TRINITY AND THE UPPER SALT BASIN, 78 FOOT DRAWDOWN FOR THE WEST TEXAS BOLSONS, 66 FOOT DRAWDOWN FOR THE IGNEOUS FOR HUDSPETH COUNTY UWCD NO.1 0 FOOT DRAWDOWN FOR THE BONE SPRINGS – VICTORIO PEAK AQUIFER. FOR JEFF DAVIS COUNTY GCD 20 FOOT DRAWDOWN FOR THE IGNEOUS AQUIFER, 72 FOOT DRAWDOWN FOR THE WEST TEXAS BOLSONS. FOR PRESIDIO COUNTY GCD 14 FOOT DRAWDOWN FOR THE IGENOUS AQUIFER, 5 FOOT DRAWDOWN FOR THE PRESIDIO-REDFORD BOLSON, 72 FOOT DRAWDOWN FOR THE WEST TEXAS BOLSONS.

ALL OTHER AQUIFERS IN GROUNDWATER MANAGEMENT AREA 4 NOT LISTED ARE CONSIDERED NON-RELEVANT FOR THE PURPOSE OF JOINT PLANNING AT THIS TIME.

**AND IT IS SO ORDERED AND PASSED THIS 13th DAY OF AUGUST 2010.**

**SIGNED** _____

**Conrad Arriola** — **Brewster County GCD**

**SIGNED** _____

**John Jones** — **Culberson County GCD**

**SIGNED** _____

**Randy Barker** — **Hudspeth County UWCD No 1**

**SIGNED** _____

**Janet Adams** — **Jeff Davis County UWCD**

**SIGNED** _____

**Janet Adams** — **Presidio County UWCD**

# Groundwater Management Area # 4
# Joint Planning Meeting

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area Joint Planning Group, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area #4: Brewster County GCD, Jeff Davis UWCD, Culberson County GCD, Hudspeth County UWCD #1, and Presidio County UWCD was held on Friday, August 13, 2010, at 10:00 a.m. (CST) in the Culberson County Groundwater Conservation District Office, 1300 W Broadway, Van Horn, Texas.

## Minutes

1. Call to Order
   The meeting was called to order at 10:09 a.m.

2. Introduction of Member Districts
   Hudspeth County UWCD #1 – Randy Barker
   Culberson County GCD – John Jones
   Brewster County GCD – Conrad Arriola
   Jeff Davis County UWCD – Janet Adams
   Presidio County UWCD – Janet Adams
   TWDB – Bill Hutchison
   Public
      Talley Davis – Hudspeth County UWCD #1
      Darrell Peckham – Thornhill Group. Inc

3. Approval of Minutes
   Randy Barker made a motion to approve the minutes from July 23, 2010. Second by John Jones. Motion carried 4-0.

4. Update by Bill Hutchison of TWDB
   10-028 has been completed

5. Non-relevant Aquifers
   On a motion by Janet Adams and a second by Conrad Arriola GMA 4 voted that the following Aquifers are non-relevant in GMA 4. Motion carried 5-0.

      Culberson County GCD
         Deleware Basin

6. Adoption of Final DFCs

On a motion by Conrad Arriola and a second by Janet Adams, GMA 4 voted to adopt the following DFCs for the aquifers in GMA 4. Motion carried 5-0.

THE DISTRICT MEMBERS OF GROUNDWATER MANAGEMENT AREA 4, ADOPT FOR BREWSTER COUNTY GCD 0 FOOT DRAWDOWN FOR THE CAPITAN REEF, EDWARDS TRINITY, MARATHON, AND THE RUSTLER, 10 FOOT DRAWDOWN FOR THE IGNEOUS, FOR CULBERSON COUNTY GCD 50 FOOT DRAWDOWN FOR THE CAPITAN REEF, EDWARDS TRINITY AND THE UPPER SALT BASIN, 78 FOOT DRAWDOWN FOR THE WEST TEXAS BOLSONS, 66 FOOT DRWADOWN FOR THE IGNEOUS FOR HUDSPETH COUNTY UWCD NO.1 0 FOOT DRAWDOWN FOR THE BONE SPRINGS – VICTORIO PEAK AQUIFER. FOR JEFF DAVIS COUNTY GCD 20 FOOT DRAWDOWN FOR THE IGNEOUS AQUIFER, 72 FOOT DRAWDOWN FOR THE WEST TEXAS BOLSONS. FOR PRESIDIO COUNTY GCD 14 FOOT DRAWDOWN FOR THE IGENOUS AQUIFER, 5 FOOT DRAWDOWN FOR THE PRESIDIO-REDFORD BOLSON, 72 FOOT DRAWDOWN FOR THE WEST TEXAS BOLSONS.

