

BEFORE THE NEW MEXICO STATE ENGINEER

IN THE MATTER OF THE APPLICATION BY)	
CITY OF ALBUQUERQUE PUBLIC WORKS)	Hearing No. 02-017
DEPARTMENT TO DIVERT SURFACE)	
WATER FROM THE RIO GRANDE BASIN)	OSE File No. 4830
OF NEW MEXICO)	

REPORT AND RECOMMENDATION
OF THE HEARING EXAMINER

This matter came on for hearing before Victor Kovach, the State Engineer's designated Hearing Examiner, on December 3 through December 6 and December 9 through December 13, 2002, in Santa Fe, New Mexico, and on February 24 through February 27, 2003, in Albuquerque, New Mexico. The parties appeared as follows: Jay F. Stein, Esq., and James C. Brockmann, Esq., represented the Applicant City of Albuquerque Public Works Department; Peter Thomas White, Esq., Mary Humphrey, Esq., and Connie Odé, Esq., represented Protestants Amigos Bravos, Rio Grande Restoration, Sierra Club, New Mexico Public Interest Research Group (NMPIRG), Socorro Soil and Water Conservation District (SSWC), John Carangelo, and the Assessment Payers Association of the MRGCD (hereinafter referred to collectively as the "Coalition Protestants"); and William D. Teel, Esq., represented the Water Resource Allocation Program (WRAP) of the Office of the State Engineer (OSE). An appearance, at the beginning of the hearing, was made by Lester K. Taylor, Esq., for the Pueblo of Isleta, Gary Horner, Esq., for B.J. Resources, Inc., and Ray A. Garcia, *pro se*.

Having considered the pleadings and evidence of record, the Hearing Examiner recommends the following Findings and Order.

FINDINGS

1. The State Engineer has jurisdiction of the parties and subject matter.
2. On May 18, 2001 and again on June 26, 2001, the City of Albuquerque (City) Public Works Department filed Application No. 4830 with the State Engineer for Permit to divert surface water from the Rio Grande for municipal, industrial and related

purposes for the City's Drinking Water Project (DWP). The City proposes to divert approximately 94,000 acre-feet per year (afy), on a yearly average, at a near constant rate of about 130 cubic feet per second (cfs), with peak diversions of up to 103,000 afy at a rate of up to 142 cfs, generally comprised of 50 percent San Juan-Chama Project water, which will be fully consumed within the City's water service area, and 50 percent 'native' Rio Grande Water, which will be returned to the Rio Grande. The Application and legal notice identify three alternative diversion points, all of which are located on land owned by the Middle Rio Grande Conservancy District (MRGCD).

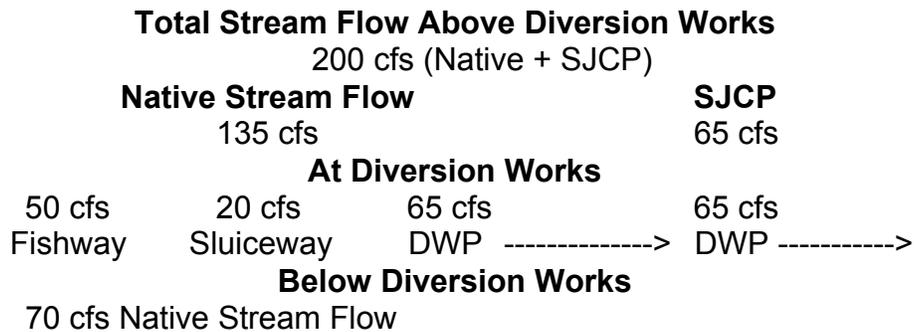
3. The City's preferred diversion alternative, and focus of its presentation at hearing, is a new surface water diversion facility to be located in the vicinity of the Paseo del Norte Bridge in Albuquerque, New Mexico, within a 500-foot radius of a point where X=382,500 feet and Y=1,525,800 feet NMCS Central Zone, NAD 27. The facility would consist of an adjustable-height (from 0 to 3.5 feet) inflatable dam to be installed on the Rio Grande approximately 2,500 feet north (upstream) of the Paseo del Norte Bridge. At Rio Grande stream flow rates up to approximately 10,000 cfs, the adjustable-height crest gates would be raised or lowered as required to maintain an average water surface elevation of approximately 4,992.9 feet, which is about 2.9 feet above the existing river bottom. At flow rates greater than 10,000 cfs, the gates would be maintained in the lowered position. The proposed diversion facilities include a sluice channel, raw water intake and fish screens along the east bank of the Rio Grande, a 50-foot-wide, low gradient, fishway on the west side of the river, and a pump-station and pipeline to convey water to the City's proposed treatment plant near Chapell and Osuna Roads in northeast Albuquerque. The 'native' Rio Grande water diverted by the City would be returned to the river at the City's Southside Water Reclamation Plant (SWRP) wastewater outfall, located below the Rio Bravo Bridge at a point where X=373,900 feet and Y=1,462,000 feet New Mexico Coordinate System (NMCS), Central Zone, North American Datum (NAD) 27.

