



rio grande SIERRAN

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Doctor Strangelove Comes to New Mexico

A proposal to construct Project Seafarer, a land-based submarine communications system, is currently under consideration for New Mexico. Its purpose is to provide "last strike" capability to the United States in the event of nuclear war. The fugitive project which was originally called "Sanguine" (and also has been known as "Operation Rathole"), was driven from Wisconsin to Texas to Michigan by the vociferous protests of its neighbors-elect. At present, White Sands Missile Range, Nellis Air Force Base in Nevada and the Michigan locations are the remaining officially announced candidate

sites.

What exactly is Sanguine/Seafarer? Although the Navy frequently alters the project's dimensions, basically the system is a grid of cables buried from one to six feet deep in a large bed of low conductivity (dry) rock. The grid is an antenna system for bouncing extremely low frequency (ELF) waves off the ionosphere to contact submarines submerged anywhere in the world. Transmitters could be placed either above or below ground. Field strengths expected to be generated by Sanguine are 63/volts per meter

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and 1.0 gauss at the earth's surface.

The Navy first proposed to build the project in Wisconsin's Laurentian Shield formation in 1967. According to Lowell Klessig, a former chairman of STOP SANGUINE, the initial parameters of Sanguine were 20,000 square miles of area, 6000 miles of cable, 800 megawatts of power and 240 transmitter sites. After a public outcry in Wisconsin, Navy technologists managed a "break-through" in Sanguine which envisioned 3000 square miles of area, 1300 miles of cable, 30 megawatts of power and 100 transmitter sites. The press reports on the project dimensions proposed for New Mexico vary from 300 to 5000 miles of underground cable covering from 1500 to 3000 square miles. One report gives the number of transmitters as from 4 to 12.

Referring to the numerous changes in the project's parameters during its 8-year history, critics point out that there is no way to determine the final dimensions of the project and no assurance on what the upper size limits will be. There are many possible trade-offs between the length and number of cables and power required.

Antennae for projecting ELF waves of 45-75 cycles/second are generally estimated at 60-80 miles in length. The lower the frequency, the longer the antenna must be and the slower the message. The longer the antenna, the more power is required to project the message. Other problems include:

1. Vulnerability of above-ground antennae.
2. Reduced efficiency of buried antennae.

3. Atmospheric interference during transmission.
4. Length of time needed to transmit a message; 1.7 hours are required to transmit a 12-letter message. Speeding the message time would require enormous increases in power consumption.

The effort to cope with this mix of problems is the reason for the continuous changing of parameters and one may be skeptical that any numbers given represent the final proposal. Moreover, researchers calculated the feasibility of an ELF communication system for Environment Magazine (September 1971) concluded, "On the grounds that it either requires an unrealistic amount of power or is an extremely slow system of communication, and that these features lead to its susceptibility to jamming, the Sanguine system must be regarded as technically infeasible."

Apart from the fact the Navy has failed to demonstrate that the project is not a colossal boondoggle, why should environmentalists be concerned?

In the first place, scientists who have debated the issue in other parts of the country point to the lack of study of the biological and ecological effects of ELF waves. Navy PR says that "Thirty-five separate Navy studies show that there are no effects from Sanguine on humans, animals, plants or microorganisms." Klessig reports that scrutiny of Navy research revealed that:

The research was performed by Hazelton Laboratories which is a wholly-owned subsidiary of TRW, Inc., a major defense contractor with an act-

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ive interest in ELF projects. There were no ecologists on the staff and a low percentage of advanced degrees. During discussions in Wisconsin, non-agency biologists and ecologists pointed out that Hazelton research designs were inadequate. Examples of inadequacies included performing too few tests to yield statistical reliability, performing tests on small organisms (fingerling fish, fruit flies, and bacteria) without adequately compensating for the fact that the effect of electromagnetic fields is proportional to the size of the organism (effects on deer, men and cattle remain unknown) and the tests were too short in duration. Klessig notes further that of \$47.9 million spent on Sanguine for FY'71, less than .04% went for biological and ecological research, and that the Navy was prepared to begin construction before the results of the studies were in.

