

# Meteorological Macro-Imagineering: A Re-plumbed Freshwater Supply System for the USA's Southwest?

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**Abstract:** The macroproject proposed, encompassing the arid Southwest of the USA and northern Mexico, has the potential to more than pay for itself. If a radical volumetric enlargement were competently completed by correctly educated advocates of Macro-Imagineering, supplemented by geothermal power-plants, it could make benign an over-polluted aquatic “monster” — the present-day stagnant and putrid Salton Sea — through induced importation of diluting Gulf of California saltwater resulting in rapid areal increase of the inanimate “creature”, converting it from its presently degraded smelly status to an amply beneficial condition as an anthropogenic extension of Mexico’s Gulf of California! Formation by Macro-Engineering means of a sustainable human development around and thereon can result in profitable voluminous desalinated seawater exportation from the State of California to adjacent Arizona, Nevada and nearby Utah as well as Mexico bordering the USA’s Southwest. The key infrastructure permitting these developments is a centralized multi-segment photovoltaic-powered desalination factory resting atop named

floating artificial islands covering most of a deliberately enlarged and robotized Salton Sea. A particular macroproject proposed, the Southwest Water Alliance Project (SWAP), is fashioned somewhat after NEOM, an announced ecopolis, but still structurally unspecified robot megacity, scheduled to be built in northern Saudi Arabia connected by a yet-to-be-constructed fixed sea-strait crossing linking Tabuk, Saudi Arabia to Sharm el-Sheikh on the Sinai Peninsula of bordering Egypt.

**Key words:** Seawater desalination, floating photovoltaic platforms, arid Southwest USA and Mexico development, Macro-Imagineering, Macro-Engineering.

**Resumo:** O macroprojeto proposto, abrangendo o árido sudoeste dos EUA e norte do México, tem potencial para mais do que pagar por si mesmo. Se um aumento volumétrico radical fosse conduzido por defensores competentes da Macro-Imagineering, suplementado por usinas de energia geotérmica, seria possível tornar benigno um “monstro” aquático extremamente poluído — o atual e estagnado Mar de Salton — por meio de importações induzidas de água salgada diluente do Golfo da Califórnia, resultando em um rápido aumento de área da “criatura” inanimada, resgatando-a de seu estado atual degradado como uma extensão antropogênica do Golfo da Califórnia! Por meio da Macroengenharia é possível conduzir um desenvolvimento humano sustentável e lucrativo capaz de garantir uma expressiva exportação de água do mar dessalinizada do estado da Califórnia para os adjacentes Arizona, Nevada e Utah, além do México na fronteira com o sudoeste dos EUA. A principal infraestrutura que permite esse desenvolvimento é uma fábrica centralizada para dessalinização multissegmento baseada em energia fotovoltaica, formada por ilhas artificiais flutuantes que cobririam a maior parte do Mar de Salton em um sistema ampliado e robotizado. Em

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particular, um macroprojeto semelhante proposto é o *Southwest Water Alliance Project* (SWAP) — criado um pouco depois do NEOM —, uma ecópolis anunciada, megacidade robótica estruturalmente ainda não especificada, programada para ser construída no norte da Arábia Saudita, conectada por uma passagem estreita ligando Tabuk, na Arábia Saudita, a Sharm el-Sheikh, na Península do Sinai (fronteira com o Egito).

**Palavras-chave:** Dessalinização da água do mar, plataformas fotovoltaicas flutuantes, desenvolvimento do sudoeste dos EUA e do México, Macroengenharia.

## 1. Introduction

The trash-cluttered, chemically contaminated and ugly defective “monster” of 20th Century Technology that is today’s infective Salton Sea puree is not an apprehension prevalence-induced concept [1] but rather a widely-recognized, real-world degraded environmental quality macro-problem actually adversely affecting directly the citizens of northern Mexico and the USA simultaneously [2]. What air pollution was to the State of California’s infamous smog-town, the City of Los Angeles during the 1950s, toxic lakebed dust emissions is to today’s inland Imperial Valley. This article is not just another spoofy Salton Sea redevelopment manifesto; instead, it will merely outline in sufficient geographical detail several new macro-planning means to indisputably supplant all of the past disastrous so-called State of California “desert development” schemes, possibly to achieve an attractive and lasting 21st Century Salton Trough infrastructural development status realized via SWAP, the Southwest Water Alliance Project. In other words, to close-out Southern California’s never-ending costly-to-taxpayers cascades of unsafe curative Macro-Imagineering fantasies with conversion of the Salton Trough into a real-world public-appreciated asset, the region’s ultimate landscape perfection done with proper Macro-Imagineering! In this report, Team

Geographos excludes discussion of all navigational aspects of a previously proposed twin canal and megaports macroproject plan — the Salton Sea PLUS — other than to present an exemplary ultra-case of photovoltaic-desalination SWAP trades! In other words, here we do not account for the requirements of multiple seaports and their marked navigational channels for very large ships.

