Watering the Great American Desert

Here are excerpts from an article by Dennis Small in EIR, Aug. 10, 2012.

The Northern Gulf Hydraulic Plan, or PLHIGON, will control the historic flooding problem in the Mexican Isthmus region, produce significant amounts of hydroelectric power, and move vast quantities of fresh water northwest along Mexico's Gulf Coast, part of which will then require complementary projects that will pump it up to Mexico's north-central plateau, which is part of the Great American Desert.

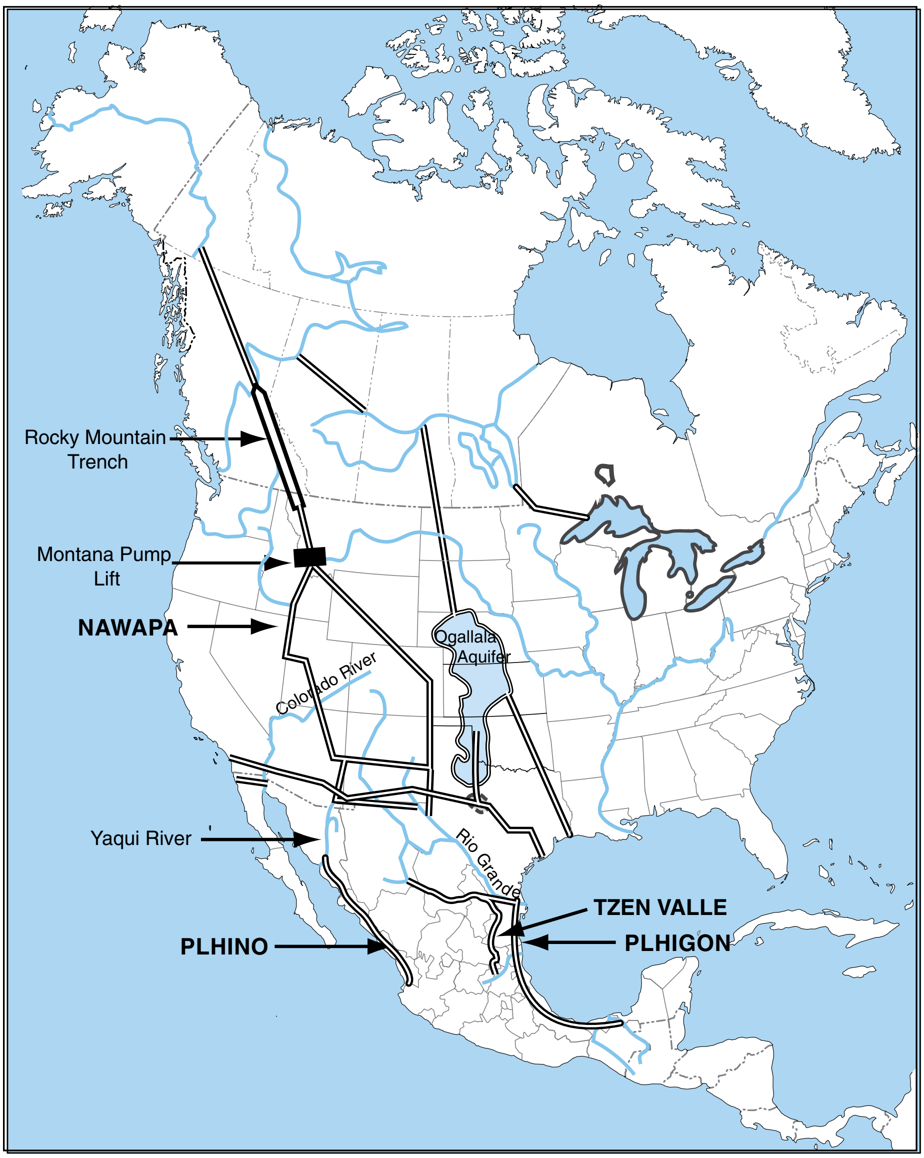
The total amount of water runoff to be controlled and withdrawn for use is enormous, and dwarfs the North West Hydraulic Plan's (PLHINO's), scope of 7 km^3 of water withdrawn, out of a total runoff of 9.5 km^3. The Southeast's four big rivers (Grijalva-Usumacinta, Papaloapan, Coatzacoalcos, and Tonalá—the first, second, third, and sixth biggest in the country, respectively) jointly produce some 204 km^3 of runoff, of which only 15%, or 30 km^3, will be withdrawn for use in the PLHIGON. This is almost one-fifth the amount of water that will be transfered by the North American Water and Power Alliance (NAWAPA XXI)—some 165 km^3 per year.

