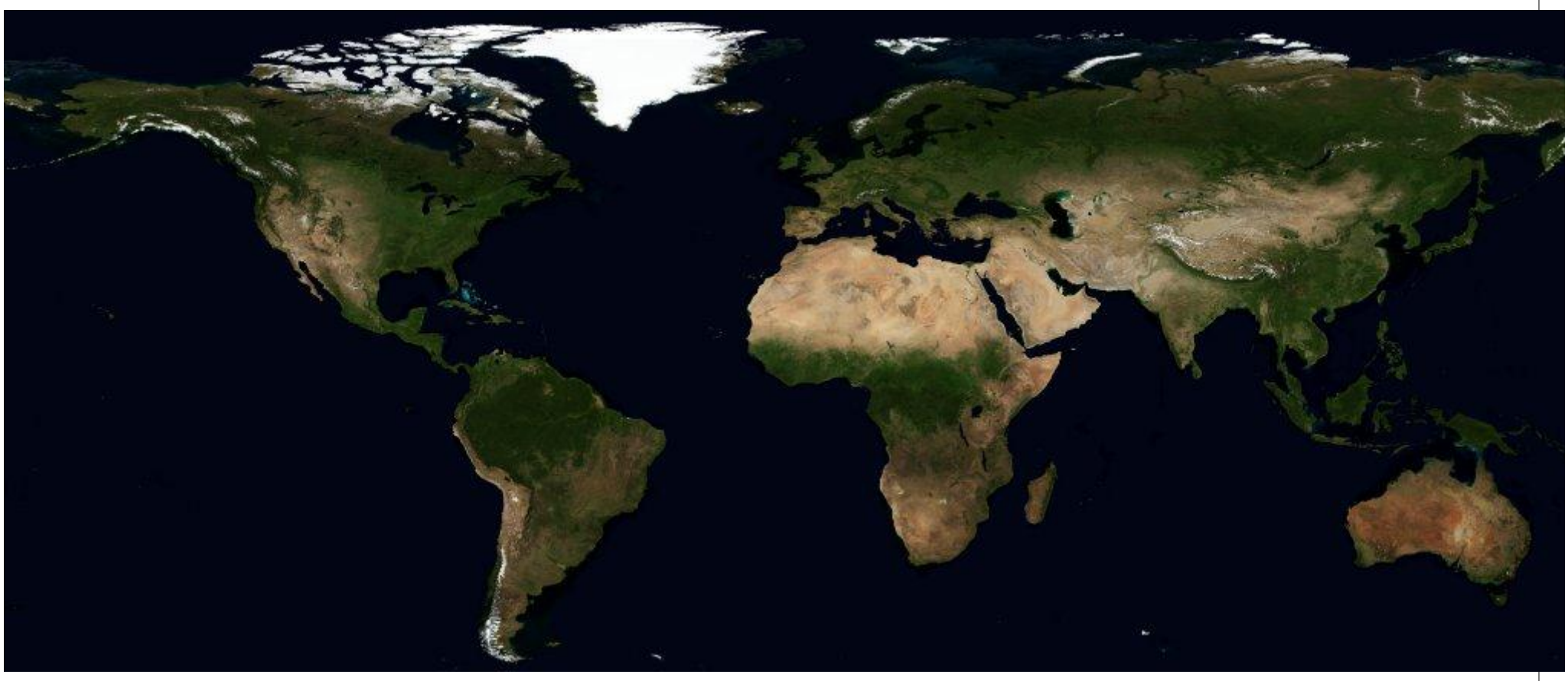
Water diversion is the keystone to humanity's future

- Rolf A. F. Witzsche - Aug. 2010



"Blue Marble" Satellite image by NASA for August

Here is our report card
The light areas and the brown give us a failing grade and at the same time the greatest opportunity to create a New World

The New Ice Age ahead adds to the challenge

Transferring waters defines the new age

The world has huge water resources, but much of the precious commodity on which the entire biosphere depends, when it falls as rain across the lands, ends up being dumped unused into the seas. Since the dawn of civilization mankind has used its ingenuity to artificially improve the biological system by diverting some of the runoff to irrigate its agriculture. Traces of the irrigation systems of the Harappan people along the Indus River, such as dams and canals dating back possibly 6,000 years, are still recognizable today.