An English-language antonymic neologism for a newly-described aspirational social group, or recognizable community, avivocracy’s fans oppose blind ideology and any demonstrably wasteful implementation of unadulterated Technocracy, which is both an identifier as well as a popular social movement first fostered during AD 1919 by Californian engineer William Henry Smyth (1855-1940). First imagined as new terminology by Marc Hudson working at the Sustainable Consumption Institute, University of Manchester in the UK, carefully he sought to impose the term avivocracy on all Region-reforming macro-planners as a cautionary bridle because, Hudson says, “It means those tasked with imagining how we will cope, as a species, cannot hide [anymore] behind soothing stories of technological (and technocratic) salvation” [3]. Obviously, the newly-minted term well applies to this outrageous everyday technological-geographical State of California tainted desert “monster”, today’s occasionally putrid non-cyborg Salton Sea! Advocates and silent followers of avivocracy prudently attempt to train and constrain the most outrageously hubristic proponents of Macro-Imagineering to be humbler and more forthright about the data and informational limits to what they know for certain as accepted truth (sometimes referred to as “prediction”), what is indisputably uncertain, as well as what they may personally deliver to the world-public in the form of totalizing regional and global macro-plans and megaprojects [4]. It is possible, in other words, for cosmopolitan Macro-Imagineering persons, studied

intentional special-interest groups to create desirable 21st Century eucatastrophes, a word coined in 1944 by famed story-teller J.R.R Tolkien (1892-1973) [5]! Viva Happy Endings!

Today's Salton Sea is an artificial, increasingly salty terminal lake sitting in a 6.3-million-year-old rift-valley, a sometimes-deadly feature of a trough-shaped Earth-crust rip still being torn asunder by Nature. A maximum area 1,100 km<sup>2</sup> Salton Sea was emplaced during 1904-1907 AD in the dryland Trough at minus ~60 m below global sea-level as a result of an extra-ordinary sequence of environmental event-processes involving the intentional commercial diversion of Colorado River freshwater for irrigation farming. Unlike its many historical natural predecessors, the existing unnatural Salton Sea has been sustained since those early days mainly by contaminated drainage from its surrounding intensively irrigated fertile landscape. Nowadays, it is basically a briny sump presently subject to total evaporation under some often vaguely futuristic climate regime change scenarios that usually entail postulated presence, in future, of a much drier climate regime affecting the USA's Southwest and northern Mexico desert. One of the initial founders of the University of Southern California, Joseph Pomeroy Widney (1841-1938), as early as AD 1873, wastefully proposed to deliberately divert the Colorado River into the USA's below-sea level rift-valley territory with the goal of creating a big "...freshwater lake and to ameliorate the region's hot and dry climate" [6]; a year after the Colorado River ceased to flow naturally into Mexico because of the closure of several massive upstream dams constructed in the USA, maverick atmospheric scientist James Edward McDonald (1920-1971) had correctly pooh-poohed — proven fallacious as well as ridiculed — J.P. Widney's and others' regional air-modification concept, evaporational rain-making downwind from artificially pooled freshwater [7]. However, the overrated idea is

still grudgingly promoted, often by densely jargonized, obfuscating, circumscription-style pseudo-scientific reports authored by innumerable researchers with various educational and employment qualifications — many are mere Californian politicians first trained as lawyers and realtors [8-10]. And, it is generally alleged that extensive solar-power panel arrays sited above simultaneously cultivated fertile soils underneath (so-called agri-voltaism) may have an as yet unknown effect on post-installation precipitation distribution; two Salton Sea PLUS-proposed canals from the Gulf of California conveying seawater north to enlarge and maintain the Salton Sea by water-mass compensation could reduce slightly the Region's surrounding adjacent landscape air temperature, increasing annual precipitation as well as the year-round vegetation density because of moisture-laden winds arriving from the Gulf of California following the canal routes as happened in the Middle East after the Suez Canal had been dug by AD 1869. (To access the "California Climate Tracker tool, please visit: <https://wrcc.dri.edu/Climate/Tracker/CA/>). Hurricane Odile interrupted the energy and freshwater supply systems for several days during September 2014 in the State of Baja California Sur, Mexico; assuming future climate regime change, hurricanes could move still farther north, making landfall so as to affect the Colorado Delta and commercial shipping within the sheltering Gulf of California with slightly increased storminess).