4. Affidavits of Publication indicate that legal notice of the Application was published in the following newspapers: *Albuquerque Journal*; *Las Cruces Sun-News*; *News Bulletin* of Valencia County, New Mexico; *The Herald*, Truth or Consequences, New Mexico; and, *El Defensor Chieftain*, Socorro, New Mexico. Protests to the granting of the Application were filed by the MRGCD, the City of Farmington, the San Juan Water Commission, the Hammond Conservancy District, the Navajo Nation, the Pueblo of Isleta, the Frankie S. Carruthers Trust, the Alliance for the Rio Grande (by and through Amigos Bravos, Rio Grande Restoration, Sierra Club, NMPIRG and only these entities), SSWC, John Carangelo, Chairman, in his official capacity and as an individual, the Assessment Payers Association of the MRGCD, B.J. Resources, Inc., Robert E. Oxford, Bette J. Oxford, and Ray A. Garcia.
5. Several Protestants objected to the priority date claimed by the City for the San Juan-Chama Project water in the Application and legal notice. San Juan-Chama Project water is imported into the Rio Grande Basin from the San Juan River Basin and is not subject to priority administration within the Rio Grande Basin. Any potential priority administration with respect to such water can only occur in the San Juan River Basin, and not in the Rio Grande Basin. Any priority date for Applicant's San Juan-Chama Project water will properly be adjudicated by the district court for the Eleventh Judicial District in the pending general water rights stream adjudication for the San Juan River. Accordingly, by stipulation, and limiting order of the State Engineer entered on November 8, 2002, the priority date for the City's San Juan-Chama Project water is not an issue for determination in this administrative proceeding and any decision entered in these proceedings shall not be construed as establishing a priority date for said SJCP water.
6. The protests of the MRGCD, the City of Farmington, the San Juan Water Commission, the Hammond Conservancy District, the Navajo Nation and the Frankie S. Carruthers Trust were withdrawn prior to hearing and these entities were dismissed from further proceedings.
7. The protests of Robert E. Oxford and Bette J. Oxford were dismissed by Order entered in this matter on September 23, 2002.

8. The Coalition Protestants moved to dismiss the Application for lack of jurisdiction. The Hearing Examiner's Order, entered on November 7, 2002, denying Coalition Protestants' Motion to Dismiss Application for Lack of Jurisdiction is incorporated herein by reference.
9. On December 3, 2002, at the beginning of the hearing and prior to the presentation of witnesses, the protests of the Pueblo of Isleta, B.J. Resources, Inc., and Ray A. Garcia were withdrawn and these parties were dismissed from the proceedings by order entered on the record.
10. The remaining parties who participated at hearing include the City, the Coalition Protestants and the WRAP of the OSE.
11. San Juan-Chama Project (SJCP) water is diverted from three tributaries of the San Juan River, a tributary of the Colorado River, and imported into the Rio Grande Basin to provide for beneficial consumptive use of a part of New Mexico's entitlement to Colorado River water under the Colorado River Compact, 45 Stat. 1057, 1064 (1928) and the Upper Colorado River Basin Compact, 63 Stat. 31 (1949).
12. The diversion works for SJCP water, located in southern Colorado, are as follows: the Blanco Diversion Dam diverts surface waters from the Blanco River; the Little Oso Diversion Dam diverts surface waters from the Little Navajo River; and, the Oso Diversion Dam diverts surface waters from the Navajo River. The SJCP water is transmitted via approximately 26 miles of tunnels, into Willow Creek, a tributary of the Rio Chama, and stored in Heron Reservoir in northern New Mexico.
13. 48,200 afy of SJCP water is expressly allocated to the City for municipal purposes in accordance with Contract No. 14-06-500-810 between the United States Department of the Interior, Bureau of Reclamation and City of Albuquerque, dated June 25, 1963 and Amendment No. 1, dated July 6, 1965. The City estimates that it has invested more than \$45,000,000 to develop its supply of SJCP contract water.
14. The City has a permit to consume up to 3,000 afy of SJCP water under OSE File No. 4819 for its Nonpotable Surface Water Reclamation Project (NSWRP). It wishes to reserve the right to use said 3,000 afy under either the DWP or NSWRP

and proposes to coordinate such use with the OSE.

15. The City takes delivery of its SJCP water at the outlet works of Heron Reservoir. After release from Heron Reservoir, the City's SJCP water is stored in Abiquiu Reservoir. The City has 170,900 acre-feet of storage space leased in Abiquiu Reservoir.
16. The general operating plan for the City's DWP, set forth in Exhibit A, Pages A-4 & A-5, of Application No. 4830, provides for a constant release of about 67 cfs of City SJCP water from Abiquiu Reservoir in most years. The City estimates that after incurring conveyance losses between Abiquiu and Albuquerque, 65 cfs of SJCP water will reach the diversion facility at Paseo del Norte. A constant diversion of 130 cfs, comprised of 65 cfs SJCP water and 65 cfs 'native' water, would occur at the diversion facility as long as flows at the diversion works are at or above a specified 'threshold flow' of 200 cfs. The 'threshold flow' level was determined based on the following: a diversion rate of 130 cfs comprised of 65 cfs of SJCP water and 65 cfs 'native' water; a fishway bypass flow of 50 cfs; and a flow of 20 cfs at the sluiceway outlet to provide for downstream movement of sediment and fish past the intake screens, as follows:



As proposed, a minimum of 135 cfs of 'native' flow would have to be present in the Rio Grande at the point of diversion for full operation of the DWP.

17. When 'native' flows fall below 135 cfs at the diversion point (total flow of 200 cfs with the 65 cfs SJCP water in the river) the City proposes to begin curtailing the quantity of the diversion, to ensure proper operation of the sluiceway and fishway facilities and to minimize depletion effects in the reach of the Rio Grande between the point

of diversion and return flow at the SWRP. The City will continue to release 67 cfs and divert 65 cfs of SJCP water, but will begin curtailing the total quantity (native + SJCP water) of the diversion by 1 cfs for each 1 cfs drop in native flow below 135 cfs. When 'native' flow drops to 70 cfs at the point of diversion DWP diversions would cease and releases of City SJCP water at Abiquiu would be cut off.

