

**STATE OF NEW MEXICO
WATER QUALITY CONTROL COMMISSION**

**IN THE MATTER OF)
APPEAL OF SUPPLEMENTAL DISCHARGE)
PERMIT FOR CLOSURE (DP-1341) FOR)
PHELPS DODGE TYRONE, INC.,)
Petitioner.)
_____)**

**Docket Nos.
WQCC 03-12(A)
WQCC-03-13(A)
(Consolidated)**

WRITTEN TESTIMONY OF CRAIG ROEPKE

My name is Craig Roepke. I am the Deputy Director of the Interstate Stream Commission (ISC) within the Office of the State Engineer (OSE) and Chief of the ISC Special Projects Bureau. I am presenting this written testimony on behalf of the New Mexico Environment Department in the proceeding on the appeal of the Supplemental Discharge Permit for Closure, DP-1341, for the Phelps Dodge Tyrone, Inc. (Tyrone) open-pit copper mine (Tyrone Mine) located in Grant County, New Mexico. The matter is before the New Mexico Water Quality Control Commission on remand from the New Mexico Court of Appeals. My written testimony is marked as NMED Exhibit 32.

I. Educational Background and Work Experience

I have served as Deputy Director of the ISC since April 2004. In that capacity, I supervise a staff of twelve technical positions and teams of contract technical consultants and attorneys. In addition to my duties as Deputy Director, I serve as Chief of the Statewide Water Projects Bureau and as a Hydrologist and Project Manager for the ISC. While at the ISC, I have led the New Mexico team negotiating with federal, other state, and Indian parties for New Mexico's Gila Settlement in the 2004 Arizona Water Settlements Act (2004 AWSA). As such, I am familiar with water resource supplies and demands in southwest New Mexico. While at the ISC, I led negotiations for successful settlements of Eagle Nest and Rio Hondo litigations. I

have overseen engineering, ISC personnel and operations in the Costilla, Gila, and Canadian River Basins, and other state areas not included in the Rio Grande, Pecos, and San Juan Basins. I have supervised the ISC Acequia Construction and Reloan Programs. I served as ISC project manager and hydrologist for the Costilla Creek Compact, the Gila and Canadian River Basins, and Ute Reservoir, and functioned as Water Master for the Costilla Creek System during 2000 irrigation season. I coordinated and negotiated water system administration with Colorado officials and New Mexico water users. As project manager for Ute Reservoir, I coordinated activities and negotiations leading to ISC policy on use of ISC lands and easements and developed the beginning elements of a Master Plan for Ute Reservoir and surrounding areas.

Before working at the ISC, I created and managed the water resources programs for the Cheyenne River Sioux Tribe and the Standing Rock Sioux Tribe. In that capacity, I administered and coordinated the 106 Water Quality Program, including performing budgeting, preparing proposals, and contracting; prepared the Tribal Water Quality Standards and grant requests; provided hydrologic technical advice and assistance to all Tribal entities; and coordinated and supervised environmental projects. Prior to working with the Tribes, I worked for Sandia National Laboratories in the Subsurface Flow and Transport Laboratory and in the Sandia Environmental Remediation Program as head of the Hydrology and Geochemistry Testing Laboratory. I am a Coast Guard Certified Marine Engineer, and have owned and operated a marine engineering company.

I have a Bachelor's Degree in English from the University of New Mexico and a Master in Science Degree in Hydrology from New Mexico Institute of Mining and Technology.

My resume with a brief listing of publications is NMED Exhibit 33.

II. Summary of Testimony

The purpose of my testimony is to provide my opinion, as a water resources manager, that the ground water in and around the Tyrone Mine has a future use and should be protected for future use.

My testimony also describes a proposal presented by Phelps Dodge Corporation (Phelps Dodge) to the ISC and OSE which involved pumping 4,300 to 6,600 acre-feet of ground water from the Tyrone Mine, after closure of the mine, for use in Silver City, Deming, Hatch, Las Cruces, and the areas surrounding those municipalities.

III. The Need to Protect the Ground Water in Southwest New Mexico and at the Tyrone Mine for Future Use

All studies of which I am aware use a growth rate for southwest New Mexico of approximately 2% per year. At this growth rate, the investigators generally agree that currently available water supply will not meet demand by 2040. In addition, the ground water use in the Mimbres Basin exceeds supply by approximately 33,000 acre-feet per year. By themselves, these facts establish the need to preserve all water supplies in the region.

