NOTICE CONCERNING COPYRIGHT RESTRICTIONS

11946

THE GEOTHERMAL LOAN GUARANTY PROGRAM

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U.S. DEPARTMENT OF ENERGY - GEOTHERMAL LOAN GUARANTY PROGRAM

The Geothermal Loan Guaranty Program (GLGP) became operational on June 25, 1976, approximately two years after passage of P.L. 93-410, the Geothermal Energy Research, Development and Demonstration Act of 1974. Its primary purpose is to assist in the development and utilization of geothermal energy in an environmentally acceptable manner by helping to minimize the financial risk in geothermal energy by guarantying loans made by certified lenders to qualified borrowers.

The second purpose of the GLGP is to develop normal lender-borrower relationships such that future federal goverment financial assistance will be necessary. In fact, the U.S. Government can guarantee no additional loans after 1984.

Under current limitations, the DOE can guarantee 75% of a project's total estimated costs up to a limit of $25 million per project or $50 million per borrower. If amendments now working their way through Congress are passed into law, these limits would be raised to $100 million and $200 million, respectively.

Although loans can be guaranteed for research and development, and exploration, top priority is given under the law to those projects which will utilize geothermal energy directly - either for the generation of electricity, or a host of non-electric uses ranging from space-heating to agricultural and food processing projects. In all cases, however, the Secretary must make the determination that there is a reasonable assurance that the loan will be repaid. In additional, preference will be given to applications from small businesses, or where the project is on federal lands, or if the lender carries part of the loan on a non-guaranteed basis.

At present, the San Francisco Operations Office of DOE has the responsibility for receiving, processing, and evaluating all GLGP applications. SAN then makes a recommendation to the Secretary of DOE whether the application should be approved or not.

To date, although DOE has the authority to guarantee up to $300 M in loans through Fiscal Year 1978, only nine applications have been received, of which three have been approved. These three, with an estimated loan value of about $14M, each represents a different type of utilization of geothermal energy.

The first loan guaranty to be approved was made to the Bank of America and Republic Geothermal, Inc. That loan, of about $9 M, was for the drilling and testing of additional wells at East Mesa, California, to provide steam sufficient to power an electric generating plant of between 15-50 MW.

The second to be approved was to the Nevada National Bank and Geothermal Food Processors, Inc. (GFP). That loan, of about $2.6 M, is for the testing and use of existing wells at Brady Hot Springs, Nevada, and the construction of a vegetable dehydration plant using the geothermal fluids as the primary heat source for processing various vegtables.

Initially, GFP has signed a contract with Gilroy Foods, Inc. to process 15-18 million pounds of raw onions on a 110 day a year contract. We have estimated that this 110-day cycle will save approximately $235,000 per year if Natural Gas had had to be used. In terms of natural gas savings, this amounts to about 117+ mcf, which is the equivalent of the natural gas needed to heat about 1100 homes in Northern Nevada.

The third application approved was to the Band of Montreal (California) and CU I Venture - a joint venture of Geothermal Kinetics, Inc. and McCulloch Oil Corporation. That loan, of about $1.8 M, is for the drilling and testing of two exploration wells in Brawley, California. The ultimate purpose is to develop the Brawley leases to provide steam for at least one 50 MWe power plant. Current estimates are that the reservoir may support as much as 400 MWe or more.

If there is one thing that has become clearer to me over the past two years, it is that geothermal energy is a very real alternative to many other energy sources. It is particularly adaptable for a wide range of non-electric uses, <u>today</u>. For most applications, the technology is here now; and it is merely a matter of end users realizing its great potential as a quick, readily available, and relatively inexpensive energy source before it is used on a large scale.

The GLGP is only one of several means the DOE is using to help promote the utilization of geothermal energy. Virtually anyone is eligible to use the GLGP. However, it does require that each applicant

must provide at least 25% of the total project costs from his own funds. Furthermore, SAN's evaluation of the project takes between 4-6 months while we evaluate the project's technical, financial, marketing, management, legal, environmental and resource utilization data. SAN then submits its recommendation to the Secretary who has the final approval authority. Actual processing time will vary depending on the scope of the project and the amount and sufficiency of data provided in the application.

All questions on the GLGP should be addressed to the Director, Office of the Geothermal Loan Guaranty Program, Department of Energy, San Francisco Operations Office, 1333 Broadway, Oakland, Ca. 94612.