In addition, what few independent studies have been done raise questions about:

1. The effect of magnetic fields on bird migration.
2. Interference with circadian rhythms.
3. Effects on organisms at neurological and biochemical levels.
4. Effects on animal reproductive cycles.

As with the advent of other new technologies, pesticides, for example, application of this technology is proposed prior to thorough investigation into its ramifications.

Much of the emphasis of those studies the Navy has performed is on mitigating effects on the man-made environment. In cases where Sanguine cables parallel such things

as fences, pipelines, railways, telephone and power transmission lines, the flow of electricity through Sanguine's cable could induce low-level electrical flow through these structures. While such effects can be prevented, it has not been clear whether the Navy of the customer would bear the cost of mitigation, and estimates in Wisconsin indicated expenses of \$90 to \$745 per customer.

There is another area of concern about which little is known and less is revealed. Apparently an ELF system could be capable of transmitting waves as low as 5-20 cycles per second which is in the range of human brain waves. Testimony on the use of environmental and geophysical modifications as weapons of war before a Senate subcommittee in 1974 described research in enhancing natural low-frequency electrical oscillations in the earth ionosphere cavity to be used as possible weapons through an as yet poorly understood aspect of brain physiology. Gordon J.F. MacDonald of UCLA, a former member of the President's Science Advisory Committee, testified that,

"The field strengths in these experiments are of the order of a few hundredths of a volt per centimeter. Subjects show small, but measurable degradation in performance when exposed to oscillating fields for periods of up to fifteen minutes."...One could develop a system that would seriously impair brain performance in very large populations in selected regions over an extended period... The scheme I have suggested is admittedly far-fetched, but I have used it to indicate the rather subtle connection between variations in man's environmental conditions

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and his behavior. No matter how disturbing the thought of using the environment to manipulate behavior for national advantage is to some, the technology permitting such use will very probably develop within the next few decades." One informed local source reports that the intelligence community has been interested in the applications possibilities of behavior alteration through harnessing or manufacturing ELF waves for some time.

The questions in the discussion above reflect the concerns of those who have looked carefully at the Sanguine proposal in other parts of the country. They deserve full and honest discussion, which has not been forthcoming so far. Klessig reports that when the Navy did not wish to answer the public's questions, it would respond that the question "bordered on the classified". Sen Gaylord Nelson of Wisconsin found that even newspaper articles were included in the Navy's "classified" files.

So far New Mexico's state administration and congressional delegation seem to favor the project which would entail expenditure of \$500 million to \$1 billion, involve about 1000 construction jobs over 4 years and employ about 100 civilian maintenance workers.

As New Mexicans consider whether they want such a system located here (or anywhere) they should reflect upon:

1. Are we being given the accurate, complete data necessary to make an intelligent decision, namely exact data on the project's parameters so the citizen scientists can evaluate feasibility claims,

environmental impact on the project site and power requirements.

2. How much biological and ecological research into the ramifications of such a system is necessary to give us adequate information on (1) the extent of ecological side effects; (2) on whether it is possible to avoid these effects, and (3) if so, whether the cost would render the project infeasible.

3. What is the potential for using or adapting Seafarer for purposes of human manipulation?

Finally, are the economic, environmental and social costs of the project justifiable for the purpose of creating a system whose objective is to obliterate the enemy after he has obliterated us?

Betsy Barnett

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Like an ugly duckling turned into a beautiful swan; the Tularosa Basin, with its unusable brackish waters could turn into the major water producing center of the Southwest, with a little help from the LASL engineering department.