Following the accidental emplacement of the Salton Sea, by AD 1909 all commercial cargo shipping ceased using the lower Colorado River as an arterial freshwater rivercraft traffic route after completion-by-closure of the Laguna Diversion Dam situated between the State of California and the State of Arizona. The troubled binational territorial influence of today's wretched Salton Sea exists because of the past absence of international cooperation between Mexico and the USA: the American developer-builder of the unsound irrigation canal head-gate at a locality within

the jurisdiction of Mexico which failed structurally under Spring floodwater impact, allowing the full flow of the Colorado River for several years to enter the Salton Trough, sought exemption by geopolitical evasion tactics from the few then existing legal regulations imposable by the State of California as well as the USA's national government, by only obtaining building permits from Mexico's national government. Today's Salton Sea is a disappearing monument to past disharmony amongst two ecosystem-nations; nowadays their respective citizenry require "togetherness"!

## **2. Abandoning all previous generations' infrastructure development hallucinations [9-10]!**

By dictionary definition, "the geographical future" is a place, landscape or Region without objects. During AD 2012, the USA and Mexico concluded a bilateral agreement to restore the Colorado River Delta [11-12]. This enshrined international concord typifies the stale-minded thinking ever-present in the two-international border-separated political and academic conversational circles, unfortunately hosted by somewhat confused and ill-informed Californians and Mexicans, focused upon the extant disgusting, horrendously low-environmental sustainability status so-called Salton Sea. Professional landscape Architects are promoting the idea that Americans must retreat in another compass direction because of the Southwest's supposed ultimate natural freshwater supply limitations [13], one of the sub-themes of the 1994 Hollywood movie *Wagon's East!* starring comedian John Candy (1950-1994)! Alternatively, Team Geographos determinedly recommends a singular massive macro-planned enlargement of the Salton Sea — to nearly seven times its present-day area — finally to attain a constant artificial seawater area of ~7,722 km<sup>2</sup> using seawater imported from the Gulf of California, via cost-free gravitational flow through one or more canals excavated by floating dredgers, and

passing through cooperating Mexico and Imperial County, State of California, into a new internationalized and robotic landscape feature, the Salton Sea PLUS [14] — that is, a permanent anthropogenic seawater-flooding of the entire below-sea level part of the Salton Trough north of the Gulf of California, including Mexico's below-sea-level Laguna Salada. (Daring Geoscience literature speculates that between 1000-1600 AD, when the world-ocean is known to have been >1 m higher than its measured average global 21st Century elevation, the Salton Trough may have become inundated by seawater owing to the arid Colorado River Delta's high-tides and associated large tidal-bore; it is possible that Gulf of California seawater may have reached, impactfully eroded and finally penetrated a former river delta crest located at Volcano Lake near Cerro Prieto, Mexico, subsequently wholly flooding Mexico and the USA's shared Salton Trough geographic feature.) Whether or not Nature ever seawater-submerged the Salton Trough in the USA, today's landscape ought to become, by binationally-deliberated agreed design a seascape at the hands of positivist Geoscience human beings! If undertaken, such a Macro-engineering project must, of necessity, surpass all currently contemplated linear "restoration", "reclamation" or "stop further deterioration" misaligned mega-schemes — all of which are fabulously hyper-costly to taxpayers as well as so poorly conceived structurally as to be obviously inappropriate financial and mega-engineering binational reactions when considered in the full 21st Century world civilization context — in short, too many proposed schemes are simply the effusions of resigned and uncaring politicians and the faithful news-media's hallucinations ceremoniously dumped onto the otherwise uninformed publics, some of whom are irked knowledgeable voters! Could it be that the commonly employed deterministic "landscape developmental" scenarios, in fact the equivalent to virtual resignations to existential risks [15], used until

ow for evaluating environmental outcomes should be substituted by stochastic scenarios after AD 2018?