Modern civilization depends to a large degree on the principle of irrigated agriculture that vastly improves the productive potential of the biological system. The current tragedy in the world where more than a billion people are forced to 'live' under conditions of chronic starvation is not a reflection of a lack of agricultural potential, but a lack of the development of the existing potential with improved fertilization, scientific seed selection, and mechanized farming methods that include irrigation as a component. The world's food production could be doubled with ease with just a small improvement in the utilization of mechanization, not to mention irrigation. There are an estimated 1,340 million farmers in the world (more if the families are included). Of these, as much as 900 million labor with their bare hands, 400 million utilize animal labor, and only 30 million (2.2%) are mechanized and have access to modern technology. Those few of the mechanized group produce most of the food in the world.

Technological inputs can uplift the meager scene of the current world-food situation, multifold. However, an

even greater loss for mankind is incurred by the current inability to utilize the barren wastelands that cover large parts of our planet, where nothing or very little grows, and this mostly for the lack of water resources. Water transfer infrastructures and technologies are therefore poised to become the defining features of the coming new age of human development.

The key-defining element is technology

Ever since the Harappan began to dig irrigation channels, water transfer technologies have remained land-based. Elevation differentials have been exploited, but in most cases the elevation differentials have been a blocking factors. Water doesn't flow uphill. Dams have been built since ancient times to artificially elevate the waters for distribution into nearby fields. This process has been extended to great extremes with giant dams, like the Aswan Dam that dams the Nile and enables far reaching irrigation, or the Three Gorges Dam on the Yangtze River that raises the waters 600 feet and enables long distance water transfer projects to irrigate the dry regions in the North of China a thousand miles distant. The NAWAPA project is designed to raise the bar even higher, with great dams up to 1,700 feet tall, to elevate the water in the Yukon and Alaska highlands for long-distance transferring across a mountainous terrain to irrigate the great dessert basins of America two thousand miles to the south. The plan, as designed in the 1960s, envisions a system that will the king of all the overland long-distance water transfer schemes ever created by mankind. The plan is for a gigantic system that will take 30-50 years to build, made up of over 300 separate infrastructure projects from source to destination.

But is over-land water transfer the only option available?

The answer is, no. Modern materials, energy systems, and automated manufacturing technologies, make it possible to construct long distance water transfer systems that operate submerged in the oceans, transferring the outflow of rivers to any coastal point in the world with zero elevation-differential. Rivers can be made to flow within the oceans in large diameter 'pipelines' made of a cloth of high-strength basalt fibers that are impregnated (with polyurethane for example) to make the water-separation barrier water tight. Motivated by a moderate pumping system, the thus submerged rivers, confined by these thin-walled barriers, can be made to flow to any coastal-point on the planet where water is needed for nearby irrigation needs, etc..

A pilot project for the submerged water-distribution principle

In the USA, for example, the entire outflow of the Columbia River (192 million acre feet per year) could be channeled south to a low-elevation point near Los Angeles and be pumped from there with minimal nuclear power into the low-elevation area of the Mojave Dessert for a desert-wide irrigation system, and from there become expanded both southward and northward to eventually cover the entire great dessert area of the southwest, including the Sonora Desert that extends deep into Mexico and the northern Great Basin of Nevada, and extending beyond into Idaho and Utah.

Submerged 'pipelines' are easy to build. For example, a single cubic meter of liquefied basalt utilized for extruded-fiber production, would yield slightly over 3000 square meters of a 20 mil cloth of high strength basalt fibers. A 'pipe' 100 feet in diameter, large enough to move the entire Columbia River at a flow rate of less then 4 Km an hour, could be built on this basis. The fabrication of this 1,500 Km pipe from the Columbia River to Los Angeles would require 150,000 cubic meters of basalt, or 0.015% of a single cubic kilometer of the material that the USA, all by itself, has 170,000 cubic kilometers of sitting unused on the ground, and northern Canada an estimated 650,000 cubic kilometers. (see: On the subject of basalt technology)

At a production rate of 2,000 meters a day, the entire pipeline can be produced in two years time. Add to this a year for the construction of the production facilities, and another year for the installation of it and the building of a submerged reservoir (a cube 1.5 kilometers per side), the entire submerged pipeline system could be fully operational in four years, and have a fully operational irrigation and distribution system (pre-built by this time) up and running with first water on the ground in four years, supplying the first pre-built new cities of free houses, and vast new industries. The entire demonstration project, complete with high-speed rail access could be pre-built by the time the water arrives, and be ready for occupancy at this time, for the

greening of the deserts to begin and all related aspects.