As a water resources manager, one must consider water demand of an area for at least for the next 60 years, and preferably longer. For water resource planning purposes in the western United States, a growth rate based on past patterns can substantially underestimate future demand. In addition to past growth trends, planning for future water use in New Mexico must take into account the arid environment in which we live, the cyclic droughts we have been experiencing, the State's heavy reliance on ground water for drinking water, the generally unsustainable depletions of groundwater reserves, the uncertainty of climate change, the pressures that growth in regions near ours will bring to bear upon the State, and the experience of other, similar Western localities.

In the decade from 1960 to 1970, the population in Colorado increased by 26%. In that same decade, the population in Laramie County, Wyoming decreased by 6%. However, due primarily to immigration from the rapidly growing regions of Colorado, in the subsequent decade from 1970 to 1980, Laramie County experienced a 22% increase in population. That trend continues. *See Population Growth: Denver and Laramie County, WY, attached.* In the single year from 2005 to 2006, the population of Laramie County increased by over 4%. Similar examples of sudden and sizeable population increases can be found in other areas where large urban areas experience growth followed by equivalent or even higher growth rates in nearby or adjacent rural or semi-rural areas. In San Diego, for example, population increased from 637,491 in 1970 to 875,538 in 1980, or an increase of over 37%. The following decade, from 1980 to 1990, the population of Jamul, California, a small rural community in the mountains east of San Diego similar to Cliff-Gila in Grant County, increased from a population of 1,826 in 1980 to 5,920 by 2000, or over 6% per year. In the Colorado – Laramie County, Wyoming example, the rapid and unforeseen growth was due primarily to immigration into Wyoming of persons who left their homes in Colorado to escape the burgeoning populations. In the California example, the rapid increases in San Diego and Jamul were due primarily to immigration from east of the Mississippi though the same time lag was seen as in the Colorado – Laramie County, Wyoming example.

Southern New Mexico, west Texas, and northern Mexico also represent growing markets for scarce water supplies. Las Cruces is growing rapidly, from a population of 74,267 in 2000 to 82,671 in 2005, or growth of over 11% in five years. Truth or Consequences population in 1990 was 6,224; in 2000 it had grown to 7,289, for an increase of 17%. Similar trends are seen in planned development in Santa Teresa, New Mexico; El Paso, Texas; and Juarez, Mexico.

The potential underestimation of population growth based on historical trends is especially important in southwest New Mexico. Until recently, Grant County, Silver City, and the Cliff-Gila Valley represented an undiscovered and nearly ideal climate and location for migration. National publications such as the Atlantic Monthly have now recognized Silver City as "the poor man's Santa Fe." Oprah Winfrey recently cited Silver City as one of the ten best places to live in the United States. Arizona, bordering New Mexico on the west, is the second fastest growing state behind Nevada. Phoenix and the central valley of Arizona have adopted population goals of 15.6 million within the century. I personally have been approached by Arizona and Boston developers seeking land and water rights in the Grant County area.

It is prudent for a water resources manager to plan for the greatest demand scenario. The attractiveness of the southwest New Mexico climate equals or exceeds that of southern California. The location of Phoenix just to the west portends similar growth dynamics in southwest New Mexico as occurred in Laramie, Wyoming. In my opinion, it is probable that future growth rates in southwest New Mexico will likely exceed the growth rates projected in current planning.

In addition, water throughout southern New Mexico is scarce, and communities outside southwest New Mexico may look to water in the southwest region to meet demand. All these demands point to the necessity to carefully husband and protect existing ground water supplies in southwest New Mexico.

As a result of declining aquifers, upon which the vast majority of communities in southern New Mexico depend for their municipal supplies, the State Engineer has declared the Mimbres and Lower Rio Grande Basins. This means that no new water may be appropriated. In the 1964 U.S. Supreme Court Decree in *Arizona v. California*, the Court severely limited

depletions by New Mexico in the Gila Basin to approximately 30,000 acre-feet per year. The Gila and San Francisco Rivers in the Gila Basin represent the only renewable water supplies in the region.

In the 2004 Arizona Water Settlements Act, Congress granted New Mexico the ability to deplete an additional 140,000 acre-feet in any ten-year period, or on average 14,000 acre-feet per year from the Gila Basin. However, development of this water has proven problematic. At present, there is no agreement or consensus among the various stakeholders as to how or even whether the AWSA water will be used and, therefore, at present there is no decision that the Gila Settlement water will be available for municipal, domestic, agricultural or industrial use in the future.