In a report titled "A Feasibility Study Proposal for the Development of an Energy-Water-Agriculture Complex in the Tularosa Basin", Gus Gertsch, the author presents a plan to provide 1.1 million acre feet of water a year (equal to the flow of the Rio Grande), open up 1 million acres of arid land to agriculture and provide 2000 megawatts of electricity through the use of a nuclear and possibly solar and geothermal powered desalinization plant. The water for this plant would come from the large saline aquifer that underlies the basin. One possible use of the electricity would be for ancillary energy and water intensive industries such as coal gasification plants.

The feasibility proposal by Gertsch has been funded by the Federal Energy Administration and is expected to take 2 to 3 years to complete. During this time, such factors as the political and legal questions involved, the social impact of the agriculture "boom town" that would be created and the environmental impact will be considered.

The consequences of providing "another Rio Grande for New Mexico" will be difficult to accurately access as nothing of this magnitude has ever been done before; however, Gertsch emphasizes that no new technological breakthroughs are necessary to accomplish this

It is possible that if this and other related projects such as Seafarer (see article) and the proposed nuclear waste disposal are built that the future will find New Mexico being touted as the energy, industry, water, nuclear waste and radar production center of the world. Is this a desirable scenario for the Land of Enchantment???

Doug Biggs

FLASH!!! The Senate Public Works Committee's Subcommittee on Environmental Pollution has responsibility for drafting amendments to the Clean Air Act. Senator Pete Domenici is a member of that subcommittee and is one of the harder working and most knowledgeable members. He has been generally receptive to our concerns especially those strengthening the protection of air quality in areas that are now cleaner than Federal standards (non-deterioration). Since it is important for our congressional delegation to hear our positive as well as negative comments, it would be worthwhile taking this opportunity to commend Senator Domenici. A short note thanking him for his good, competent, hard work in behalf of cleaner air and assuring him of your continuing support for strong non-deterioration safeguards would be appreciated.



SWRCC Wild And Scenic Rivers Workshop

Southwestern river enthusiasts and representatives of river-managing agencies met in Stoner, Colorado on the weekend of June 21. Discussions centered on progress of agencies and citizen studies of rivers required to be studied under the Wild and Scenic Rivers Act, potential additions to the statutory study list, and river management problems.

Rivers required to be studied under the Wild and Scenic Rivers Act, or discussed at the meeting as potential additions to the study list, are:

ARIZONA

Salt: Above Roosevelt Lake (potential)
Gila: 1. Below Coolidge Dam; 2. all upstream from Safford (potential)
San Francisco: All of it above confluence with Gila (potential)
Verde: Above Horseshoe Dam (potential)

Colorado: 1. Lower Glen Canyon from dam to Lees Ferry; 2. Havasu National Wildlife Refuge; 3. Imperial National Wildlife Refuge; 4. within Grand Canyon (potential)

New Mexico

Chama: Below El Vado Monastery (potential)
Pecos: Upstream from Santa Rosa (potential)
Gila/San Francisco: State line to source (potential)

Utah

Escalante: All of it (potential)
Green: All (potential)
Dolores: All (potential)
White: All in Utah (potential)
Yampa: All in Utah (potential)
San Juan: Bluff to Lake Powell (potential)

Colorado: Westwater Canyon (study)
San Rafael: (potential)
Dirty Devil: (potential)
Fremont: (potential)
Sevier: (potential)
Provo: (potential)
Virgin: (potential)

Colorado The following rivers have segments required to be studied under the act: Big Thompson, Cache la Poudre, Colorado, Conejos, Elk, Encampment, Green, Gunnison, Los Pinos, Yampa, Dolores, Piney. Twelve other rivers are being considered as potential additions.