Part of the Mojave Desert

The entire New NAWAPA project could be up and running by this time, in four years rather that 30-50 years, and this with nearly double the supply capacity, and which would of course be readily expandable. (Columbia River project: 192 MAF/yr complete in 4 years with minimal effort and expandable, vs the 1960s overland plan for transferring 100-110 MAF/yr at the end of a 30-50 years Herculean effort)

The railway equivalent for water diversion

The ease of installation and vast expandability of the *submerged water-transfer technology* makes this technology the equivalent of the railway concept that has become the most efficient mode for mass transportation, and thereby has become the backbone of civilization. The *submerged water-transfer technology,* the 'railroad' for water, has a similar and possibly far greater potential. The overland NAWAPA transfer plan is limited to 100 MAF/yr by the limited availability of high altitude water. The submerged transfer technology has no such limits. The overland NAWAPA plan requires an enormously long construction time. For example, the Three Gorges Dam in China took 12 years to build under optimal conditions. The construction time for the 900 foot high dam to raise the elevation of the upper Yukon, which is the #1 key component of overland NAWAPA plan, would likely require a four times as long construction period considering the much more massive construction that needs to be built to hold back the dramatically higher water pressure resulting from the higher elevation, which in addition to the scope of the project is to be erected in permafrost country where nothing gets build for a large part of the year because of the deep sub-zero temperatures.

Utilizing the *submerged water transfer technology* as an alternative would bypass all of these challenges and in addition enable the utilization of much closer water resources, such as the Columbia River and Fraser River, etc...

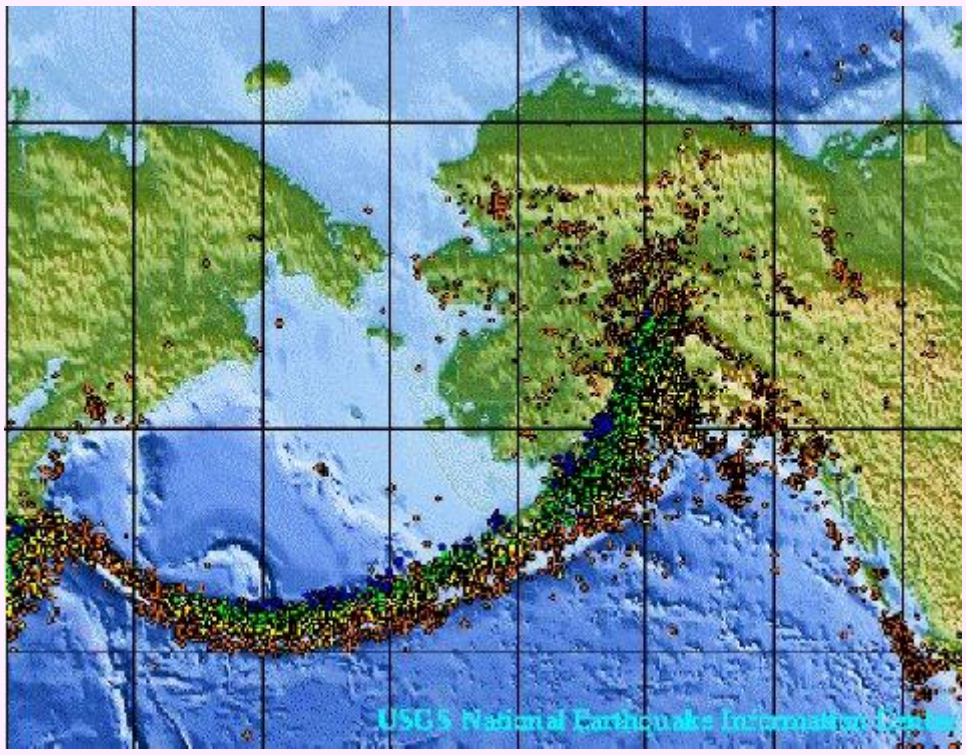
The dawn of new technology typically obsoletes old technology

These vast advantages of the *submerged water transfer technology* that are now possible, effectively dooms the old NAWAPA overland option of the 1960's vintage, together with all related factors. Here is an overfiew of why.