18. The DWP is a primary component of the City of Albuquerque's Water Resources Management Strategy (AWRMS) and 40-Year Water Development Plan (hereinafter "40-Year Plan").
19. Municipalities are allowed a water use planning period not to exceed forty (40) years and applications for appropriation of water by municipalities are to be based upon a water development plan for reasonably projected water demands within the forty-year planning period. The City's population and demand projections are set forth in its 40-Year Plan dated August 2002 (City Exhibit No. 11).
20. Three different population projection data sets for the City's water service area are included in Table 2 of the City's 40-Year Plan as follows: the Bureau of Business and Economic Research (BBER) estimates a population of 752,294 in the year 2040; the Middle Rio Grande Council of Governments estimates a population through 2010 at 603,760; and the City's Continued Current Growth Trends (CCGT) estimates a population of 868,800 in the year 2040. The City's CCGT population projection is based on past water use and the growth in the number of utility accounts. All three projections are reasonable.
21. Based on its population estimate of 868,800 for the year 2040, and its expectation that annual average per capita water use will be reduced from 205 to 175 gallons per capita per day (gpcpd) by 2010, the City projects that demand for its service area in the year 2040 will be approximately 170,000 afy ($175 \text{ gpcpd} \times 365 \text{ days} = 63,875 \text{ gallons per capita per year} \div 325,851 \text{ gallons per acre-foot} = 0.196 \text{ afy per capita} \times 868,800 = 170,284.8 \text{ afy}$).
22. Estimated demand for the City's service area in the year 2040, based upon the BBER population estimate of 752,294, would be approximately 147,450 afy using similar methodology.

23. Estimated demand for the City's service area in the year 2040, using the City's population estimate and a gpcpd figure of 155 would be approximately 150,800 afy.
24. Andrew Lieuwen, Ph.D., WRAP's expert in water rights, water planning and water conservation, reviewed the City's 40-Year Plan and determined that it was acceptable.
25. The City proposes to meet anticipated water demand through transition from dependence on groundwater as its sole source of supply to conjunctive use of SJCP water under the DWP and groundwater permitted under OSE File No. RG-960 et al. Presumably, the amount of the City's annual groundwater diversions under RG-960 et al., would decrease by an amount commensurate with its annual DWP surface water diversions.
26. The City's prior strategy was to meet water demand by continued and increasing diversion of ground water under its existing Permit No. RG-960 et al., and to use its allocated SJCP water to offset the effects on the flows of the Rio Grande that result from those groundwater diversions. The City now proposes to fully consume its SJCP water through direct surface water diversion. Such transition may be permissible provided that the City can meet its obligations under RG-960 et al., that there will be no impairment to existing water rights, that its proposal will not be contrary to the conservation of water within the state and that its proposal will not be detrimental to the public welfare of the state of New Mexico.
27. As a condition of approval under its existing Permit No. RG-960 et al., the City is required to offset the depletion effects of its groundwater diversions on the surface flows of the Rio Grande. OSE records and testimony of WRAP's witnesses indicate that the City uses what it has termed 'vested' and 'acquired' water rights, return flow credit and SJCP water to do so.
28. Although the City proposes to decrease its diversion of groundwater under RG-960 et al., upon implementation of the DWP, it would nonetheless remain obliged to offset the net surface water depletions on the flow of the Rio Grande associated with past groundwater diversion (residual effects) and to offset the effects of continuing groundwater diversions under RG-960 et al. In Table 4-1 of City Exhibit 23, the City

estimates that it needs to have at least 91,000 acre-feet of SJCP water stored in Abiquiu to offset anticipated residual effects during the years 2006 through 2016, or the first ten years of operation. The City also notes that additional storage of SJCP water would be needed to offset evaporation and seepage losses at Abiquiu (26,000 acre-feet), and to meet other obligations (29,000 acre-feet), during that same ten-year period. The Coalition Protestants' technical expert adjusted the City's calculations upward and estimated that the amount of water needed to offset residual effects for the first ten years of operation could be as high as 132,382 acre-feet (Coalition Exhibit 4, Page A-4).

29. The City's calculation of additional releases of SJCP water, for offset purposes during the first ten years of operation, are derived from Table E2 of its Exhibit 23. Certain discrepancies in the listing of estimated net effects (column 17) and the consequent estimated additional SJCP releases (column 20) were recognized at hearing. The estimates of additional releases of SJCP water are calculated by comparing net effects on Rio Grande flow to the amount of water the City describes as its vested and acquired rights: 23,347 afy. The net effects for the majority of years covered by Table E2 are apparently calculated by subtracting groundwater return flows (column 11) from the river effects calculated using the OSE model (column 16). However, net effects entries for the years 2006 through 2016 are not consistent with this methodology. Adjusted entries for the years in question and the corresponding adjusted figures for additional SJCP releases are as follows:

<u>Col. (1)</u> <u>Year</u>	<u>Col. (16)</u> <u>OSE River</u> <u>Effects</u>	<u>Col. (11)</u> <u>Groundwater</u> <u>Returns</u>	<u>Col. (17)</u> <u>Net Effect</u>	<u>Col. (20)</u> <u>Additional SJCP</u> <u>Releases</u>
2006	65,092	17,287	47,805	24,458
2007	64,451	27,142	37,309	13,962
2008	59,050	11,870	47,180	23,833
2009	57,145	16,741	40,404	17,057
2010	53,676	11,679	41,997	18,650

2011	52,197	16,546	35,651	12,304
2012	52,517	27,385	25,132	1,785
2013	49,402	20,600	28,802	5,455
2014	46,301	15,482	30,819	7,472
2015	43,878	16,433	27,445	4,098
2016	42,203	17,547	24,656	<u>1,309</u>
			Total:	130,383

Based on the adjusted entries above, the City's estimate of the amount of additional releases of SJCP water needed for the period of 2006 through 2016 would be approximately 130,383 acre-feet. Additional releases of SJCP water in the amount of 97,960 acre-feet would be required for offset purposes during the first five years of operation of the DWP, as those operations are described and simulated in City Exhibit 23.