The declaration of the Mimbres and Lower Rio Grande Basins, the Supreme Court limitations in the Gila Basin, and the difficulties in developing any additional Gila Basin water under the 2004 AWSA make current ground water supplies in the region all the more critical. Based on the more conservative growth rates utilized in the Town of Silver City's 40-Year Water Plan (authored by Balleau Groundwater, Inc.) and the Southwest New Mexico Regional Water Plan (authored by Daniel B. Stephens), the growth and demand from outside the region, the current 33,000 acre-feet deficit between supply and withdrawals in the Mimbres Basin, it is my opinion that the Tyrone Mine ground water will be needed and utilized in the foreseeable future, whether as water pumped from the mine itself or as flows into aquifers currently utilized as municipal supplies. Tyrone mine sits almost astride the continental divide. To my knowledge, all investigators have estimated that approximately 40% of the base flows of the Gila River between Gila and Redrock derive from groundwater that can include the water that flows into or from the Tyrone mine. Regardless of whether the Tyrone mine water would flow to the Gila or

Mimbres Basins, aquifers that could be impacted are currently used to provide existing municipal supplies.

Given the impetus for unbridled growth in the central valley of Arizona, the difficulties in developing any of the additional depletions granted in the 2004 AWSA, and the strong likelihood that immigration into the region will grow at faster rates than present, the prudent expectation of a water resource manager would be that all the water supplies in the region, including the Tyrone Mine water, will represent a scarce and highly valuable resource in the near future and therefore should be preserved for future use.

IV. Phelps Dodge Proposal for Future Use of Tyrone Ground Water

During negotiations leading to the 2004 AWSA, Phelps Dodge made a proposal to ISC during the summer of 2003. *See* NMED Exhibit 34. In its proposal, referred to as "Exchange A," Phelps Dodge proposed to provide approximately 6,000 acre-feet of its existing Gila River surface water rights and 4,300 to 6,600 acre-feet of its Tyrone mine ground water to be treated and piped to Silver City and Deming, and outside of the region, to Hatch and Las Cruces. *See* NMED Exhibit 34. Phelps Dodge further proposed that the federal funding provided in the 2004 AWSA would be used to build and operate a treatment plant for the contaminated water from the Tyrone Mine and to build the piping and infrastructure to the various points of delivery. As an alternative, Phelps Dodge proposed that the ground water from the Tyrone Mine could be piped to Caballo Reservoir and used to meet demand or compact obligations as ISC chose. Meetings in which Phelps Dodge made this proposal were attended by the State Engineer, the Director of the Interstate Stream Commission, ISC counsel, the Phelps Dodge manager in charge of all water rights, a Phelps Dodge hydrologist, and a Phelps Dodge attorney.

Because the Phelps Dodge exchange proposals, unlike the 2004 AWSA water, only

redistributed already existing New Mexico water rights, and did not augment or increase supply to meet increasing future demand, ISC could not accept the proposals. However, the excavation of materials from the open pit in the Tyrone mine creates a gradient that in effect acts similar to pumping in a well, drawing water into the pit from surrounding sources. Under State Engineer permits, the Tyrone mine pit is considered a well. Given the expected and potential growth in southwest New Mexico, Texas, and Mexico, and the technical practicability of conveying the water to those locations, downhill, through gravity flow, Phelps Dodge's proposal to pipe treated ground water from the Tyrone Mine to Silver City, Deming, Hatch, Las Cruces and their environs is a reasonable and foreseeable future use of that ground water.¹

This concludes my direct testimony.

¹ On February 20, 2006, ISC sent a letter to Phelps Dodge asking for reconsideration of its refusal to provide data to the ISC planning modeling team. In March 2006, Phelps Dodge replied in the negative, stating that "it is premature for PD to participate in these studies to effect a CAP [Central Arizona Project] exchange even before the settlement authorizing the exchange is finalized, and before the litigation underlying the settlement is settled." The letter went on to state that, "Even after the mine closes, Phelps Dodge Corporation will continue to use its water rights at the Tyrone Mine for a variety of purposes." NMED Exhibit 35.

I, Craig Roepke, swear that the foregoing is, to the best of my knowledge, true and correct.