Before the spate is put into the ground for any project, the licensing needs to be secured (app. 5-10 years). During the licensing process hard questions will be asked, because enormous demands are made by the overland NAWAPA plan for its implementation. For example, more than half of the Trans-Alaska Pipeline, a 48 inches pipeline that conveys the northern oil from Prudhoe Bay, to Valdez in the south, will have to be rerouted to bypass all the areas that are to be flooded, including the Copper River section where the 1,700 foot high dam is to be built. The question will inevitably be asked: Will we really need to do this?

This question will be asked many times in many places during the licensing process, such as when the plan demands the relocation of the many towns and industries in the Copper River basin, and the need for building a new highway to Valdez.

It will also be asked if the flooding of the Copper River basin is really worth the price of loosing one the world's great salmon spawning grounds (used by several million salmon each year). And the question will be further asked if it is really wise to build a 1,700 foot high dam, and several other dams, in a high-risk earthquake zone, and for what?



Seismicity of Alaska: 1975 - 1995

Many similar questions will also be asked when the permission is requested to flood the many billions of acres of land, and in the process numerous towns and cities, when the great reservoirs fill up that are required. Wouldn't anyone ask, is this really needed?

Canada would certainly ask for what benefit it would be required to relocate all its transcontinental railway lines around the 500-mile long Rocky Mountain Trench reservoir, adding nearly a thousand miles to the transcontinental distance for some routes.

It is highly unlikely for all of these kinds of reason that permission will be given for any of the NAWAPA overland routing requests, when simpler, quicker, less disruptive, and more efficient options are available to achieve the same and better results, and this more quickly.

It must be further considered that the overland plan requires all of the permissions to be granted, without exception, for the implementation to begin.

A plan that is pushing the limits to such a great extend as the overland NAWAPA plan, and this on so many fronts, with comparatively little to show for in the end, is doomed from the outset by high technology options that offer better alternatives.

The only valuable element that would remain of the plan then, is the idea of utilizing large scale infrastructures to uplift the productive capacity of the world by enabling the biological system to become more productive with the provision of one of its vital elements, which is water. The American economist and statesman Lyndon LaRouche, who has recently brought the NAWAPA plan to the foreground once again, notes that the plan itself is not practical, but speaking of its mission orientation, he states that it is so critical at the present time (in an economically collapsing world) that the continued existence of civilization may depend on it.

The NAWAPA concept that Mr. LaRouche brings to the plate for the whole world to consider, pioneers the idea of enriching the meteorological environment in North America on a continental scale, with potentially such great power that the effect that would be generated in the target zones, the great desert basins, would spill over onto the Great Plains region east of the mountains. The spill-over effect has (theoretically) the potential to be so great that no additional water transfer into the Great Plains region might be needed.

The old NAWAPA concept, when seen as a mission orientation, is highly valuable for this reason, even though the underlying plan never actually provided the resources to implement the potential that the concept unlocks.

The overland NAWAPA plan was a greater idea than it had resources for. This might have been the reason why the NAWAPA idea as a mission orientation has never had a chance to get off the ground, until quite recently when the technology of submerged water transfer became possible with the unfolding technology of high temperature basalt processing and the now fading resistance in society against nuclear power.

Nuclear power is the turning point

It not only enables the efficient construction of a submerged water distribution systems, a New NAWAPA, but also enables the efficient distribution of the transferred waters over land to where the waters, distributed from the south, would be needed. For the New NAWAPA system the diverted waters would still need to be pumped up in some cases, as in the case of the higher elevation of the Nevada area Great Basin, or the high areas of the Sonora Desert. However, in those cases, only those waters would need to be pumped up that are actually destined for those elevations. This too, makes the system more efficient. The development potential that this massively expandable system offers is essentially unlimited.

Increasing the power-density of human labor

The greatest development limit that the New NAWAPA system would likely face, would be a shortage of manpower. In the dynamics of development, the tendency of a rapidly erupting manpower shortage is inherent in a process that unlocks ever greater potentials. Under these quickly unfolding circumstances, the improvement of the effectiveness of human labor - increasing the productive and creative power of human labor - becomes a highly critical factor. The submerged-water-transfer technology fits well into this trend as it is highly organized around automated processes for its construction, in contrast with the 1960s overland NAWAPA plan that is highly labor intensive and lean on automation.