30. Prior to initial diversion of SJCP water for the DWP, the City should have at least 130,000 acre-feet of SJCP water stored in Abiquiu reservoir. Thereafter, the City should maintain SJCP water storage in Abiquiu reservoir at levels sufficient to ensure that its obligations under other permits, including its obligation concerning offset of residual and anticipated upcoming effects to the Rio Grande, resulting from its diversion of groundwater under RG-960 et al., will be met.
31. The City's SJCP water in excess of the amount determined by the State Engineer to be needed for offset purposes under RG-960 et al., would be available for release for the City's DWP. SJCP water released for the City's DWP, less conveyance losses, would be available at the DWP diversion point.
32. For purposes of estimating the annual quantity of SJCP water available for diversion at Albuquerque, the City utilized incremental loss methodology. Incremental loss methodology assumes that non-native water is riding on top of native flows. The SJCP water incurs losses caused by evaporation from the larger surface area of the flowing water, but no seepage or other losses.
33. The City considers a factor of 2.5% appropriate for computing conveyance losses of SJCP water from Heron reservoir to the Paseo del Norte diversion site. The City's

proposed factor is derived from loss factors for SJCP water used by the United States Bureau of Reclamation. Table D-5 of City Exhibit 23 reflects a loss rate of 2.35% from Heron reservoir to the Jemez River (Table D-5 of City Exhibit 23). The City adds an additional conveyance loss rate of 0.15 % for the remaining distance to the Paseo de Norte diversion site. According to the City's calculations, approximately 47,000 afy of SJCP water would be available for appropriation at the diversion point for the DWP ((48,200 afy – (0.025 x 48,200 afy) = 46,995 afy)).

34. More conservative, monthly conveyance loss rates for SJCP water from Heron reservoir to Albuquerque were provided in Tables D-6a & D-6b of City Exhibit No. 23, as follows:

	Table D-6a	Table D-6b
January-March	0.97 (3.00%)	0.97 (3.00%)
April	0.96 (4.00%)	0.94 (6.00%)
May	0.95 (5.00%)	0.91 (9.00%)
June	0.93 (7.00%)	0.88 (12.00%)
July – September	0.92 (8.00%)	0.85 (15.00%)
October	0.95 (5.00%)	0.91 (9.00%)
November – December	0.97 (3.00%)	0.97 (3.00%)

WRAP's experts utilized conveyance loss rates from Table D-6b of City Exhibit 23, in evaluating the subject Application. In order to ensure a conservative analysis of depletion effects on streamflows under the DWP, the City utilized the loss rates in Table D-6a of its Exhibit 23, in model simulations.

35. Underestimation of conveyance losses could result in the diversion of native water without a corresponding accounting for such diversion. Monthly, incremental conveyance losses for SJCP water between Heron reservoir and the City's point of diversion should be determined based upon a study, approved by and acceptable to the State Engineer. The results of said study should be adopted for determination of conveyance loss rates for SJCP water under the DWP. In the interim, for purposes of determining the amount of SJCP water delivered to the proposed point of diversion for the DWP, the monthly conveyance loss factors from Table D-6a of the

City Exhibit 23, referenced in Finding 36, above, should be utilized. Assuming a constant rate of release of SJCP water of 4,017 acre-feet monthly (48,200 afy ÷ 12), and no diversion of SJCP water under the City's NSWRP, total SJCP water available at the proposed point of diversion for the DWP would be 45,792 acre-feet calculated as follows:

<u>Month</u>	<u>CLF</u>	<u>SJC (monthly release)</u>	<u>Available at diversion</u>
January	0.97	4,017	3,896
February	0.97	4,017	3,896
March	0.97	4,017	3,896
April	0.96	4,017	3,856
May	0.95	4,017	3,816
June	0.93	4,017	3,736
July	0.92	4,017	3,696
August	0.92	4,017	3,696
September	0.92	4,017	3,696
October	0.95	4,017	3,816
November	0.97	4,017	3,896
<u>December</u>	<u>0.97</u>	<u>4,017</u>	<u>3,896</u>
Annual		48,200	45,792

The above calculations should be adjusted downward to the extent that SJCP water is diverted for the City's NSWRP under Permit No. 4819.

36. The City proposes to fully consume the available SJCP water diverted under the DWP by diverting an equivalent amount of 'native' Rio Grande water and returning the full amount of that 'native' water to the Rio Grande at its SWRP discharge point.
37. The reach of the Rio Grande between the proposed DWP diversion point at Paseo del Norte and the SWRP return flow point, referred to at hearing as the 'depleted reach', is approximately 15-miles long. There are no existing surface water right holders with diversion works on the Rio Grande within the length of the 'depleted reach'.