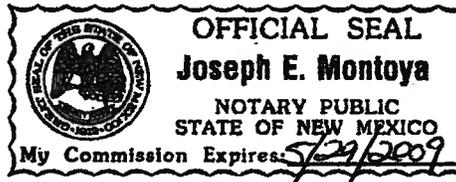
C. Roepke
Craig Roepke

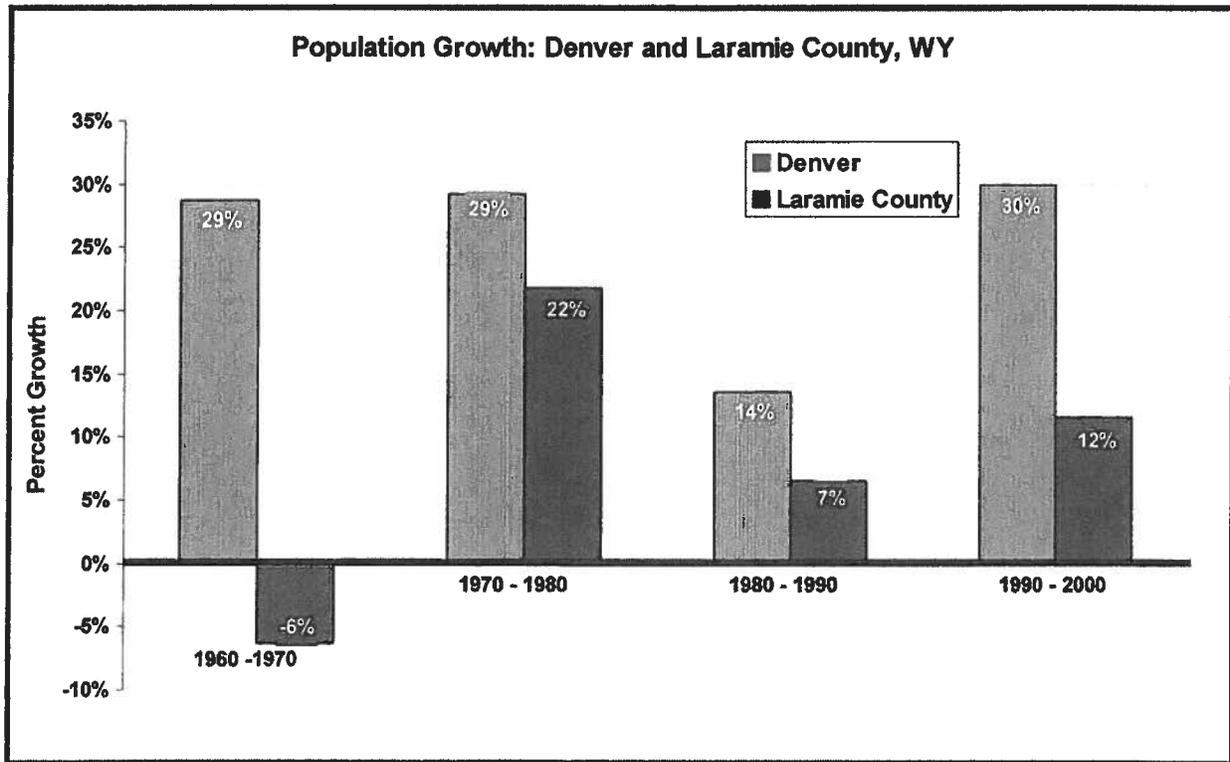
Subscribed and sworn to before me this 9th day of July, 2007 by Craig Roepke.

Joseph E. Montoya
Notary Public

My commission expires:

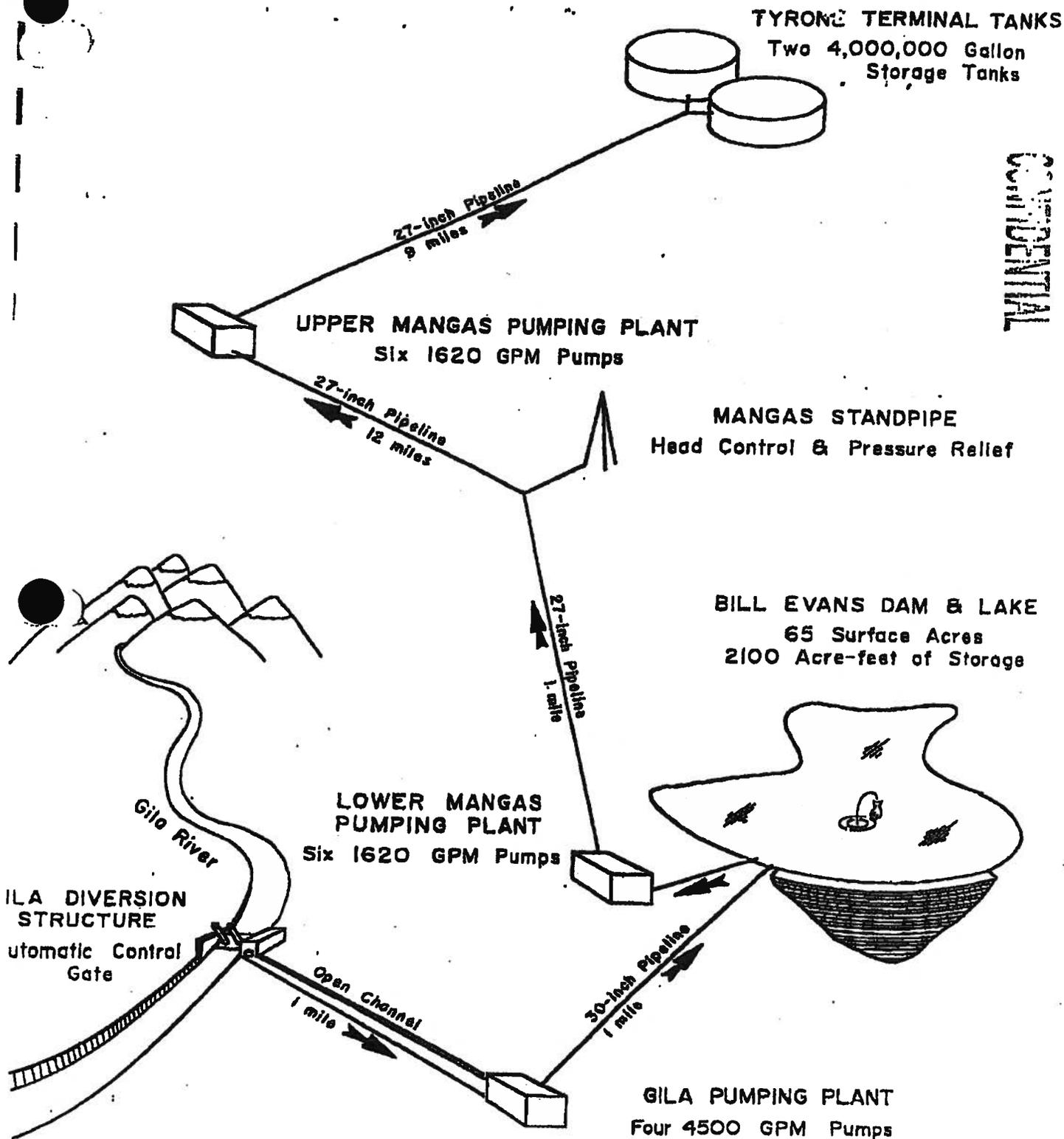
May 29, 2009





Growth rates in Colorado and Laramie County, Wyoming

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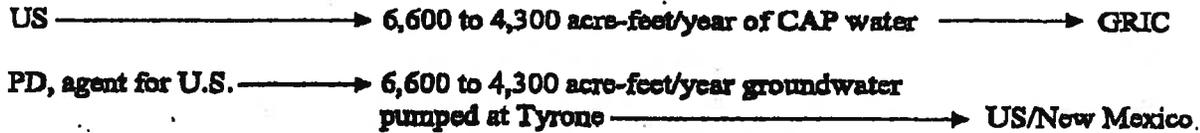


GILA WATER SUPPLY SYSTEM FLOW SHEET

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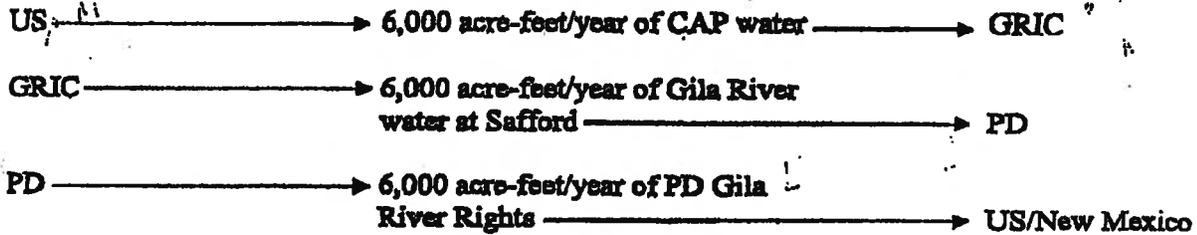
Schematic of Exchanges