Free houses as a necessary component

If a society is to recover itself economically and politically by developing its potential, the development of the human element of this potential becomes evermore critical. Our humanity is the most powerful and valuable asset we have as a society. Consequently this asset needs to be developed to the utmost, so that nothing be wasted and the as yet hidden power has a chance to become realized.

On this front, the greatest detriment is whatever most impedes the human development. Here poor living condition take a huge toll, such as slum living, substandard housing, or housing slavery. Slum conditions do not promote intellectual development. A society that tolerates conditions that create slum is a self-collapsing society. While numerous conditions that are detrimental to housing, are artificial, involving numerous processes of looting - which therefore can be changed as a matter of policy - some key-detrimental aspects a physical. The current construction of houses is immensely labor intensive, and detrimental for this reason. Extremely little automation is applied in the current process, and the materials for the construction are 'hard' to come by and expensive to produce. But this entire cost/benefit geometry is altered with the introduction of advanced materials (such as basalt) that enable the application of 100% automation for the production of modular housing units. On this basis the currently much needed houses can be mass produced at such a low cost that they can be provided for free as an investment by society into itself, just as highways are provided for free.

The use of basalt lends itself well as a means for meeting this currently great need in the housing arena (see: Free Houses For All). But most of all, the free housing principle is the most powerful animator imaginable for an economic development explosion that quickly gains the potential to transform the entire nation. The secondary development potential that would flow from this driver-process may be a thousand-fold, if not more. Just think of the potential that can be unlocked with the creating of scores of new cities, and new industries for the then developing new technologies. We simply don't know yet what potentials the liberating new technologies invariably create.

Priming the pump

Of course, the New NAWAPA, based for example, on the submerged diversion of the Columbia River outflow

into southern California and Arizona, which would be twice in volume compared with the old NAWAPA, would be nevertheless just a step through the starting gate. It would be essentially but demonstration project. The full implementation of the desert potential would require four times the Columbia volume. However, as the development dynamics create their own new dimension in terms of biological enablement and civic and industrial uses for water, the input of more rivers into the distribution network will eventually be required, and the potential for this expansion exists in rich measure (see: Towards a FDR NAWAPA).

Of course, the same development potential that the USA thereby develops, also exists in other nations, as for example along Pacific coast in South America, and in the vast unused regions of Patagonia (in the range of half a billion acres). The New NAWAPA demonstration project would most likely become instantly become in many areas around the world on a scale as yet unimagined.

The New NAWAPA would also prime the pump in yet another way, and a way that would wreck all imperial chokeholds on society. It would wreck most of all the property oriented chokehold. As anyone knows the most debilitating high-cost component in providing housing for society, is the 'cost' of land. Well, the deserts are free. Once this chokehold is eliminated on a large scale, the ripple effect will liberate the entire housing scene and eliminate a lot of trash.

The building of brand new cities with houses to be given away rent-free by the state, initially for the pioneer development regions, becomes totally possible within the New NAWAPA environment. The economic return for society from this development alone would not only repay the small cost involved, but would rapidly upgrade the entire economic scene across the nation. Nothing would jump-start an economy more quickly than enabling society to develop itself rapidly as human beings in a human environment. Slum does not qualify here. The same principle applies also to education, science, and culture.

The most natural thing that one would see unfolding then from this human-power development in the newly developing region, would not be merely new agriculture, which would be a part of it, of course. Instead, the most natural derivatives of this development would be found in the new leading-edge-technology industries that the vast spaces of this region coming to life would enable. After all, the great desert provides vast spaces for free, for technological infrastructures, such as a New NASA would require.

NASA would likely set up its next new Space Center in Utah, possibly near the vast Bonneville Salt Flats that offer a near perfectly level platform for experimenting with high-speed mag-lev space-lunch sleds that accelerates launch vehicles to such high velocities that nuclear-powered ramjet technology can be applied in the early stage to overcome the gravity barrier to a large degree, powering a space vehicle to the edge of the

atmosphere where ion engines can take over, thereby ending the age of the big missiles. This kind of high-tech approach that the development spaces would enable would revolutionize access to space and enable the industrialization of the moon, both for research, and for a jump-off point for wide-ranging missions into the solar system.

In other words, the pathway to Mars will likely begin at the Bonneville Salt Flats, and the infrastructures for that will likely begin at the Colorado River, which itself flows through America's great Flood Basalt Province extending across Washington, Oregon, and Idaho.