THE GEOTHERMAL LOAN GUARANTY PROGRAM

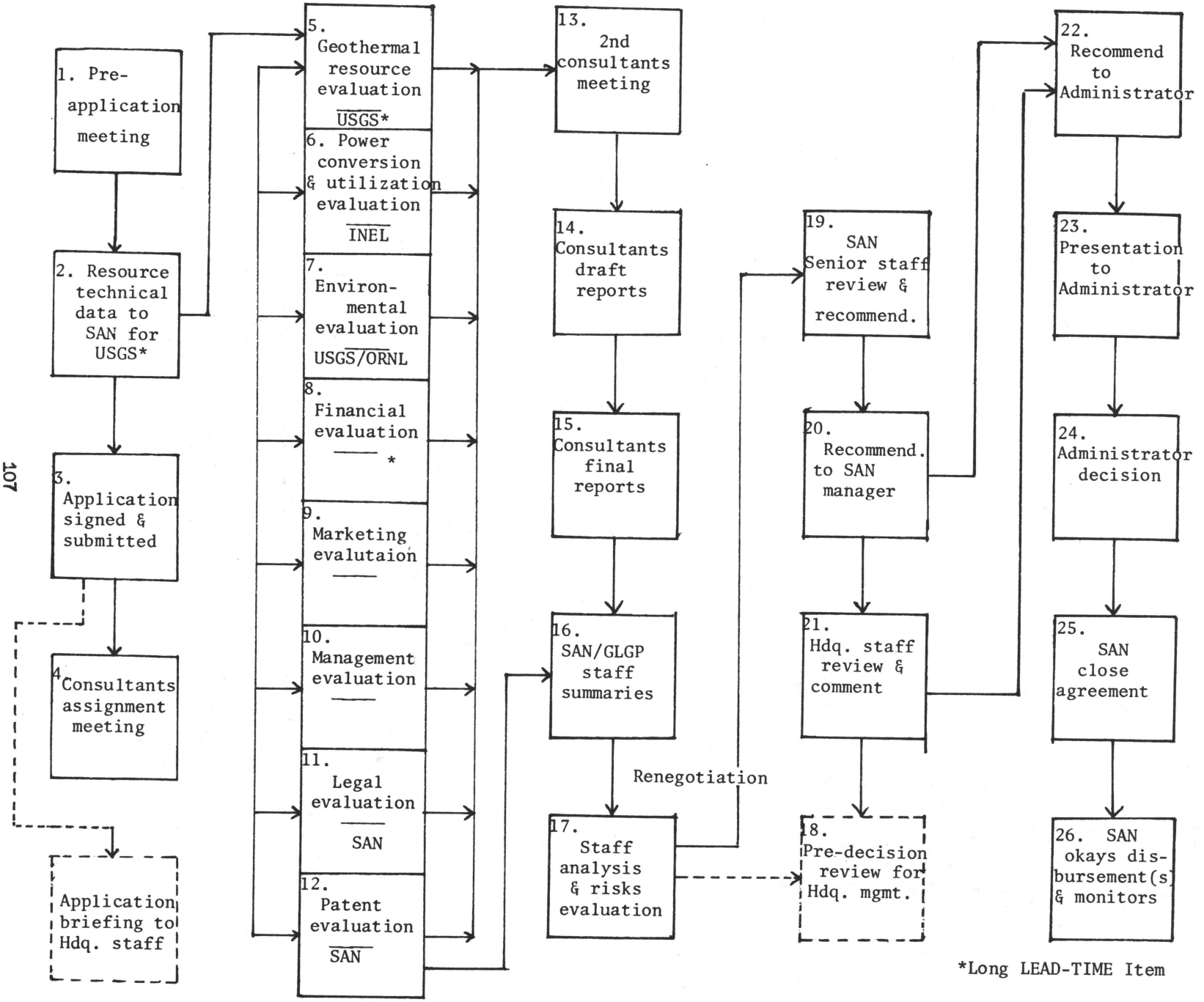
- PUBLIC LAW 93-410 - The Geothermal Energy, Research, Development, and Demonstration Act of 1974
- Program became effective on June 25, 1976 (10 CFR 790)
- $30 Million appropriated for FY 1977
  $15 Million appropriated for FY 1978
- Authorized to guarantee $200 Million in FY 1977
  Authorized to guarantee $236 Million in FY 1978
- P.L. 93-410 Amendments under consideration