38. The first immediate downstream surface water diversion below the SWRP return flow point is the MRGCD's Isleta Diversion Dam used for delivery of water to lands within Isleta Pueblo and to lands of individual members of MRGCD. The MRGCD and Isleta Pueblo entered into settlement agreements with the City and withdrew their protests to the granting of this Application.
39. Provided that 100% of the amount of 'native' water diverted under the DWP is timely returned to the Rio Grande, there should be no decrease in the amount of 'native' water available to existing water right holders downstream.
40. The City submitted expert testimony and exhibits reflecting that, in time, estimated depletions on the Rio Grande under the DWP conjunctive use AWRMS strategy would be less than the effects that would result from continued reliance on groundwater under RG-960 et al., as its sole source of supply.
41. City Exhibit 23 includes an analysis of the hydrologic effects of a baseline scenario, wherein the surface water depletion effects of groundwater diversions under RG-960 et al., are simulated, with annual ground water diversions increasing up to 162,354 afy in 2040 and 194,875 afy in 2060, and an analysis of the surface water depletion effects under the DWP, wherein surface and groundwater are used conjunctively (89,883 afy ground & 72,000 afy surface water in 2040 and 100,777 afy ground & 94,000 afy surface water in 2060).
42. The City's hydrologic baseline was developed in three steps as follows:
 - a. Align the 1971-98 streamflow and reservoir gage records for the Middle Rio Grande (MRG) and Rio Chama Basins so that 1971 becomes 2006, 1972 becomes 2007, etc., and adjust the records by removing historic City SJCP water.
 - b. Subtract the effects of historical City groundwater pumping from the adjusted 1971-98 record and account for the effects of SWRP returns on river flows. This is based on running the OSE interim groundwater model to estimate historical pumping-induced river seepage and using the City's record of wastewater return flows.

- c. Subtract or add to the flows determined in subpart (b), above, the projected future effects (2006 through 2060) of continued, full-scale, groundwater pumping (using the OSE interim model) and SWRP return flows on river flows. Also included in the baseline are: variable SJCP water releases made for existing City leases (up to 2,600 afy) through termination in about 2011, approximately 3,000 afy in SJCP water releases for the NSWRP (through 2060), and beginning in 2050, releases of SJCP water to offset pumping effects (amounts increase from about 220 afy to 6,100 afy over the 2050 to 2060 time period), and a simulated 3-year drought.
43. The 1971-98 period provides an acceptable basis for examining the effects of the DWP and RG-960 alternatives on streamflow conditions in the MRG.
44. The City used the OSE interim groundwater model of the Albuquerque basin aquifer, coupled with an interactive 'spreadsheet model' of Rio Grande flows (built upon the adjusted 1971-98 hydrologic record). The two models, so coupled, are an acceptable tool for evaluation and comparison of the hydrologic effects of the DWP and RG-960 alternatives in this matter.
45. Computer simulations for the period 2006 (City's anticipated DWP start up date) through 2060 reflect that the DWP and RG-960 groundwater diversion alternatives will have similar effects on overall streamflow conditions in the MRG. In general, the simulations indicate that relative to RG-960 groundwater diversions, the DWP alternative results in more water (about 60 cfs) in the river above the diversion point at Paseo del Norte, somewhat less water (10 to 25 cfs) in the reach between the diversion point and the City's wastewater return flow point, and essentially no change in flows at the MRGCD's Isleta Diversion Dam.
46. The overall quality of water discharged to the Rio Grande at the City's SWRP will improve under the DWP.
47. The evidence presented at hearing reflects that if the full amount of 'native' Rio Grande water diverted under the DWP is returned at the SWRP outfall, the effects on existing downstream surface water rights, under the DWP, would be no greater than the projected effects under RG-960 et al.

48. In order to prevent impairment to downstream users, diversions of 'native' water under the DWP could never be greater than 50% of the DWP diversion, and said diversion of 'native' water would have to cease at any time the City's return flows to the Rio Grande at its SWRP outfall are less than 50% of the DWP diversion.
49. The amount of the City's return flows to the Rio Grande that are considered return flows of 'native' surface water under its DWP, would not be available to offset depletion effects or to otherwise increase the City's diversion of groundwater under RG-960 et al.
50. The expert testimony and model simulations reflect that the DWP will have less effect on the Albuquerque area aquifer and upon existing groundwater rights within the basin than the RG-960 alternative. By 2040, estimated drawdowns from pre-development water levels under simulated RG-960 conditions are greater than 200 feet in areas of west, northeast and southeast Albuquerque. Under the DWP alternative, estimated drawdowns in 2040 are generally less than 150 to 175 feet in the same areas.
51. As compared to the RG-960 alternative, the DWP will have a positive effect on the aquifer.
52. The City has taken significant steps with respect to water conservation, beginning with the establishment of a Water Conservation Task Force in July of 1990. In May of 1992, the City passed Resolution R-49-1992 adopting a Short-Term Water Conservation Program that included appointment of a Water Conservation Officer, and research and development of a Long-Term Water Conservation Strategy to include specific per capita consumption goals and water rate modifications. In March of 1995 the City adopted its Long-Term Water Conservation Strategy through Resolution R-40-1995 and the Landscaping and Water Waste Ordinance O-18-1995.
53. The City adopted the following water use reduction goals in R-40-1995: reduction of overall per capita usage of 250 gallons per capita per day (gpcpd) by 30% to achieve 175 gpcpd by 2004; reduction of summer outdoor usage by 25%; reduction of current year-round indoor usage by 33%; and reduction of peak day usage by

- 20% within six to ten years. Since that time the City has maintained a multi-faceted program to encourage conservation and has reduced water usage within its service area by more than 20% to 205 gpcpd.
54. Other southwestern cities of comparable size and climate have successfully reduced their water usage to significantly less than 175 gpcpd. City Exhibit 17 contains a table at page 2, which reflects a gpcpd of 155 (combined residential & non-residential) for El Paso, Texas and Tucson, Arizona.
 55. The City's Exhibit 17, page 3, reflects that, in 1950, water use in the City averaged 148 gpcpd.
 56. Jeanne Witherspoon, the City's former Water Conservation Officer and its expert in water conservation, testified that the City has achieved significant reductions in water usage in a relatively short period of time and that with continuing and sustained effort, the City can achieve a gpcpd of 150.
 57. By utilizing practically available technology and resources, the City can significantly reduce its per capita water usage. Prior to diverting any 'native' water under its DWP, the City should be required to reduce its combined residential and non-residential water usage level to 175 gpcpd. The City should be able to achieve a water usage level of 155 gpcpd or less within a reasonable period of time and continued diversion of 'native' water under the DWP should be contingent upon the City's filing of regular conservation progress reports demonstrating that it is diligently pursuing reductions in water usage levels to the maximum extent practical and showing continuing reductions consistent with achieving a water usage level of 155 gpcpd within twenty (20) years.
 58. The City's water conservation program should be modified and updated to include a drought management plan acceptable to the OSE.
 59. The Coalition Protestants presented several witnesses who testified about the intrinsic cultural and environmental value of maintaining flows in the Rio Grande throughout the 'depleted reach' and related concerns as to the effect that diminution of those flows might have on the riparian ecology and aquatic habitat.