The Colorado River, which supplies freshwater to ~ 40 million dependent persons in the Southwest and northern Mexico, including corporatized commercial farmers in the Imperial Valley, endured the worst mega-drought of recorded history during 2000-2014 AD. The 2015 “Salton Sea Restoration and Renewable Energy Initiative” framed California’s stinking and eye-irritating brine pool’s geographical recession (because of desert climate regime conditions and a reduction in anthropogenic effluents) as an inevitable and lucrative economic desert landscape windfall since profitable geothermal wells could be drilled and serviced based on dry-land worksites rather than operated through a impeding brine layer; briefly, for commercial renewable energy facility operators a semi-disgusting anthropogenic desert playa is preferable to any remaining area of the State’s repulsive anthropogenic Salton Sea! The Salton Sea’s 2018 AD exposed lakebed constitutes a medically-recognized, spatially-widespread public health risk since the persisting poisonous odiferous dust is already wind-shifted in every direction; before AD 2028, will these industrial macro-planners, real-estate developers and their lax State and Federal governmental regulators suppose its aerosolized topping toxicant-impregnated grainy salt residue will not become equally harmful to adjacent Imperial Valley residents, workers and other important persons and organizations, whenever blown by rainless windstorms off the even vaster dry lakebed resulting from the Salton Sea’s total evaporation? This vivid prospective Region doomsday scenario is daunting; eucatastrophe for the Salton Sea Region can most certainly never actualize during our 21st Century without the genuine teamwork and camaraderie of its majority contributors and specialist consultants seeking concerted infrastructural improvements for the Region [16]!

### 3. Optimizing northern Mexico-southern California’s Freshwater Supply Systems

Obviously Whilst taxpaying residents, businesses and governmental entities unintentionally unsafely sited on the Nature-provided eastern Pacific Ocean coasts of western Mexico and southern California must fitfully mull physical retreat from an impending, or at least popularly forecast, global sea-level rise [17-18], those presently located next to the evaporating Salton Sea — trending physically to become a kidney bean-shaped tainted hot desert-dunal landscape—must consider ways to avoid its harmful wind-lofted toxic dust emissions and stinky brine water chemistry-induced clouds which do not yet, but should perhaps, contain injected pleasantly odorized disinfectants! Could a conjunction of humans and their managed computation-mechanical agencies (robots) revolutionize this unmistakably blighted binational New World Region? For Saudi Arabians, the toponym “NEOM” was constructed from two words: Greek “neo” (new) and the Arabic word “*Mostaqbal*” (future) [19-20]; NEOM identifies an abuilding new Middle East city (280 17’ 17” North latitude by 340 50’ 42” East longitude) where robots function to produce desalinated water, provide adequate installation security and efficient time-tabled industrial and civic logistics, all powered by reliable renewable energy resources and backed-up by out-of-Region high-voltage direct current (HVDC) transmission line sources of electricity input. If the USA possessed a practically functional nationwide electrical grid, then solar power emanating from the desert Southwest could meet peak electricity demand in the early-evening Northeast and then support a similar demand peak in the West a few hours later; new HVDC transmissions lines could follow existing Federal Government-granted trans-continental railroad rights-of-way with very little political or commercial contestation. In the instance of a technically futurized Salton Sea, such resources shall include major photovoltaic, geothermal facilities and a few powerful

“wind farms”. Team Geographos admires the inspiring AD 1975 geographical thoughts of Allen Kellogg Philbrick (1914-2007) regarding desalination infrastructure strategic modality [21].

Figure 1 illustrates proposed desalination Plants that are herein indicated by ovoid-shaped dot symbols, located at appropriate landscapes on crucial coastlines, causing manufactured freshwater, put into connected pipelines (narrow dark arrow-tipped lines) thence transporting the made potable freshwater inland to virgin agricultural landscapes and old or new burgeoning cities. Top-left: photovoltaic installation actually should be illustrated as sited on the areally-enlarged Salton Sea resting atop special floating islands (uniquely big unsinkable foamed metal barges [22])! See Figures 2-3 for a clearer photomontage image of the macroproject suggested elsewhere by the supporting and referenced texts for this article [6]. Imagine the Pacific Ocean-volumized Salton Sea being entirely covered by industrial buoyant structures, possibly including within its multi-level “skyscraper” overall form of farms, residences and supporting businesses! According to the USA’s 2018 National Ocean Recreation Expenditure Survey, the Pacific Coast is 48% of the USA’s coastline which garnered the largest number of beachgoers, the most beach-days accumulated and the greatest ocean-related consumer spending; some ~9,848 km of skirting beaches will become available following full emplacement of the envisioned single articulated artificial island of securely interlinked modularized flat-boats or immobile non-keeled Megafloat-like installation; imagine finalization of the Italy-based architectural firm *Superstudio’s Il Monumenteo Continuo* inhabited monolith as being afloat in desartic southern California! Such structural envelopment would, of course, halt almost all direct evaporation from the Salton Sea PLUS. At the very least, such a gigantic aquatic installation would allow decoupling of Mexico and the USA from any future freshwater flow

Colorado River variability. In fact, the human populations of the USA’s Southwest and northern Mexico might find themselves in a truly revolutionary early-21st Century situation whereby independence from all freshwater extraction macro-problems related to the Colorado River is achievable under near-term future meteorological circumstances [23]. Surely, governmental budgeteers will be pleased, as will taxpayers, and commercial circles will certainly take notice of persuasively influential new economic facts [24-27].