ALL OTHER AQUIFERS IN GROUNDWATER MANAGEMENT AREA 4 NOT LISTED ARE CONSIDERED NON-RELEVANT FOR THE PURPOSE OF JOINT PLANNING AT THIS TIME.

7. Public Comment

None

8. Next meeting

June 24, 2011

9. Adjournment

On a motion by Conrad Arriola and a second by John Jones the meeting was adjourned at 10:35 a.m. Motion carried 5-0

Administrator, Groundwater Management Area 4

# NOTICE OF MEETING

## Groundwater Management Area # 4
## Joint Planning Meeting

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area Joint Planning Group, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area #4: Brewster County GCD, Jeff Davis UWCD, Culberson County GCD, Hudspeth County UWCD #1, and Presidio County UWCD will be held on Friday, August 13, 2010, at 10:00 a.m. (CST) in the Culberson County Groundwater Conservation District Office, 1300 W. Broadway, Van Horn, TX,
At this meeting, the following business may be considered and recommended for Joint Planning Group action:

1. Call to Order
2. Introduction of member Districts and guest.
3. Approval of minutes from last meeting, July 23, 2010
4. Update by Dr. Bill Hutchison
5. Adoption of additional non-relevant aquifers within Groundwater Management Area 4.
6. Adoption of Desired Future Conditions for all Aquifers within Groundwater Management Area 4 and resolution No 2010-01.
7. Public comment.
8. Set next meeting date.
9. Adjournment.

Administrator, Groundwater Management Area 4

FILED
AT 2:00 O'CLOCK P M
JUL 29 2010
Sue Blackley
SUE BLACKLEY
CLERK OF COUNTY COURT
JEFF DAVIS COUNTY, TEXAS
BY _____ DEPUTY

FILED
AT O'CLOCK M
JUL 29 2020
CLERK OF COUNTY COURT
JEFF DAVIS COUNTY, TEXAS
BY DEPUTY

**NOTICE OF MEETING**

**Groundwater Management Area # 4**
**Joint Planning Meeting**

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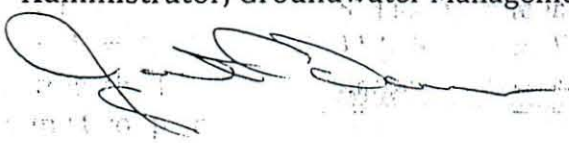
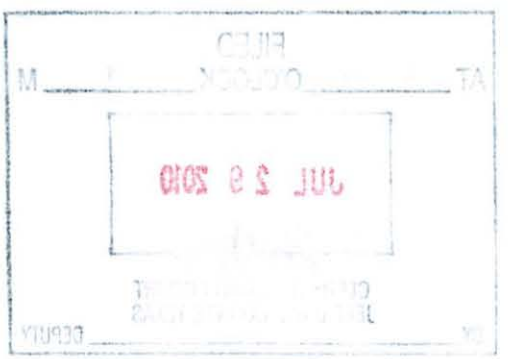
1. Call to Order
2. Approval of the Minutes of the August 13, 2010 Meeting.
3. Public comment.
4. Adjournment.