60. A Draft Environmental Impact Statement (Draft EIS), City of Albuquerque DWP, June 2002, was admitted into evidence as Coalition Protestants' Exhibit 9. The Draft EIS reflects that 189 miles of river channel of the Rio Grande is likely to experience average annual flow increases of 65 cfs under the DWP with a 15-mile stretch experiencing depleted flows. Table 3.16-1 of the Draft EIS (Coalition Protestants Exhibit 9) compares the projected effects that the DWP and no action (RG-960) alternatives would have over time to historical flows measured in the Albuquerque reach of the Rio Grande. The projections are based upon an average annual gpcpd of 175. The projected incremental differences in streamflows in cfs at the Albuquerque Central Avenue gage (hereinafter 'Albuquerque gage'), and additional depletions under the DWP as opposed to the no action alternative, are as follows:

<u>Year</u>	<u>No Action</u>	<u>DWP</u>	<u>Additional Depletions</u>
2006	-47	-68	21
2012	-56	-77	21
2020	-61	-94	33
2030	-68	-99	31
2040	-78	-89	11
2050	-85	-109	24
2060	-90	-119	29

The average of the above projected additional depletions on Rio Grande streamflows under the DWP, measured at the Albuquerque gage, is 24.29 cfs (21 + 21 + 33 + 31 + 11 + 24 + 29 = 170 ÷ 7 = 24.29 cfs).

61. The DWP should be operated in a manner that minimizes additional depletions through the 15-mile 'depleted reach' of the Rio Grande, as much as practicable.
62. Table C-3, Appendix C of City Exhibit 23, sets forth historical data on monthly Rio Grande flows measured at the Albuquerque gage. The data reflect that the median of annual average flows for 1943 through 1998 is 1,116 cfs. The median of annual average flows for 1943 – 1970 (pre SJCP) is 936 cfs. The lowest reported median of monthly average flows is 122 cfs and the minimum annual average flow

measured was 293 cfs recorded in 1964.

63. To the extent that 'native' flows are available above the proposed point of diversion, the DWP should be operated so that flows in the channel of the Rio Grande between the point of diversion and the Albuquerque gage are no less than the lowest reported median of monthly average flows: 122 cfs. Allowing 130 cfs of flow to pass through the diversion works should be adequate to maintain said flow level.
64. The 'threshold flow' level and curtailment strategy, set forth in the general operating plan for the City's DWP and described in Findings 16 and 17, should be adjusted upward to reflect the difference between the 70 cfs of 'native' flow the City originally proposed to pass through the diversion works and the 130 cfs referenced in Finding 63, above. Accordingly, diversion of 'native' water would be curtailed when 'native' flows fall below 195 cfs (130 cfs that remains in the channel immediately below the point of diversion + 65 cfs DWP diversion), measured immediately above the storage pool at the proposed point of diversion, by 1 cfs for each 1 cfs drop in 'native' flow, and would be suspended when 'native' flow drops to 130 cfs or lower at the same point.
65. Other regulatory agencies, including the United States Fish and Wildlife Service and the Bureau of Reclamation, have regulatory oversight under the National Environmental Policy Act to ensure that the City's operation of the DWP complies with environmental requirements.
66. The City's plan for conjunctive use of water resources constitutes a reasonable use and development of water resources, especially as compared to reliance on groundwater as its sole source of supply, that will extend the life of the aquifer, and allow for flexibility of operations during times of low flow or drought.
67. Evidence was also presented at hearing concerning the public benefit that would be realized from the DWP.
68. The United States Environmental Protection Agency (EPA) has promulgated a new maximum contaminant level for arsenic in drinking water of 10 $\mu\text{g/L}$. The City's proposed Surface Water Treatment Plant under its DWP will enable it to meet the arsenic standard in a cost-effective fashion by applicable compliance dates. In

addition to the public health benefits associated with meeting the EPA drinking water standard, cost savings to the City were estimated at approximately \$160,000,000 (\$200 million for groundwater treatment versus \$40 million for surface water treatment).

69. The use of surface water will result in a lower concentration of Total Dissolved Solids (TDS) in the water supply as compared to use of groundwater under RG-960 et al., and in the water discharged to the Rio Grande at the City's SWRP.
70. The overall quality of the water supplied to the public within the City's water service area will improve under the DWP as will the water discharged to the Rio Grande at the City's SWRP.
71. The City's continued reliance on groundwater as its sole source of water supply could result in significant land surface subsidence over large areas of the Albuquerque Basin. The City's transition to conjunctive use of water resources under the DWP will reduce the risk of land surface subsidence.
72. F. Lee Brown, Ph.D., Economic Consultant, estimates that direct economic benefits to the City resulting from the DWP will be approximately \$1,371,000,000.00 as follows: \$127,000,000.00 reduced well costs + \$221,000,000.00 reduced subsidence costs + \$260,000,000.00 reduced arsenic and desalinization costs + \$763,000,000.00 creation of a drought reserve.
73. The City has demonstrated that it needs a transition from reliance on groundwater under Permit RG-960 et al., as its source of municipal water supply, to conjunctive use of surface and ground water as a matter of public health and welfare.
74. The evidence presented at hearing establishes that granting Application No. 4830 will facilitate the City's transition to conjunctive utilization of its SJCP water under the DWP and groundwater under RG-960 et al., and that if properly conditioned, there will be no increase in depletions to the Rio Grande, no impairment to existing water rights, no detriment to the public welfare of the state and conservation of water will be enhanced.