EXCHANGE A



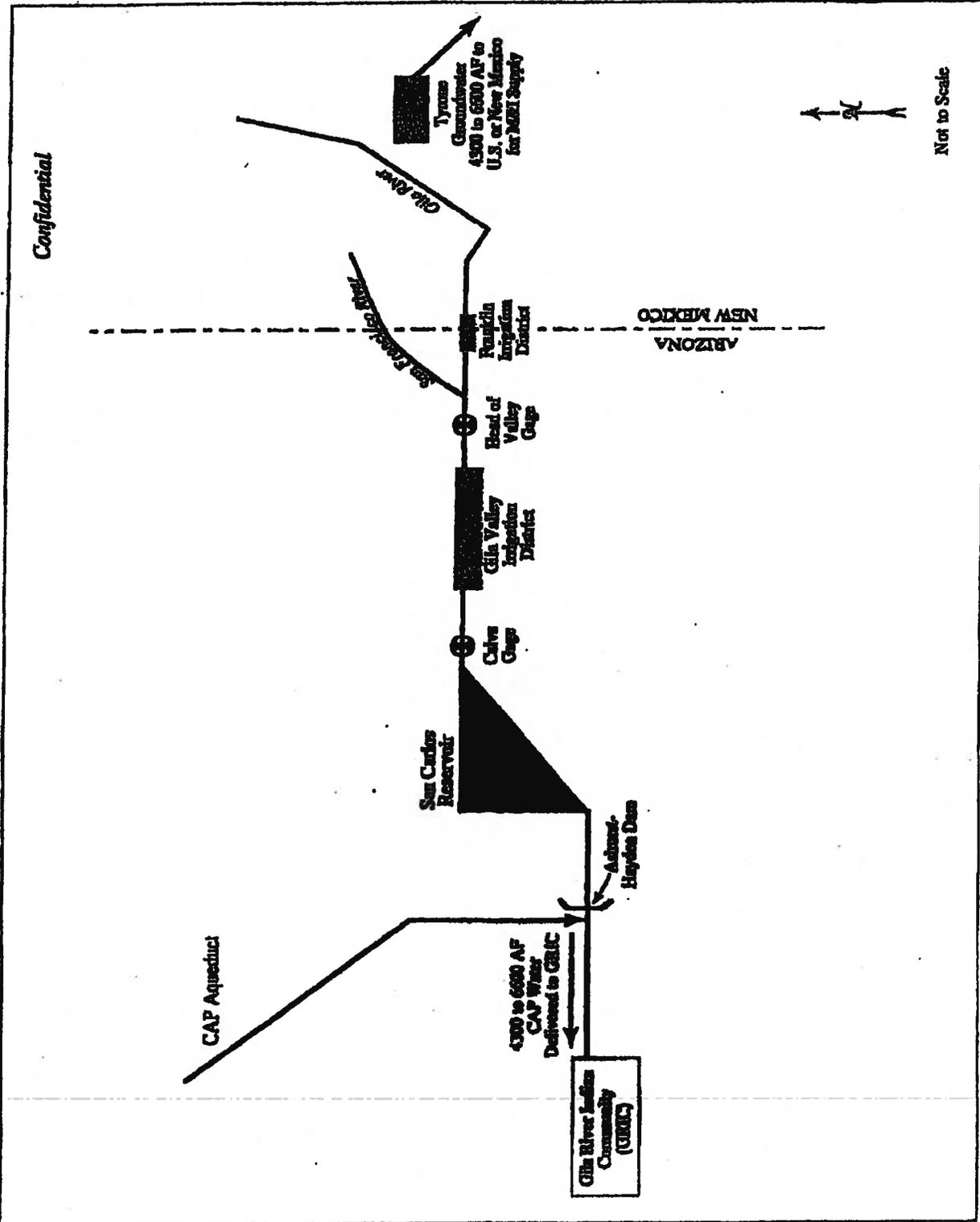
- US pays OM&R for CAP water deliveries to GRIC
- US/New Mexico (and ultimate water users) pay OM&R for groundwater deliveries in New Mexico
 - Federal funding of distribution system
 - Federal funding for wells and treatment plant