The entire desert basin from the Sonora Desert northward to the Nevada Basin and into Utah and Idaho, could become the home base for the greatest economic, scientific, technological, and industrial development the world has ever seen. The region has the land standing idle, waiting for the opportunity. The New NAWAPA project would support the infrastructures for this bright new future as it brings sufficient water to the new desert cities and everything that comes with it.

Even the sky won't be limit then on this frontier. It is likely that from this frontier the breakthrough will be wrought that will eventually enable mankind to tap into the unlimited electric energy resources that surround or planet on its close orbit around the Sun. And it might also be from here that the technologies become developed that will enable mankind for the first time since the beginning of life on Earth to create itself the power to prevent the ice ages from recurring the have for the last two million years devastated our planet repeatedly and ravished its biosphere with icy climates and endless sheets of ice (see: No Ice Age Allowed - we can block it).

When the infrastructures for life become raised to ever-higher qualitative levels, it appears that anything might be possible. Indeed, the saying will then become true, that we haven't seen anything yet.

Rolf A. F. Witzsche

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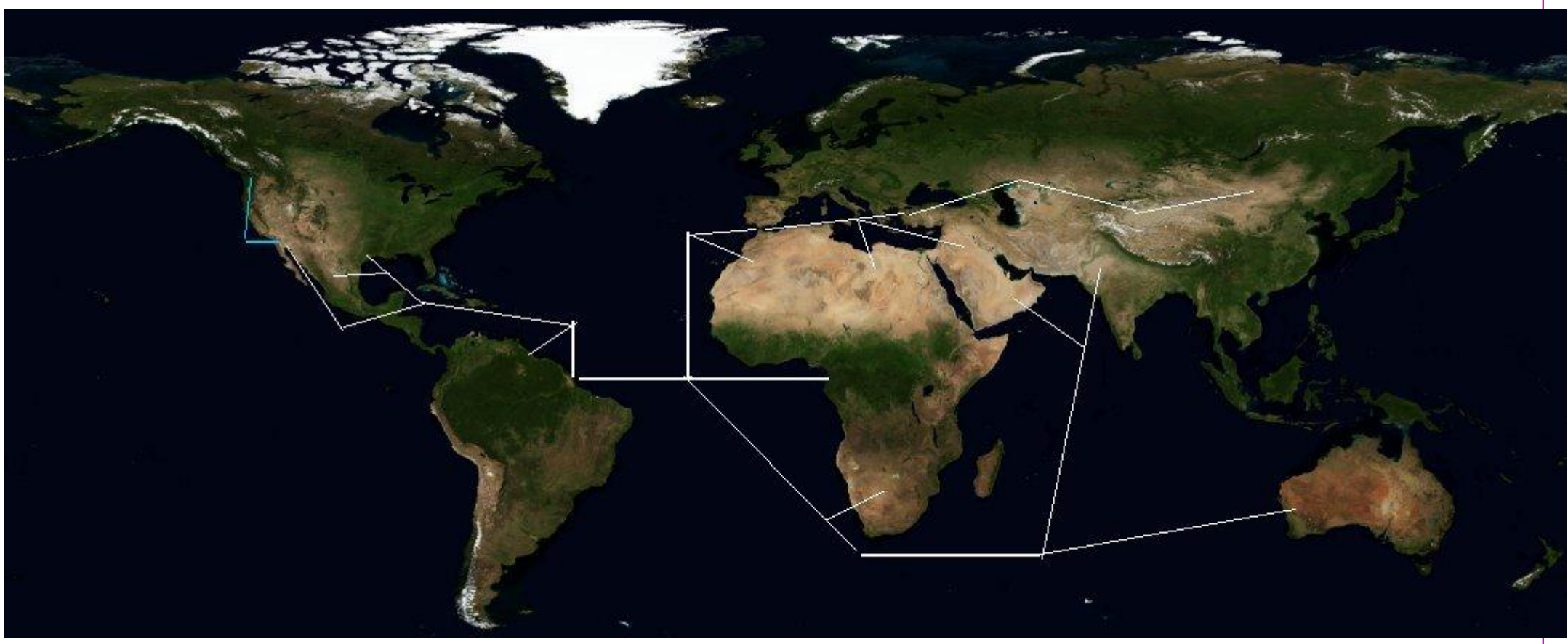

An example of an FDR type new NAWAPA river diversion system, superimposed onto a NASA satellite composite image

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