In the detailed design for the PLHIGON drawn up by the respected Mexican engineer Manuel Frías Alcaraz, six major dams will be constructed on the Usumacinta River and its tributaries, some of which will involve binational projects with Guatemala. These will create hydroelectric installed capacity in the range of 9.5 gigawatts, nearly doubling Mexico's current hydroelectric installed capacity of 11 GW, out of a national total of 50 GW from all sources. It will also be necessary to increase the capabilities of the existing Malpaso and Peñitas dams on the Grijalva.

Besides producing electricity, these dams will be designed to control the rivers' runoff, and prevent future

FIGURE 1

North America: 'NAWAPA-Plus'



Sources: Parsons Company, *North American Water and Power Alliance Conceptual Study,* Dec. 7, 1964; Hal Cooper; Manuel Frías Alcaraz; *EIR.*

flooding. That will allow the rich lands, in what is now a vast coastal flood plain stretching across Tabasco and the neighboring state of Campeche, to be put into agricultural production, both for crops and pastureland. Frías estimates that more than 1.5 million hectares of land can be recovered, transforming the region into the country's number-one agricultural zone. As a rule of thumb, 1 km^3/year of water will irrigate some 100,000 hectares of land. That means that about 15 km^3 of the 204 km^3 of runoff from the four mentioned rivers, will be needed for the 1.5 million new hectares of agricultural land.

Nuclear Energy Also a Must

In a second stage, an additional 15 km^3 of water will be transported northwestward along the Gulf coast, with dams, canals, and pumping stations built for that purpose. There are technical difficulties involved in transferring such vast amounts of water either over (or under, with tunnels) the neovolcanic knot in the center of Mexico, but these can be solved with the significant increase in power production that will come as Mexico fully develops its nuclear industry.

Substantial power will also be needed to pump water over the Eastern Sierra Madre into the Great American Desert region in north-central Mexico, the epicenter of today's drought.

It should be noted that neither the PLHINO nor the PLHIGON per se would carry water to that area. They would have to be complemented by other projects that would bring water up from the coasts to the central highlands. From the western side, this is not very feasible in physical-economic terms, since the Western Sierra Madre is quite high—it reaches heights of 3,000 meters above sea level. But on the Gulf side, it is much more feasible, given that the Eastern Sierra Madre ranges between 2,000 and 2,500 meters above sea level.

One project that would be especially important for carrying water in that direction, at least as far as the city of Monterrey (which is just before you have to cross over the Eastern Sierra Madre into the highlands), is a proposal developed by Frías, which he has dubbed the

TzenValle System. The idea is to divert about one-third of the water from the Pánuco River (the fifth in the country, in terms of run-off) and its tributaries, where these originate in the Eastern Sierra Madre in the state of San Luis Potosí. By means of a series of dams, tunnels, and canals, located some 250-300 meters above sea level, water would be carried north, and then pumped up as far as Monterrey, which is 540 meters above sea level.

The TzenValle System would carry an additional 6.8 km^3 of water per year to this arid zone.

As **Figure 1** indicates, the eastern branch of NAWAPA would connect with the tributaries of the Rio Grande (Río Bravo), which forms the border between the United States and Mexico at that point. This would enable the transfer of large quantities of fresh water—some 6.8 km^3—to the arid Center-North of Mexico. Here, at the Rio Grande, is where NAWAPA and the PLHIGON meet.

The western branch of NAWAPA would feed water across the border to the Yaqui River in Sonora, which would receive nearly 12 km^3 of water a year. This is where NAWAPA and the PLHINO meet.

The western stretch of NAWAPA would also supply water to the north and center of California, and to the Colorado River, which, in turn, would carry more than 5 km^3 of water a year to northern Baja California, in Mexico.

Figure 1 presents the full impact of the NAWAPA-Plus projects on water availability in Mexico. For the country as a whole, there will be 68 km^3 of new water available. Since Mexico currently gets 36% of its total water withdrawals from aquifers, and over-exploits more than 20% of them—i.e., withdrawing more water than the amount of annual recharge—it will be necessary to use some 10 km^3 of the newly available water to recharge the aquifers and reverse their depletion. That will leave net new water availability of some 58 km^3, a 75% increase over today's 77 km^3.

This increase in water availability will allow Mexico to irrigate some 5 million hectares of new land, a 75% increase over its current 6.5 million hectares of irrigated land. Of this newly irrigated land, 0.8 million hectares will be in Sinaloa and Sonora; 1.5 million will be in the Tabasco/Campeche flood plain; and about 2.7 million will be opened up in the upper reaches of the PLHIGON, including in the currently dry central highlands.