EXCHANGE B



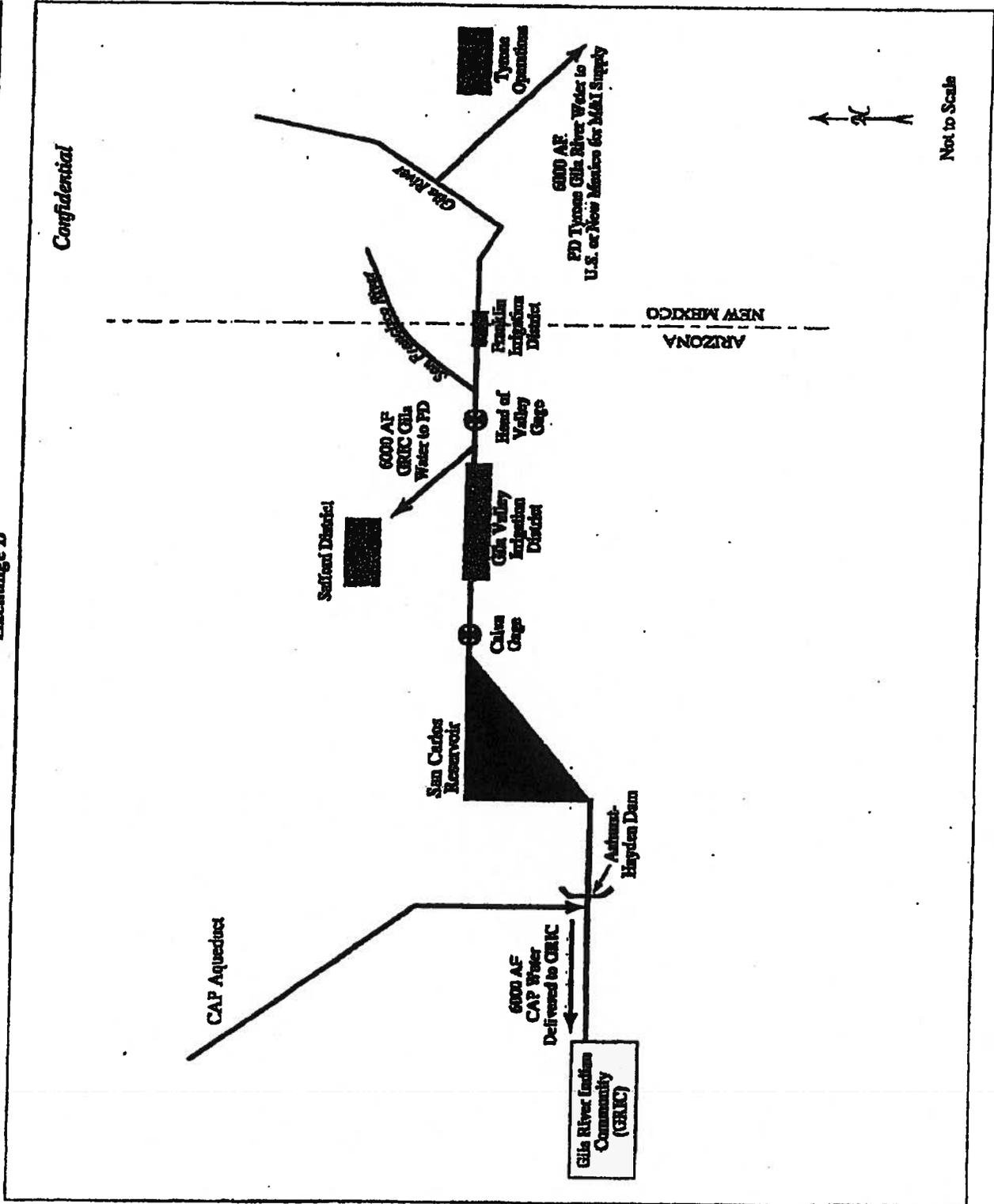
- US pays OM&R for CAP water deliveries to GRIC
- PD pays capital, OM&R for Gila River water deliveries at Safford.
- US/New Mexico (and ultimately water users) pays capital, OM&R for delivery of PD Gila Rights through Bill Evans system in New Mexico.
 - Federal funding for distribution system.
 - Federal funding for capital associated with use and improvement of Phelps Dodge system.