The southern shoreline of today’s Salton Sea is subsiding by ~52 mm/annually, “...greater than the far-field background rate” [28]. The State of California, therefore, ought to become a major for-profit desalinated water exporter to the customer States of Nevada, Arizona and Mexico. Through two dredged canals, unlined like those of the Middle East’s Suez Canal, commencing at the Colorado River Delta, seawater originating in the Gulf of California would move northwards (down gradient) into the USA’s Salton Trough property: ~400 km<sup>3</sup> of seawater inflow should fill the below sea-level Earth-crust hollow to present-day eastern Pacific Ocean sea-level [29]; however, although capped or lidded by a sunshine intercepting photovoltaic barge of immense area, the two canals will exhibit permanent strong north-flowing non-tidal seawater currents due to the extraction from a closed basin at a single enormous electricity-powered distillery of a huge volume of freshwater! Indeed, removed solid salt particles must then be exported to somewhere that is receptive to massive imports of that sunlight-reflective granular waste product—elsewhere Team Geographos will suggest filling 1,300 km<sup>2</sup> of the below sea-level Death Valley, State of California via a heavy brine-slurry pipeline to prevailing world-ocean sea-level. In a typical sunlight-aided seawater reverse osmosis desalination factory, the factory consumes 3-6 kWh (electric) per m<sup>3</sup> of freshwater produced; therefore, harnessing 1.69884 million GW generated

by a single Salton Sea PLUS-covering 7,722 km<sup>2</sup> floating array of photovoltaics operating with a standard commercial solar cell efficiency of 23%, ~339 km<sup>3</sup> of freshwater will be abstracted. (By circa 2014 AD, more than 17,000 individual desalination factories worldwide existed, some of which drew only seawater; those that did so had a freshwater output of ~30 km<sup>3</sup> yearly!). Let us take some numbers:

$$7722 \text{ km}^2 = 7722 \times 10^6 \text{ m}^2;$$

The PV operate 8 h/day x 365 days:

$$8 \times 3600 \times 365 = 10512000 \text{ s / year};$$

Solar average irradiance: per year 400 W/m<sup>2</sup> (this might be too large);

Energy per year, for a PV efficiency of 0.23:

$$7722 \times 10^6 \times 1.05 \times 10^7 \times 4 \times 10^2 \times 0.23 = 7459 \times 10^{15} \text{ J};$$

$$1 \text{ m}^3 \text{ of fresh water requires } 5 \text{ kWh} = 5000 \times 3600 \text{ J} = 18 \times 10^6 \text{ J};$$

$$\text{Number of m}^3 \text{ of fresh water} = 7459 \times 10^{15} / 18 \times 10^6 = 1801 \times 10^9 \text{ m}^3 = 414 \text{ km}^3 / \text{year}.$$

#### **4. *Team Geographos'* Action Proposal: A Southwest Water Alliance Project (SWAP)**

Geoscientist now casually assert "...that the annual direct anthropogenic contribution to the global production of sediment in 2015 was conservatively some...150 km<sup>3</sup>, a figure more than 24 times greater than the sediment supplied annually by the world's major rivers to the ocean" [30]. Speaking in the fashion of pro-desalination Ecopolis-Macro-Imagineering extremists, the yearly replenishment of an enlarged Salton Sea might eclipse that impressive ocean-sedimentation deposition bulk! A photovoltaic platform lidding all of the enlarged Salton Sea will