Administrator, Groundwater Management Area 4



FILED
AT 2:00 O'CLOCK P M
JUL 29 2010
Sue Blackley
SUE BLACKLEY
CLERK OF COUNTY COURT
JEFF DAVIS COUNTY, TEXAS
BY _____ DEPUTY


JUL 29 2019

# NOTICE OF MEETING

## Groundwater Management Area # 4
## Joint Planning Meeting

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6. Adoption of Desired Future Conditions for all Aquifers within Groundwater Management Area 4 and resolution No 2010-01.
7. Public comment.
8. Set next meeting date.
9. Adjournment.

Administrator, Groundwater Management Area 4

FILED FOR RECORD at 11:15 A.M.

JUL 30 2010

COUNTY CLK PRESIDIO CO.

# NOTICE OF MEETING

## Groundwater Management Area # 4
## Joint Planning Meeting

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area Joint Planning Group, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area #4: Brewster County GCD, Jeff Davis UWCD, Culberson County GCD, Hudspeth County UWCD #1, and Presidio County UWCD will be held on Friday, August 13, 2010, at 11:00 a.m. (CST) in the Culberson County Groundwater Conservation District Office, 1300 W. Broadway, Van Horn, TX.
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1. Call to Order
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4. Adjournment.

Administrator, Groundwater Management Area 4

FILED FOR RECORD at 11:15 A M.

JUL 30 2010

COUNTY CLK PRESIDIO CO.

**NOTICE OF MEETING**

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7. Public comment.
8. Set next meeting date.
9. Adjournment.

Administrator, Groundwater Management Area 4

Original Was.
Filed this 9th day of
August A.D. 2010
at 8:05 o'clock P M.
Linda McDonald
County Clerk
By Rita C. Ruiz
Deputy

**NOTICE OF MEETING**

**Groundwater Management Area # 4**
**Joint Planning Meeting**

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area Joint Planning Group, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area #4: Brewster County GCD, Jeff Davis UWCD, Culberson County GCD, Hudspeth County UWCD #1, and Presidio County UWCD will be held on Friday, August 13, 2010, at 11:00 a.m. (CST) in the Culberson County Groundwater Conservation District Office, 1300 W. Broadway, Van Horn, TX,
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3. Public comment.
4. Adjournment.

Administrator, Groundwater Management Area 4

Original Was:
Filed this 9th day of
August A.D. 2010
at 8:05 o'clock P M.
Linda McDonald
County Clerk
By Ana C Munoz
Deputy

# NOTICE OF MEETING

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7. Public comment.
8. Set next meeting date.
9. Adjournment.

Administrator, Groundwater Management Area 4

AUG 2 2010

Initial:

# NOTICE OF MEETING

## Groundwater Management Area # 4
## Joint Planning Meeting

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1. Call to Order
2. Approval of the Minutes of the August 13, 2010 Meeting.
3. Public comment.
4. Adjournment.

Administrator, Groundwater Management Area 4

POSTED

AUG 2 2010

Initial:

# NOTICE OF MEETING

## Groundwater Management Area # 4
## Joint Planning Meeting

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5. Adoption of additional non-relevant aquifers within Groundwater Management Area 4.
6. Adoption of Desired Future Conditions for all Aquifers within Groundwater Management Area 4 and resolution No 2010-01.
7. Public comment.
8. Set next meeting date.
9. Adjournment.

Administrator, Groundwater Management Area 4

FILED
At 1:40 o'clock P M
Date 8/9/10
Berta Rios Martinez
BERTA RIOS MARTINEZ
County Clerk, Brewster County, TX
By _____ Deputy

# NOTICE OF MEETING

## Groundwater Management Area # 4
## Joint Planning Meeting

As required by section 36.108(e), Texas Water Code, a meeting of the Groundwater Management Area Joint Planning Group, comprised of delegates from the following groundwater conservation districts located wholly or partially within Groundwater Management Area #4: Brewster County GCD, Jeff Davis UWCD, Culberson County GCD, Hudspeth County UWCD #1, and Presidio County UWCD will be held on Friday, August 13, 2010, at 11:00 a.m. (CST) in the Culberson County Groundwater Conservation District Office, 1300 W. Broadway, Van Horn, TX,
At this meeting, the following business may be considered and recommended for Joint Planning Group action:

1. Call to Order
2. Approval of the Minutes of the August 13, 2010 Meeting.
3. Public comment.
4. Adjournment.

Administrator, Groundwater Management Area 4

FILED
At 1:40 o'clock P M
Date 8/9/10
Berta Rios Martinez
BERTA RIOS MARTINEZ
County Clerk, Brewster County, TX
By _____ Deputy

## Appendix B – Copy of Resolution Adopting Management Plan

**Resolution of the**

**Hudspeth County Underground Water Conservation District No. 1**

**(the District)**

Whereas, the District in accordance with Chapter 36 of the Texas Water Code has provided public notice of hearing regarding amendment and adoption of the District's Groundwater Management Plan;

Whereas, the District has held three public meetings soliciting public comments regarding the proposed draft amended management plan and a quorum of the board was present for all hearings;

Whereas, copies of all written comments regarding the proposed management plan have been provided to each of the District's Board Members;

Therefore, on the May 14, 2013, the Board of Directors adopted the proposed management plan, as amended, and shall send a copy of the plan to the Texas Water Development Board for certification, to the Chair of the Far West Texas Water Planning Group, and to the general managers of each of the groundwater districts within Groundwater Management Area 4 of Texas.

Talley Davis, President

Attest: Phyllis Gentry, Secretary

# APPENDIX C – Agenda for May 14, 2013 Board Meeting and Hearing on Groundwater Management Plan

# Appendix C – Notice of Hearing

PUBLIC NOTICE OF GROUNDWATER

MANAGEMENT PLAN FOR ADOPTION BY THE

**Hudspeth County Underground Water Conservation District No. 1**

Hudspeth County Underground Water Conservation District No. 1 (the District) is proposing to amend the District's groundwater management plan. Copies of the proposed groundwater management plan are available for review at the District's Office located at 107 S. Dodson Street in Dell City, Texas Monday through Thursday from 9:00 AM to 2:00 PM. To obtain a copy of the management plan or additional information please contact the District office by phone at 915-964-2932, by US MAIL at P.O. Box 212, Dell City, Texas 79837 or by e-mail at hcuwcd1@dellcity.com.

As an aid to the District's Board, any person wishing to comment on the proposed groundwater management plan should give written notice of such comments to the District by May 14, 2014. The District will conduct a hearing in and consider adoption of the proposed groundwater management plan at the District's Board meeting that is scheduled for May 14, 2013 at 1:00 PM at the District Office located at 107 S. Dodson, Dell City, Texas. Verbal comments regarding the proposed groundwater management plan will be accepted by the Board during the hearing.

Manager, Randy Barker

# NOTICE OF REGULAR MEETING OF THE GOVERNING BODY OF THE HUDSPETH COUNTY UNDERGROUND WATER CONSERVATION DISTRICT #1

Notice is hereby given that the Board of Directors of the Hudspeth County Underground Water Conservation District #1 will meet in a Regular Session at the following location and time:

**Location:** **HCUWCD #1**
**107 S. Dodson**
**Dell City, Texas 79837**

**Time:** **May 14, 2013 @ 1:00 P.M upon adjournment of special session on proposed Groundwater Management Plan.**

## MEETING AGENDA

At the above time and location, the District's Board of Directors will discuss and may take action on any items on this agenda which it may determine would be appropriate, to-wit:

**Call to order and welcome all guests**

1. Discuss and take action for approval of minutes of regular meeting on April 09, 2013.

2. Discuss and take action for approval of bills.

3. Discuss and take action for approval of financial report.

4. Discuss, consider public comments, and take action on revisions, if any, and adoption of District Groundwater Management Plan.