Schematic Diagram
Exchange A

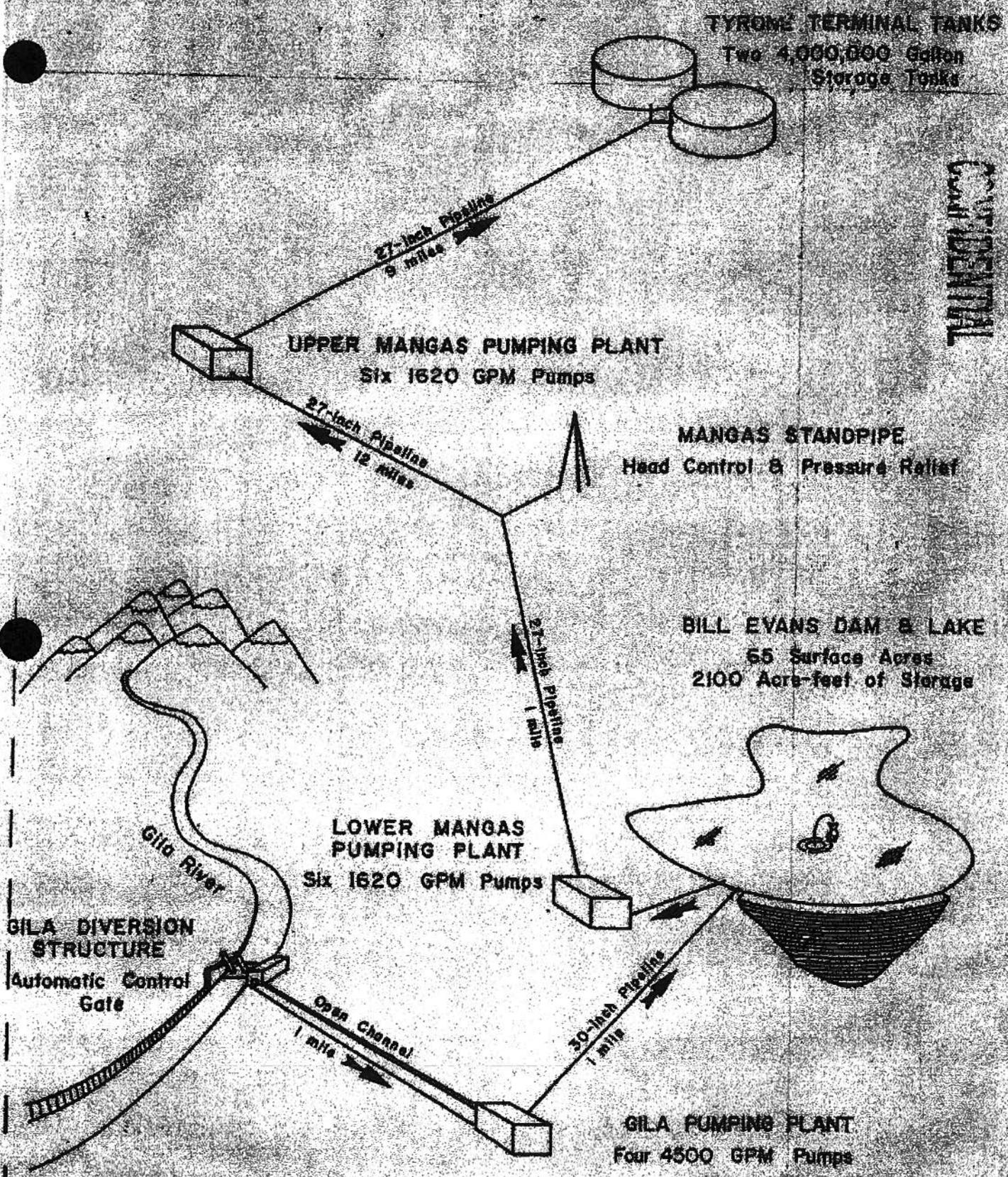


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Schematic Diagram
Exchange B



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**GILA WATER SUPPLY SYSTEM
FLOW SHEET**

DRAFT
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CONCEPTUAL TYRONE (NMCAP) & CHINO WATER EXCHANGES