perform structurally as equivalent to an ordinary land-based building's floating foundation in terms of response to seismic-induced vibrations — in other words, otherwise powerful earthquakes can, in future, be treated as urban nuisances through diminishment by structural intervention! The transform San Andreas Fault trends from Mexico, chiefly at the head of the Gulf of California, to San Francisco, State of California; the majority of the State of California's population lives in the vicinity of the San Andreas Fault. The anticipated next major projected temblor epicenter is assumed to be near Brawley, California [31]. The landscape and cities finally inundated forever by the Salton Sea PLUS-SWAP megaproject, perhaps partially rebuilt under the shading photovoltaic paneling of the artificial island covering the bigger Salton Sea artificial water-body, will never again suffer damage, property destruction or human and animal lives lost inflicted by the San Andreas Fault's notorious strike-slip movements! A future slippage of tectonic plates edges seems to be a real potential based on 2018 AD Imperial County news reports of increased horizontally shifting boiling mud-pot activity which threaten to sever Union Pacific's freight railroad tracks from Yuma, Arizona to the City of Los Angeles and beyond, a Kinder Morgan petroleum pipeline, a Verizon fiber-optic telecommunications cable [32] and a heavily-traveled section of Interstate Highway 10 in the Coachella Valley connecting to the USA-Mexico international boundary. During 1540 AD, Spanish explorer Melchor Diaz encountered "fields of boiling mud" at several places on his march northwards from the Colorado River Delta and, before their anthropogenic submergence centuries later, live steam fumaroles, mud volcanos and boiling mud-pots were encountered by local inhabitants. The first effort to exploit the evident geotherm resources of the Salton Sea Trough took place during 1927-1928 AD [33]. Moderate future release of geothermal heat by Nature into the seawater beneath the enlarged Salton Sea's artificial island can be considered quite beneficial since

by raising the seawater temperature for the distillery, the distillation process is made quicker and thus more efficient [34] and some have already sought successfully means to tap this manifestation of Earth-crust energy resource via underwater submarine geothermal facilities [35]. Photovoltaic farming upon the turbulent high-seas is a staple of futurist dogma [36] and even a floating university was tried on a placid artificial lake in Berlin, Germany during AD 2018. What was not outstanding in either of these proposals and attempts is any recognition of the future importance of aquaculture [37]. Expected Salton Trough Region climate regime change [38], as well as the large alluvial landscapes in Mexico such as the Vizcaino Plain and Magdalena Plain which can be more vigorously cultivated whenever low-cost desalinated water becomes available, makes it imperative that farmers and others working outdoors wear sun-protective clothing, possibly including air-cooling properties. As the climate regime changes, heatwaves intensify, and humidity increases, working many hours outside in farm fields as well as inside buildings without or equipped with inadequate air-conditioning systems will become unhealthier, and in some instances dangerously life-threatening, for active humans of both the State of California and northern Mexico. Thus, robotic agents may have to replace humans in some especially health-compromising industrial production situations [39]. On 13 March 2004 until 2007, in the rough desert between Barstow, State of California and Primm, State of Nevada three DARPA Grand Challenge tournaments were held as tests of robotic wheeled cross-country vehicles; since then driverless automobiles and trucks have transited highways as almost everyday car/truck technology worldwide. “While humankind faces unprecedented challenges, technology still represents the best shot to overcome them...[It] is timely to dissect in depth those grand challenges and the respective technologies that could address them, covering research, design, development,

practice, maintenance, and even the social-related elements” [40].

In the State of California, the City of Los Angeles’ Department of Water and Power (LADWP) is seriously examining the 2018 USD \$3 billion Macro-Engineering concept to place near Hoover Dam a huge photovoltaic array on the Colorado River which will generate enough electricity for a battery of fluid pumps below Hoover Dam to collect spilled Lake Mead freshwater — that is freshwater that has already fallen through Hoover Dam’s powerhouse — and push it uphill to refill the reservoir (Lake Mead) impounded by Hoover Dam and recirculated through the powerhouse again and again! Such a scheme is highly notional — it keeps the LADWP in business providing customers with electricity but provides no additional freshwater and, worse, may well reduce freshwater flows to places downstream of Hoover Dam! Depending on the pump intake site and the intake size, this question is pertinent: how many times can outdoor freshwater be recycled for power generation, especially as evaporation is unhindered in any fashion whatsoever by the LADWP’s “loon-shot”? It is Team Geographos’ assessment of the current State of California-northern Mexico freshwater macro-problem that these adjoining territorial Regions have chiefly two megaproject options: (I) keep and mend their current water supply systems or (II) conduct an exchange via the Salton Sea PLUS-Southwest Water Alliance Project, SWAP. The State of Nevada, in particular the City of Las Vegas, and the State of Arizona have been adapting to a forecasted 21st Century future of freshwater shortage induced by climate regime change but that policy is very stressful and, sometimes, disliked by their voting publics. It is possible that even some of the macro-planning techniques utilized by Walt Disney Imagineering for, say, its unbuilt Western River Expedition, could be helpful in the proper creation of SWAP-Salton Sea PLUS [41]. A chemical engineer, Mr. Sidney Loeb, who died in 2004, invented the



reverse osmosis membrane, perfecting it after AD 1965 with filtering tests done in the San Joaquin Valley for the City of Coalinga, State of California. During AD 2014, an Israel-California water cooperation agreement was concluded which is premised on the fact that Israel has constructed coast-sited desalination factories and now exports freshwater from its national territory [42]. Ponder Figures 3-4.