5. Open forum

6. Adjourn.

POSTED 5/6/13

# NOTICE OF MEETING
# OF THE GOVERNING BODY OF THE HUDSPETH COUNTY UNDERGROUND WATER CONSERVATION DISTRICT #1

Notice is hereby given that the Board of Directors of the Hudspeth County Underground Water Conservation District #1 will meet in a Special Session at the following location and time:

**Location:** **HCUWCD #1**
**107 S. Dodson**
**Dell City, Texas 79837**

**Time:** **February 12, 2013 @ 8:00 A.M.**

## MEETING AGENDA

At the above time and location the District's Board of Directors will discuss and may take action on any items on this agenda it may determine would be appropriate to-wit:

**Call to order and welcome all guests**

1. Discuss and take action on revisions, if any, to District Groundwater Management Plan.

2. Adjourn.

I, the undersigned authority of the District, do hereby certify that the above notice is a true and correct copy of said notice and that such notice was posted on the main entrance of the District's office located at 107 S. Dodson, Dell City, Texas at least 72 hours prior to the time of said meeting, and that copy of said notice was furnished via facsimile to the Clerk of Hudspeth County, Texas at least 72 hours prior to the time of said meeting.

FEB 5, 2013 Date: 10:18 AM Time:

Talley Davis, President

I, the Clerk of Hudspeth County, Texas do hereby certify that the above notice of meeting is a true and correct copy of said notice and that such notice has been posted on the bulletin board at the Hudspeth County Court House in Sierra Blanca, Texas at least 72 hours prior to the time of said meeting.

2.7.13 Date: 9:31 AM Time:

Virginia Doyal, County Clerk
Hudspeth County, Texas

2.7.13

# Appendix E - Estimated Historical Groundwater Use and 2012 State Water Plan Datasets

# Estimated Historical Groundwater Use And 2012 State Water Plan Datasets:

## Hudspeth County Underground Water Conservation District No. 1

by Stephen Allen
Texas Water Development Board
Groundwater Resources Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
April 18, 2013

## GROUNDWATER MANAGEMENT PLAN DATA:

This package of water data reports (part 1 of a 2-part package of information) is being provided to groundwater conservation districts to help them meet the requirements for approval of their five-year groundwater management plan. Each report in the package addresses a specific numbered requirement in the Texas Water Development Board's groundwater management plan checklist. The checklist can be viewed and downloaded from this web address:

http://www.twdb.state.tx.us/groundwater/docs/GCD/GMPChecklist0113.pdf

The five reports included in part 1 are:

1. Estimated Historical Groundwater Use (checklist Item 2)
   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist Item 6)
3. Projected Water Demands (checklist Item 7)
4. Projected Water Supply Needs (checklist Item 8)
5. Projected Water Management Strategies (checklist Item 9)
   reports 2-5 are from the 2012 State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report. The District should have received, or will receive, this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, (512) 936-0883.

## DISCLAIMER:

The data presented in this report represents the most updated Historical Groundwater Use and 2012 State Water Planning data available as of 4/18/2013. Although it does not happen frequently, neither of these datasets are static and are subject to change pending the availability of more accurate data (Historical Water Use Survey data) or an amendment to the 2012 State Water Plan (2012 State Water Planning data). District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The Historical Water Use dataset can be verified at this web address:

http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/

The 2012 State Water Planning dataset can be verified by contacting Wendy Barron (wendy.barron@twdb.texas.gov or 512-936-0886).

The values presented in the data tables of this report are county-based. In cases where groundwater conservation districts cover only a portion of one or more counties the data values are modified with an apportioning multiplier to create new values that more accurately represent district conditions. The multiplier used as part of the following formula is a land area ratio: (data value * (land area of district in county / land area of county)). For two of the four State Water Plan tables (Projected Surface Water Supplies and Projected Water Demands) only the county-wide water user group (WUG) data values (county other, manufacturing, steam electric power, irrigation, mining and livestock) are modified using the multiplier. WUG values for municipalities, water supply corporations, and utility districts are not apportioned; instead, their full values are retained when they are located within the district, and eliminated when they are located outside (we ask each district to identify these locations).

The two other SWP tables (Projected Water Supply Needs and Projected Water Management Strategies) are not apportioned because district-specific values are not statutorily required. Each district needs only “consider” the county values in those tables.

In the Historical Groundwater Use table every category of water use (including municipal) is apportioned. Staff determined that breaking down the annual municipal values into individual WUGs was too complex.