75. The hearing adjourned on February 27, 2003. The record was held open through April 25, 2003 for the limited purpose of allowing the parties opportunity to file proposed findings, conclusions and recommended conditions. On April 25, 2003, the Coalition Protestants filed proposed findings and also filed a Motion to Recuse the State Engineer. Said motion should be and is denied.
76. Application No. 4830 should be approved, subject to conditions.

ORDER

THEREFORE, Application No. 4830 for Permit to divert surface water from the Rio Grande is approved, subject to conditions, as follows:

Permittee: City of Albuquerque

OSE File No.: 4830

Date of Application: Application filed May 18, 2001 and June 26, 2001

Point of Diversion: New surface water diversion facility located on the Rio Grande within a 500-foot radii of a point where X=382,500 feet and Y=1,525,800 feet, New Mexico Coordinate System (NMCS), Central Zone, North American Datum (NAD) 27 and approximately 2,500.0 feet north (upstream) of the Paseo del Norte Bridge

Source of Water: Colorado River water apportioned to New Mexico for beneficial consumptive use by the Colorado Compact, 45 Stat. 1057, 1064 (1928) and the Upper Colorado River Basin Compact 63 Stat. 31 (1949) and allocated to the City of Albuquerque by Contract No. 14-06-500-810 between the United States Department of the Interior, Bureau of Reclamation and the City of Albuquerque, dated May 25, 1963, and Amendment No. 1, dated July 6, 1965, for San Juan-Chama Project Water.

Surface waters of the Rio Grande

Amount of Water:

Diversion – Up to 48,200 afy of San Juan Chama Project water, less conveyance losses as determined in accordance with Conditions of Approval, below, measured at the point of diversion. ‘Native’ Rio Grande surface water may be simultaneously diverted, in accordance with the conditions of approval below and in an amount not to exceed the amount of San Juan-Chama Project water diverted at any time, provided such water is timely returned directly to the Rio Grande, in full, at the SWRP outflow.

Consumptive Use – Up to 48,200 afy of San Juan-Chama Project Water less conveyance losses as determined in accordance with Conditions of Approval, below. Diversion of ‘native’ Rio Grande surface waters is for non-consumptive use only and 100% of the amount diverted shall be simultaneously

returned to the Rio Grande.

Purpose of Use: Municipal, industrial and related purposes for the City of Albuquerque Drinking Water Project

Place of Use: Service area of the City of Albuquerque water system

CONDITIONS OF APPROVAL

1. Permit No. 4830 shall not be exercised to the detriment of valid existing water rights or in a manner that is contrary to the conservation of water within the state or detrimental to the public welfare of the State of New Mexico.
2. The total annual combined diversion of surface water under this permit and Permit No. 4819 shall not exceed 96,400 afy, less conveyance losses as determined in accordance with Conditions of Approval 6 and 7 below.
3. Prior to initial diversion of surface water from the Rio Grande for start-up of the DWP, the City shall demonstrate to the satisfaction of the State Engineer that it has 130,000 acre-feet of San Juan-Chama Project water in storage at Abiquiu reservoir available and reserved for offsetting residual and ongoing effects to the Rio Grande as a result of its groundwater diversions under RG-960 et al.
4. The City shall submit to the State Engineer, by the first day of each of the quarterly periods January through March, April through June, July through September, and October through December, or such other time period as may be determined acceptable by the State Engineer, information concerning the upcoming period sufficient to determine that the amount of San Juan-Chama Project water the City has in storage is adequate to meet offset requirements and anticipated DWP diversions, including the following: (a) projected average daily total surface water diversions and projected total ground water diversions from the City's wells; (b) projected return flows from surface water diversions and from ground water diversions from the City's wells; (c) projected deliveries of the City's San Juan-Chama Project water; (d) the amount of the City's acquired Rio Grande surface water rights; (e) the amount of the City's vested and acquired groundwater rights and the amount of the City's dedicated surface water rights; (f) projected amount of

MRGCD or BOR water in storage available for repayment to the City; and, (g) the amount of San Juan-Chama Project water the City has in storage and available to meet its projected obligations, including offsets for residual and ongoing effects under RG-960 et al., and its projected diversion under the DWP.

5. If the information provided pursuant to Conditions of Approval 3 & 4 does not adequately establish that sufficient San Juan-Chama Project water is available in storage, the State Engineer may take such action as he deems necessary, including but not limited to, ordering that the City suspend its diversion of surface water under the DWP.
6. The City shall propose a study of incremental loss rates for delivery of San Juan-Chama Project water to the point of diversion, to be undertaken by the City within two (2) years from the date of approval of this permit, and to be conducted in a manner acceptable to and approved by the State Engineer based on existing and anticipated Rio Grande channel conditions for each month of the year and for all levels of native streamflow.
7. The amount of San Juan –Chama Project water diverted under this Permit shall be determined monthly based upon the amount of water released from upstream storage less conveyance loss rates as determined by the study required by Condition of Approval 6 and accepted by the State Engineer. Until said study is completed and the results accepted by the State Engineer, the monthly conveyance loss rates shall be as follows: January thru March 3.00%; April 4.00%; May 5.00%; June 7.00%; July thru September 8.00%; October 5.00%; and, November thru December 3.00%.
8. The City's total mean daily surface water diversion rate shall not exceed 130 cfs. The amount of native Rio Grande surface water diverted under this Permit shall not exceed 50% of the total amount of water diverted at any time.
9. An amount of water equivalent to the amount of native surface water diverted under this permit shall be simultaneously returned directly to the Rio Grande at the City's SWRP wastewater outfall as verified by accounting methodology acceptable to the State Engineer. The amount of water considered to be return flows of 'native'

surface water under this Permit shall not be available for offset purposes, or to increase diversions of ground water, under the City's other permits.