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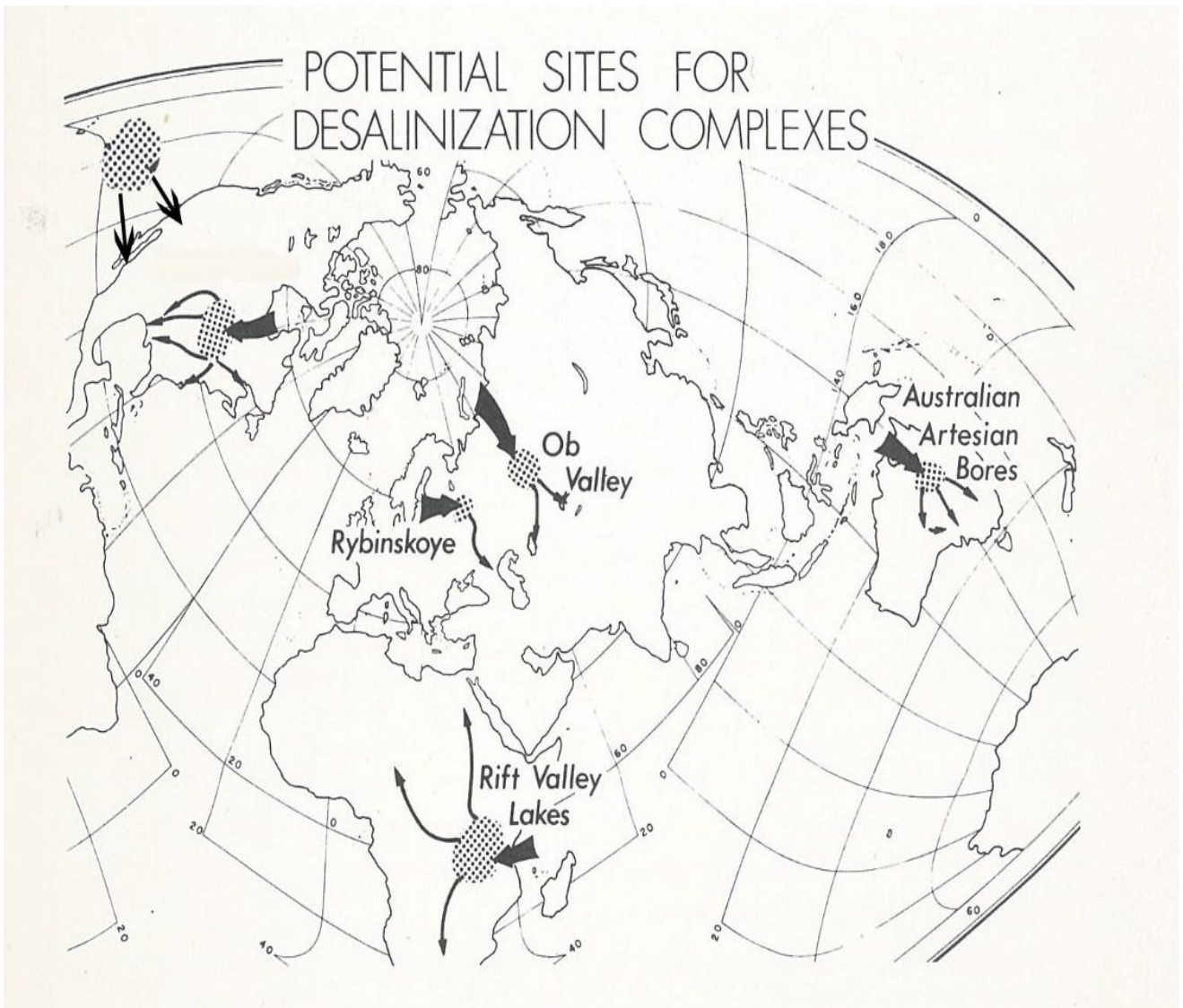


Figure 1: Proposed desalination Plants indicated by ovoid-shaped dot symbols.