TWDB recognizes that the apportioning formula used is not perfect but it is the best available process with respect to time and staffing constraints. If a district believes it has data that is more accurate it has the option of including those data in the plan with an explanation of how the data were derived. Apportioning percentages are listed above each applicable table.

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317) or Rima Petrossian (rima.petrossian@twdb.texas.gov or 512-936-2420).

# Estimated Historical Groundwater Use
# TWDB Historical Water Use Survey (WUS) Data

Groundwater historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

**HUDSPETH COUNTY** *19.65 % (multiplier)* All values are in acre-feet/year

| Year | Source | Municipal | Manufacturing | Steam Electric | Irrigation | Mining | Livestock | Total |
|---|---|---|---|---|---|---|---|---|
| 1974 | GW | 50 | 6 | 0 | 27,065 | 167 | 93 | 27,381 |
| 1980 | GW | 176 | 0 | 0 | 27,510 | 0 | 148 | 27,834 |
| 1984 | GW | 165 | 1 | 0 | 20,809 | 5 | 116 | 21,096 |
| 1985 | GW | 57 | 1 | 0 | 19,081 | 5 | 66 | 19,210 |
| 1986 | GW | 55 | 1 | 0 | 8,896 | 0 | 39 | 8,991 |
| 1987 | GW | 66 | 0 | 0 | 9,627 | 0 | 61 | 9,754 |
| 1988 | GW | 50 | 0 | 0 | 10,965 | 0 | 68 | 11,083 |
| 1989 | GW | 60 | 0 | 0 | 19,208 | 0 | 67 | 19,335 |
| 1990 | GW | 64 | 0 | 0 | 9,995 | 0 | 66 | 10,125 |
| 1991 | GW | 57 | 1 | 0 | 10,335 | 0 | 68 | 10,461 |
| 1992 | GW | 63 | 1 | 0 | 7,989 | 0 | 79 | 8,132 |
| 1993 | GW | 55 | 2 | 0 | 23,509 | 0 | 75 | 23,641 |
| 1994 | GW | 68 | 2 | 0 | 34,540 | 0 | 102 | 34,712 |
| 1995 | GW | 79 | 0 | 0 | 27,469 | 0 | 76 | 27,624 |
| 1996 | GW | 80 | 2 | 0 | 25,738 | 0 | 67 | 25,887 |
| 1997 | GW | 72 | 1 | 0 | 25,864 | 0 | 65 | 26,002 |
| 1998 | GW | 67 | 0 | 0 | 30,090 | 0 | 114 | 30,271 |
| 1999 | GW | 76 | 0 | 0 | 45,714 | 0 | 123 | 45,913 |
| 2000 | GW | 74 | 0 | 0 | 43,628 | 0 | 115 | 43,817 |
| 2001 | GW | 87 | 1 | 0 | 38,544 | 0 | 109 | 38,741 |
| 2002 | GW | 82 | 0 | 0 | 34,207 | 0 | 100 | 34,389 |
| 2003 | GW | 111 | 0 | 0 | 30,427 | 0 | 79 | 30,617 |
| 2004 | GW | 78 | 0 | 0 | 30,203 | 0 | 71 | 30,352 |
| 2006 | GW | 89 | 0 | 0 | 16,250 | 0 | 76 | 16,415 |
| 2007 | GW | 88 | 0 | 0 | 18,863 | 0 | 75 | 19,026 |
| 2008 | GW | 110 | 0 | 0 | 18,298 | 0 | 80 | 18,488 |
| 2009 | GW | 105 | 0 | 0 | 12,942 | 44 | 90 | 13,181 |
| 2010 | GW | 95 | 0 | 0 | 12,366 | 45 | 82 | 12,588 |

# Projected Surface Water Supplies
# TWDB 2012 State Water Plan Data

## HUDSPETH COUNTY

*19.65 % (multiplier)*

All values are in acre-feet/year

| RWPG | WUG | WUG Basin | Source Name | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
|---|---|---|---|---|---|---|---|---|---|
| E | IRRIGATION | RIO GRANDE | LOWER RIO GRANDE RIVER COMBINED RUN-OF-RIVER | 102 | 102 | 102 | 102 | 102 | 102 |
| E | IRRIGATION | RIO GRANDE | UPPER RIO GRANDE RIVER COMBINED RUN-OF-RIVER | 59 | 59 | 59 | 59 | 59 | 59 |
| | **Sum of Projected Surface Water Supplies (acre-feet/year)** | | | **161** | **161** | **161** | **161** | **161** | **161** |