TERMS OF LOAN GUARANTY

- PRINCIPAL GUARANTY - 75% of Total Project Costs
- INTEREST - Reasonable
- AMORTIZATION - 30 Years
- PROJECT MAXIMUM - $25 Million ($100 Million)
- BORROWER MAXIMUM - $50 Million ($200 Million)

GEOTHERMAL LOAN GUARANTY PROGRAM APPLICATIONS

APPLICANT	PROJECT Location	PROJECT Type	AMOUNT ($M)	EXPECTED DATE Submission	EXPECTED DATE Recommendation
I. Applications Received					
A. APPROVED					
Republic Geothermal	East Mesa, CA	Electric	9.03	10-76	Approved
Geothermal Food Processors	Brady Hot Springs, NV	Vegetable Dehydration	2.80	3-77	Approved
Geothermal Kinetics/ McCulloch Oil Co.	Brawley, CA	Electric	1.75	2-77	Approved
B. AWAITING ADDITIONAL INFORMATION					
Geothermal Resources	Geysers, Ca	Electric	7.7	10-76	--------
GeoCal	Honey Lake, CA	Electric	2.27	10-76	--------
City of Burbank	Multi-site	Electric	25.0	3-77	--------
Diablo Exploration	New Mexico	Electric	21.8	3-77	--------
RFL-NCPA	Geysers, CA	Electric	14.5	9-77	--------
C. BEING PROCESSED					
RGI/MAPCO Westmorland	Westmorland, CA	Electric	21.0	9-77	--------


1. Pre-application meeting
2. Resource technical data to SAN for USGS*
3. Application signed & submitted
4. Consultants assignment meeting
Application briefing to Hdq. staff
5. Geothermal resource evaluation USGS*
6. Power conversion & utilization evaluation INEL
7. Environmental evaluation USGS/ORNL
8. Financial evaluation *
9. Marketing evalutaion
10. Management evaluation
11. Legal evaluation SAN
12. Patent evaluation SAN
13. 2nd consultants meeting
14. Consultants draft reports
15. Consultants final reports
16. SAN/GLGP staff summaries
17. Staff analysis & risks evaluation
Renegotiation
18. Pre-decision review for Hdq. mgmt.
19. SAN Senior staff review & recommend.
20. Recommend. to SAN manager
21. Hdq. staff review & comment
22. Recommend to Administrator
23. Presentation to Administrator
24. Administrator decision
25. SAN close agreement
26. SAN okays disbursement(s) & monitors
*Long LEAD-TIME Item

GEOTHERMAL FOOD PROCESSORS, INC.

- A NON-ELECTRIC PROJECT
- P.L. 93-410 and 10 CFR 790 ENCOURAGE/PRIORITIZE
- NON-ELECTRIC'S:
  - Relatively small loans
  - Require rapid turn-around
  - Have little conventional equity
  - Provide early revenue income (< 1 year)
  - Involve direct use of geothermal resource (40%) for loss of the "Total Project" than electric, BUT
  - Require loan guaranty to cover same non-recourse related activities and construction as an electric power plant (i.e., building, appurtenances, roads, etc.)
  - Using resource value as part of borrower's share

GEOTHERMAL FOOD PROCESSORS, INC.
and
NEVADA NATIONAL BANK

OBJECTIVE: Design and construct a vegetable dehydration plant utilizing existing geothermal energy at Brady Hot Springs, Nevada.