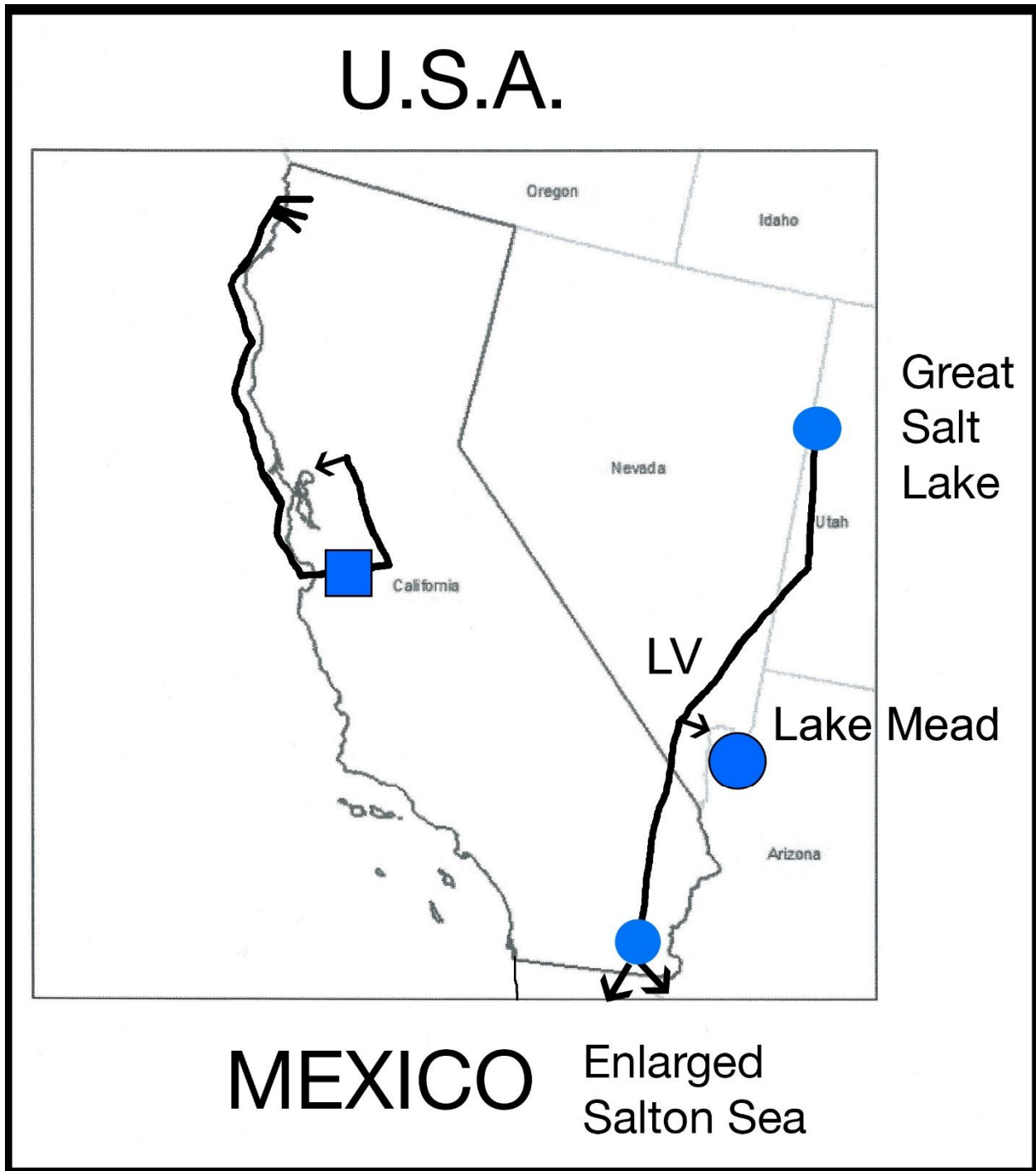


**Figure 2:** One-half of the Salton Sea PLUS-SWAP idea — that is, the two canals and the amplified area of the transmogrified Salton Sea which could add another international marine seaport to the USA’s extant infrastructure of ~150 such installations. After the imposition of such a shipping center, the State of California’s Inland Empire will spread geographically eastwards and probably become far more prosperous than it was during AD 2018 [44].



**Figure 3:** Tiny photovoltaic “island” as a polka-dot sample-kernel for the larger Salton Sea PLUS version proposed in our text. After all, if we had covered the entire enlarged Salton Sea, then it would have become uninteresting by geographical invisibility! The tipped arrows indicate freshwater product being transported to northern Mexico only.





**Figure 4:** The SWAP pipeline system (the Northern California system, with the box-shaped cartographic symbol representing a man-made freshwater reservoir, the bigger-than-Lake Tahoe San Luis Reservoir, was explained in detail in a previous paper published in this journal [43] so that further explanation herein is repetitive). This figure indicates *Team Geographos'* hope that the State of Utah's Great Salt Lake may someday become a paying Salton Sea PLUS-SWAP customer [45]!