# Projected Water Demands
# TWDB 2012 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

## HUDSPETH COUNTY

*19.65 % (multiplier)*

All values are in acre-feet/year

| RWPG | WUG | WUG Basin | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
|---|---|---|---|---|---|---|---|---|
| E | COUNTY-OTHER | RIO GRANDE | 56 | 58 | 59 | 57 | 56 | 56 |
| E | MANUFACTURING | RIO GRANDE | 0 | 0 | 0 | 0 | 0 | 0 |
| E | IRRIGATION | RIO GRANDE | 35,886 | 35,142 | 34,413 | 33,700 | 33,001 | 32,317 |
| E | LIVESTOCK | RIO GRANDE | 120 | 120 | 120 | 120 | 120 | 120 |
| E | MINING | RIO GRANDE | 0 | 0 | 0 | 0 | 0 | 0 |
| E | SIERRA BLANCA | RIO GRANDE | 123 | 130 | 134 | 132 | 131 | 131 |
| | **Sum of Projected Water Demands (acre-feet/year)** | | **36,185** | **35,450** | **34,726** | **34,009** | **33,308** | **32,624** |

# Projected Water Supply Needs
# TWDB 2012 State Water Plan Data

Negative values (in red) reflect a projected water supply need, positive values a surplus.

## HUDSPETH COUNTY

All values are in acre-feet/year

| RWPG | WUG | WUG Basin | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
|---|---|---|---|---|---|---|---|---|
| E | COUNTY-OTHER | RIO GRANDE | 125 | 115 | 111 | 124 | 128 | 128 |
| E | IRRIGATION | RIO GRANDE | -98,634 | -94,847 | -91,139 | -87,508 | -83,952 | -80,470 |
| E | LIVESTOCK | RIO GRANDE | 13 | 13 | 13 | 13 | 13 | 13 |
| E | MANUFACTURING | RIO GRANDE | 8 | 8 | 8 | 8 | 8 | 8 |
| E | MINING | RIO GRANDE | 1 | 1 | 1 | 1 | 1 | 1 |
| E | SIERRA BLANCA | RIO GRANDE | 228 | 221 | 217 | 219 | 220 | 220 |
| | **Sum of Projected Water Supply Needs (acre-feet/year)** | | **-98,634** | **-94,847** | **-91,139** | **-87,508** | **-83,952** | **-80,470** |

# Projected Water Management Strategies
# TWDB 2012 State Water Plan Data

## HUDSPETH COUNTY

**WUG, Basin (RWPG)**

All values are in acre-feet/year

| Water Management Strategy | Source Name [Origin] | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
|---|---|---|---|---|---|---|---|
| **IRRIGATION, RIO GRANDE (E)** | | | | | | | |
| IRRIGATION SCHEDULING | BONE SPRING-VICTORIO PEAK AQUIFER [HUDSPETH] | 0 | 3,535 | 3,535 | 3,535 | 3,535 | 3,535 |
| IWMS - IMPORT FROM DELL VALLEY | BONE SPRING-VICTORIO PEAK AQUIFER [HUDSPETH] | 0 | 0 | 0 | 0 | -10,000 | -20,000 |
| IWMS - IMPORT FROM DIABLO FARMS | CAPITAN REEF AQUIFER [HUDSPETH] | 0 | 0 | 0 | -2,000 | -2,000 | -2,000 |
| TAILWATER REUSE | BONE SPRING-VICTORIO PEAK AQUIFER [HUDSPETH] | 0 | 589 | 589 | 589 | 589 | 589 |
| **Sum of Projected Water Management Strategies (acre-feet/year)** | | **0** | **4,124** | **4,124** | **2,124** | **-7,876** | **-17,876** |