FINANCING:	Equity (26%)	$ 978,301
	Guaranty	$ 2,836,800
		$ 3,815,101

- Interest Rate: Prime plus 2%
- Payback: 15 years

RESOURCE: Magma/Union - 10 Wells on Property

UTILIZATION: Dryer, Dessicator, and Process Water

MARKETING: Carrots, Celery, Pepers, Onions, Garlic

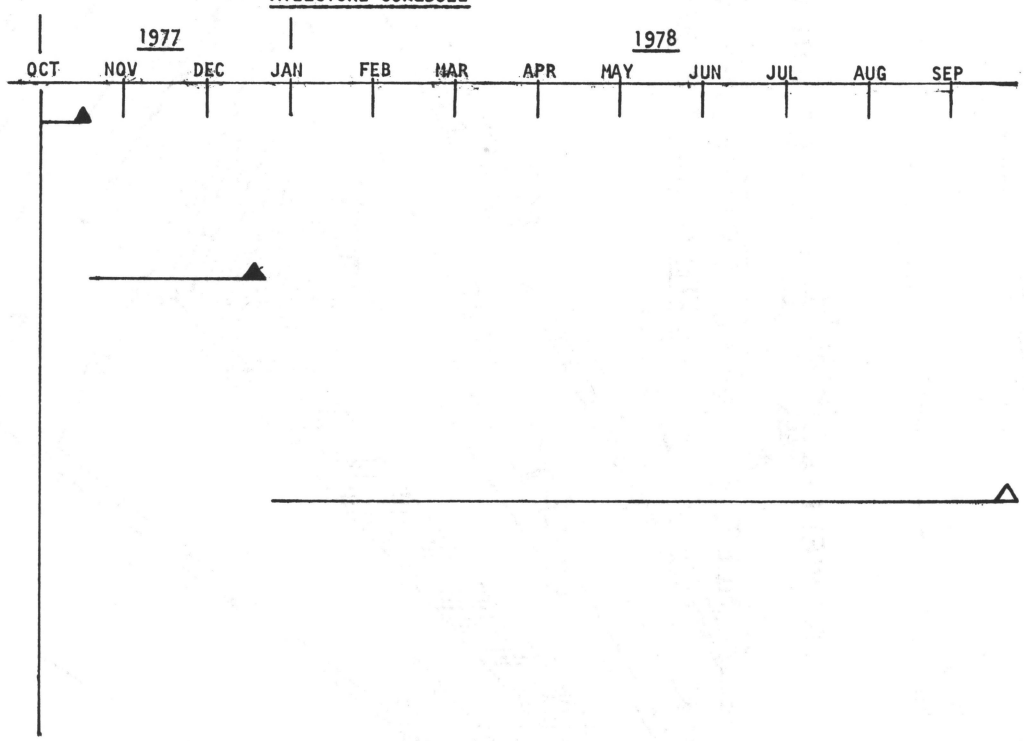
- Gilroy Foods, Inc.

RESOURCE SUMMARY

- 14 Geothermal Wells Drilled in Brady Hot Springs Area
  - 4 wells on adjacent land
  - 6 wells unusable (cement, casing, etc.)
  - 4 wells = potential producers
- Well Characteristics
  - Maximum Depth: 5,550 ft. (6,700 ft just to north)
  - Temperature: 143° - 165° C
  - Flow Rate: 76,600 - 366,000 kg/hr (unpumped)
- Pumping is necessary to keep CO_2 in solution and prevent calcite scale.
- Small Risk that a well testing program will not confirm an adequate resource for the plant.
- Require a test of the production and injection capability (under pumped conditions) of the resource.

GEOTHERMAL FOOD PROCESSORS, INC. - VEGETABLE DEHYDRATION PROJECT

MILESTONE SCHEDULE



PRE-CLOSING ACTIVITIES

- Select qualified reservoir engineer
- Select qualified plant/process engineer

MILESTONE 1 ($300,000)