10. Prior to any diversion of 'native' Rio Grande surface water under this permit, the City shall reduce its average per capita water usage to 175 gpcpd, computed in accordance with standards and methodology described by and acceptable to the State Engineer's Water Conservation Bureau. Continued diversion of 'native' Rio Grande surface water under this permit shall be contingent upon the City's demonstrating to the satisfaction of the State Engineer that it is utilizing the highest and best technology available to ensure conservation of water to the maximum extent practicable to reduce average annual per capita water usage to 155 gpcpd, computed in accordance with standards and methodology described by and acceptable to the State Engineer's Water Conservation Bureau, as soon as practicable and no later than twenty (20) years after initial diversion of 'native' Rio Grande surface water. By March 1st of each year, the City shall submit to the State Engineer a report of its average per capita water usage for the prior calendar year, computed in accordance with standards and methodology described by and acceptable to the State Engineer's Water Conservation Bureau.
11. The City shall submit progress reports on its 40-Year Plan and Water Conservation Plan on or before January 10, 2007, and every 5 years thereafter, showing that the City is diligently pursuing and achieving reduction of its average per capita water usage in accordance with Condition of Approval 10, above.
12. The City shall regulate its surface water diversion rate under this permit and Permit No. 4819 to maintain, in so far as 'native' flow is available at and above the point of diversion, streamflows of not less than 122 cfs in the channel of the Rio Grande between the point of diversion and the Albuquerque Central Avenue gage.
13. Diversion of 'native' water from the Rio Grande under this permit shall be curtailed when 'native' flow in the channel of the Rio Grande is less than 195 cfs, measured immediately above the storage pool at the point of diversion, by 1 cfs for each 1 cfs drop in 'native' flow below 195 cfs. Diversion of 'native' water from the Rio Grande under this permit shall be suspended when any of the following situations exist: the

amount of return flow to the Rio Grande at the City's SWRP outfall is less than the amount of 'native' water diverted; 'native' flow in the channel of the Rio Grande is equal to or less than 130 cfs, measured immediately above the storage pool at the point of diversion or immediately below the point of diversion; streamflows in the channel of the Rio Grande fall below 122 cfs, measured at the Albuquerque Central Avenue gage; or the State Engineer determines that suspension is necessary to meet compact obligations or to protect existing water rights.

14. Prior to diversion of any surface water from the Rio Grande under this permit, the City shall install, in a manner acceptable to the State Engineer, stream gages of a type approved by the State Engineer, at locations acceptable to the State Engineer sufficient to adequately measure and monitor streamflows above the point of diversion and throughout the reach of the Rio Grande from the point of diversion to the Southside Water Reclamation Plant wastewater outfall. The total diversion of surface water under this permit and flows returned directly to the Rio Grande shall be measured with totalizing meters of a type and at a locations approved by and installed in a manner acceptable to the State Engineer. All meters and gages shall have continuous data recorders. The data, on a real-time basis at intervals acceptable to the State Engineer, shall be made available to the public and the State Engineer. The City shall provide in writing, the make, model, serial number, date of installation, initial reading, units, and dates of recalibration of each meter and gage, and any replacement meter or gage used to measure stream flows, diversion of water and return flows to the Rio Grande. At a minimum, all meters and gages shall be calibrated in accordance to industry standards annually and the results shall be submitted to the Office of the State Engineer.
15. The City shall submit final plans for construction of the DWP diversion works and impoundment structures to the State Engineer for approval, prior to construction. Prior to any diversion of surface waters from the Rio Grande under this permit, the City must arrange for the State Engineer's inspection and approval of the diversion works, impoundment structures and the meters and gages required pursuant to Condition of Approval 14.

16. On or before the 10th day of January, April, July and October, or such other times as may be determined acceptable by the State Engineer, the City shall submit to the Office of the State Engineer, a comprehensive report, both in writing and electronically, which includes the following data concerning the preceding three-month period, or such other time period as may be determined acceptable by the State Engineer: the total amount of San Juan-Chama Project water released from Heron and/or Abiquiu reservoir(s) for its DWP and for offset of depletions on the Rio Grande caused by the exercise of permit RG-960 et al.; the total amount of water diverted from all sources; the measured streamflows throughout the reach of the Rio Grande from above the point of diversion to the Southside Water Reclamation Plant wastewater outfall; and the total flow returned directly to the Rio Grande.
17. Proof of Completion of Works shall be filed within four (4) years from the date of this order.
18. The State Engineer shall retain jurisdiction over this permit for the purpose of ensuring that exercise of the permit does not violate the forgoing Conditions of Approval, is not detrimental to existing water rights, is not contrary to the conservation of water within the State and is not detrimental to the public welfare of the State of New Mexico.

Respectfully submitted July 8, 2004.

Victor Kovach
Hearing Examiner

Louis D. O'Dell
Technical Advisor

I ACCEPT AND ADOPT THE REPORT AND RECOMMENDATION OF THE HEARING EXAMINER THIS _____ DAY OF _____ 2004.

**JOHN R. D'ANTONIO, JR., P.E.
NEW MEXICO STATE ENGINEER**