State coordinators to organize river studies in the Southwest Region and develop recommendations for their designations as wild, scenic or recreational segments were appointed. Anyone able to join in the study and formulation of recommendations should contact:

Arizona: Terry Lane; Box 87; Cortaro, AZ 85230 (602-297-1493)

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Colorado: John Stansfield; 630 N. Cascade #1; Colorado Springs 80903; (303-471-0712) or Doug Wheat; 3807 Half Turn Road; Colorado Springs 80917; (303-597-3698)

New Mexico: Dave Foreman; P.O. Box 58; Glenwood 88039 (505-539-2645)

Utah: Mike Omana; 645 Sogar Street #6; Midvale 84047; (801-561-4537)

SWRCC adopted positions to be pursued with river-managing agencies, summarized as follows:

Motorized craft should be phased out in all national parks and should not be allowed on river segments classified as wild or scenic. Ways of separating river use by motorized and non-motorized equipment in other areas, such as zoning or alternating time periods for each use should be explored.

Permit Allocation - River managing agencies should devise a more equitable and flexible systems for allocating river use permits between commercial outfitters and private river runners (In Grand Canyon 92% of the permits are held by commercial outfitters). Solutions which should be explored include:
1.) A system where all river runners individually apply for a permit. Permittees may then choose an outfitter or, upon proof of capability, run the river as a private party.

2.) A system where the ratio of private and commercial permits is based on the ratio of total applicants the previous year.

River Use - The Sierra Club urges that no further increases in use be allowed on the Colorado River in

Westwater, Cataract, and Grand Canyon; the Green River in Dinosaur National Monument and Desolation Canyon, and the Yampa River in Dinosaur, N.M. until we have a better idea of the adverse impacts current levels of use are having on the riparian ecosystem and the ecological impacts users have on each other. In some situations, notably the Grand Canyon, reductions below the current use levels may be needed. Because of the rapidly increasing popularity of wild river boating, use limits may soon be needed on additional river segments.

Betsy Barnett

WILDERNESS WORKSHOPS SCHEDULED ON GRAND CANYON

National Park Service will hold a series of 7 public workshops to solicit public input before they begin to revise the wilderness recommendations for the Grand Canyon as required by the recent Act of Congress which modified the boundaries of the park. Call the CCH at 982-4349 for particulars as to the exact locations and dates. No advance notice is required to participate; just show up at 7 P.M. The first workshop will be held on 22 September in Phoenix, AZ at the National Park Service.



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KAIPAROWITS POWER PLANT EIS RELEASED...HEARINGS SET: The Bureau of Land Management has released the draft environmental statement (EIS) on the proposed 3000 megawatt Kaiparowits power project in southern Utah. Copies of the EIS or shorter summary may be obtained by writing Paul Howard; Director; Utah State Office; Bureau of Land Management; 125 South State Street; Salt Lake City, Utah 84111. Public Hearings have been scheduled and written statements should be submitted to Paul Howard by 30 Sept. For additional information see the August/September 1975 issue of the SIERRA CLUB BULLETIN or contact Betsy Barnett at the CCH in Santa Fe; 338 E. De Vargas Street; (505-982-4349)

The General Services Administration has issued a draft environmental Impact Statement proposing the leasing and construction of a new parking facility for visitor, Federal, and Employee-owned vehicles in the vicinity of the Post Office and Federal Courthouse in Santa Fe. The proposed two-story structure will provide parking space for 250 vehicles - thereby relieving congestion on the narrow streets of the Plaza area and allowing more space for visitor parking.

Only a general area for the leased site is given and no definite site is designated. The area under consideration for the project is bounded by the Paseo de Peralta on the north and east, Palace Avenue and Johnson Street on the south, and Jefferson Street on the west. This 20 block area is within an area which is on the National Register of Historic

Places and within the Santa Fe Historic Zone.

Of the alternatives considered by the GSA, the one selected was "leased space resulting in new construction". The alternative of construction at a different location was not explored further because people would continue to park on the streets due to an increased walking distance to a new parking structure. The possibility of shuttle service to a distant parking area, particularly at peak traffic hours, was not even mentioned.

According to GSA, "there is no known opposition to the construction of the proposed facility." Perhaps this lack of opposition is due to the fact that there has not been any media coverage of the proposed parking structure. Public input, an integral part of the NEPA -EIS planning procedure has not been encouraged.