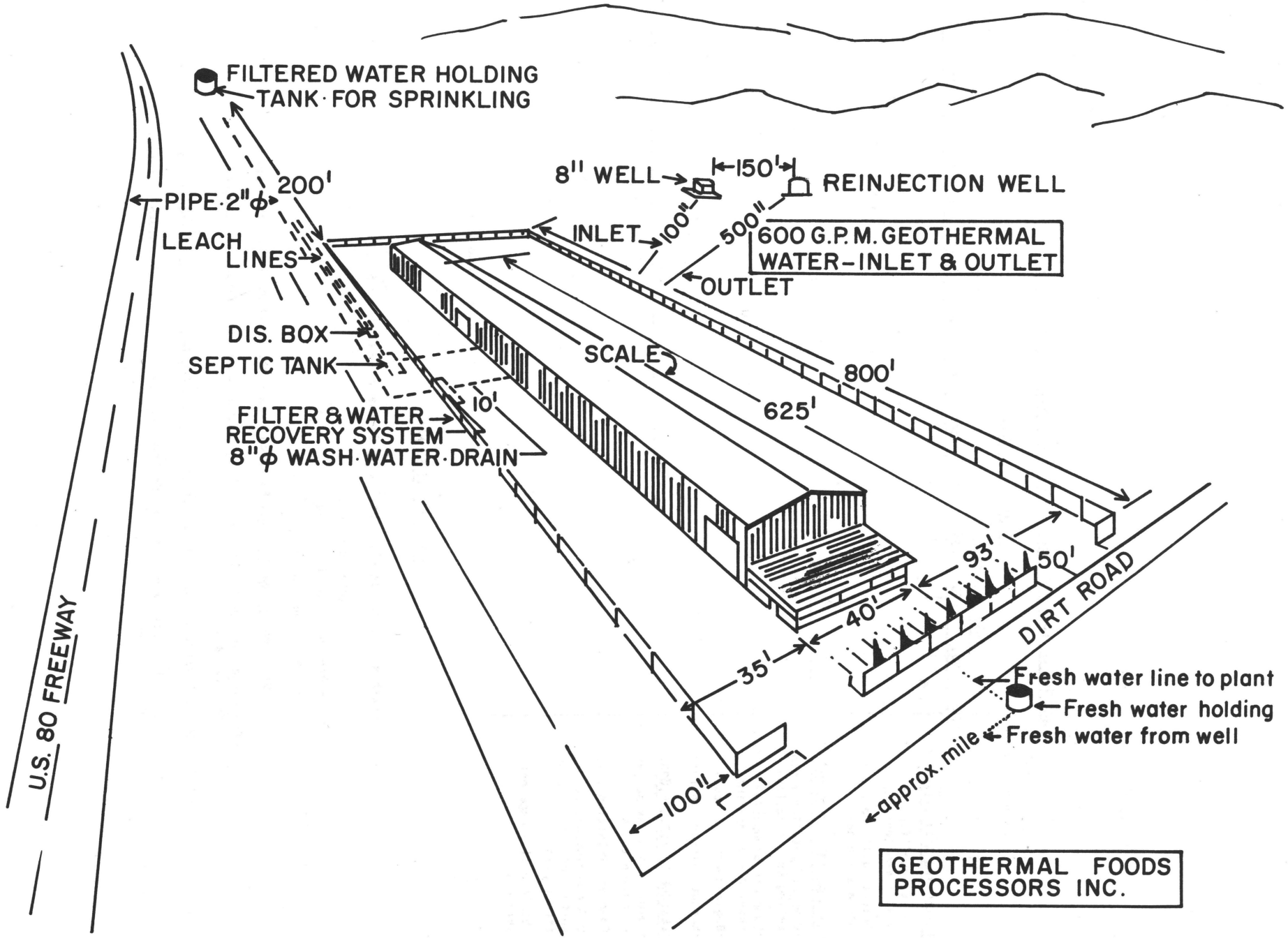
- Complete detailed engineering specifications
- Complete production reservoir assessment
- Begin corrosion tests
- Execute Gilroy Contract

MILESTONE 2 ($2,536,800)

- Complete heat exchanger corrosion tests
- Complete injection test
- Order equipment, run surface piping and construct plant
- Obtain well management services

PLANT DESIGN SUMMARY

- Vegetable Dehydration Plant Utilizing Geothermal Fluids to Supply:
  - Heat to vegetable dryers
  - Process water (flashing)
  - Heat to dessicator
- Plant Utilizes Standard Design Features Except the Geothermal Heat Exchangers.
- Conceptual Design Requires 148°C but can use Lower Temperature and Larger Heat Exchanger.
- Plant Development Requires Additional Engineering Design and Corrosion Tests.
- Require ERDA Review of Detailed Engineering Specifications and Insure Corrosion Tests are Made.


FILTERED WATER HOLDING TANK FOR SPRINKLING
8" WELL
150'
REINJECTION WELL
200'
PIPE 2"φ
LEACH LINES
INLET
100"
500"
600 G.P.M. GEOTHERMAL WATER-INLET & OUTLET
OUTLET
DIS. BOX
SEPTIC TANK
SCALE
800'
625'
10'
FILTER & WATER RECOVERY SYSTEM
8"φ WASH WATER DRAIN
93'
50'
40'
35'
DIRT ROAD
Fresh water line to plant
Fresh water holding
Fresh water from well
approx. mile
100"
U.S. 80 FREEWAY
GEOTHERMAL FOODS PROCESSORS INC.