

John Griffith

FORM-132 Rev. 10-77 U. S. DEPARTMENT OF ENERGY COOPERATIVE AGREEMENT PURSUANT TO AUTHORITY OF PL 93-410, PL 93-438, PL 93-473, PL 93-577, and PL 95-91	1.a. Agreement No. DE-FC07-79ID12026	1.b. Modification No.								
3. Participant Name and Address University of Wyoming University Station, Box 3355 Laramie, Wyoming 82071	2. Agreement Period From: Dec. 11, 1978 to: Sept. 30, 1979									
5. Project Title Hydrothermal Resources in Wyoming (State Coop Program)	4. Participant Type <input checked="" type="checkbox"/> Educational <input checked="" type="checkbox"/> Nonprofit <input type="checkbox"/> State or Local Government <input type="checkbox"/> Profit									
3. Principal Investigator(s) or Program Director(s) Name and Address Edward R. Decker, Professor of Geology University of Wyoming University Station, Box 3355 Laramie, Wyoming 82071	6. Project Will Be Conducted Per See Article <u>I</u>									
10. Accounting and Appropriation Data	7. Technical Reports Are Required See Article <u>V</u>									
11. Eminent Vouchers, if any, to Agreements Officer unless Otherwise Specified in this Block Director, Contracts Management Division, 550 Second Street Idaho Falls, Idaho 83401	9. DOE Program Officer (Name and Address) Leland L. Mink, E&T Division Idaho Operations Office, DOE 550 Second Street, Idaho Falls, ID 83401 Telephone No 208-526-0638									
12. Funding Sources <table border="0"> <tr> <td>Source</td> <td>Amount</td> </tr> <tr> <td>DOE:</td> <td>\$ 99,439.00</td> </tr> <tr> <td>Participant:</td> <td>\$ 7,048.00</td> </tr> <tr> <td>Total Funding:</td> <td>\$ 106,487.00</td> </tr> </table>	Source	Amount	DOE:	\$ 99,439.00	Participant:	\$ 7,048.00	Total Funding:	\$ 106,487.00	11. Method of Payment <input type="checkbox"/> % At Award. <input type="checkbox"/> When Requested. <input type="checkbox"/> 5% Upon Receipt of Final Report <input type="checkbox"/> Letter of Credit <input type="checkbox"/> Reimbursement <input checked="" type="checkbox"/> Other (specify) See Article <u>III</u>	
Source	Amount									
DOE:	\$ 99,439.00									
Participant:	\$ 7,048.00									
Total Funding:	\$ 106,487.00									
8. Amount Obligated by This Action: \$ 99,439.00	14. Remarks:									
10. DOE Issuing Office (Name and Address) Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401										
17. DOE Cooperative Agreements Officer _____ (Signature) (Date) Name (typed) _____ Title _____ Telephone No _____										

RECEIVED
NOV 15 1978
STATE OF WYOMING
ELIZABETH

John Griffith

COOPERATIVE AGREEMENT

THIS AGREEMENT, entered into the 29th day of December 1978 (effective as of the 11th day of December 1978), by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the DEPARTMENT OF ENERGY (hereinafter called "DOE") with its Idaho Operations Office located at 550 Second Street in Idaho Falls, Idaho 83401, and the UNIVERSITY OF WYOMING (hereinafter called the "Participant") located at Laramie, Wyoming;

WITNESSETH THAT:

WHEREAS, the Government is engaged in the Western States Coupled Direct-Heat Geothermal Program, an integral element of the Rocky Mountain Basin and Range Commercialization Plan; and

WHEREAS, the Participant has proposed to undertake a part of such a program and request that DOE provides certain financial assistance for the accomplishment of such a program; and

WHEREAS, this agreement is authorized by the Department of Energy Organization Act (Public Law 95-91), Sections 7(a)(2) and 8 of Public Law 93-577, and Sections 103(5) and 107(a) of Public Law 93-438;

NOW, THEREFORE, DOE and the Participant agree as follows:

ARTICLE I - STATEMENT OF JOINT OBJECTIVE

The direct application of geothermal and hydrothermal energy at various sites located within Wyoming can be a significant factor in the Government's efforts to achieve energy independence. The research provided for in this Agreement is important to both the Government and the Participant for estimating the potential of geothermal and hydrothermal energy utilization and for fostering its use in Wyoming.

ARTICLE II - DESCRIPTION OF RESPONSIBILITIES

The Participant is responsible to assure that the research is accomplished in a manner consistent with the provisions of this Agreement. The Participant's proposal identified as Phase I Research On Hydrothermal Resources In Wyoming, as it may have been amended, is made part of this Agreement by this reference; however, if there is any conflict between the content of the proposal and the content of this Agreement, the content of this Agreement governs. The tasks provided for in the proposal are to be accomplished, and are to result in, a final feasibility assessment report which will include, as a minimum, the following information:

ARTICLE II - DESCRIPTION OF RESPONSIBILITIES (Cont'd)

1. Evaluation of existing thermal spring areas through geologic and hydrologic investigations, chemical sampling and analysis and review of existing thermal information.
2. Measurements of thermal gradients in selected areas through the use of existing wells where possible or through drilling of new thermal gradient holes.
3. Detailed investigations will be conducted in areas of near-term development potential. Two areas which may be investigated based on preliminary data are the Gas Hills and Douglas areas with emphasis near populated centers where direct heat applications could have significant impact.
4. Investigate the northern extension of the Rio Grade Rift through studies of flux, radioactivity and young volcanics for the potential of geothermal resources.
5. Study of existing oil well and other drill hole data to evaluate the geothermal potential of reservoir systems such as the Madison Formation.

ARTICLE III - FINANCIAL SUPPORT OF THE PROJECT

A. The total estimated cost of performing the work under this Agreement is One Hundred Six Thousand Four Hundred Eighty-Seven Dollars (\$106,487.00). For performance of work under this Agreement, the agreed share ratio is 93.38% DOE, 6.62% Participant of total allowable costs. The Participant shall be reimbursed by DOE for 93.38 of the costs of the project determined to be allowable in accordance with Article A-I of the General Provisions entitled "Allowable Costs." All other costs that are not determined to be allowable under Article A-I shall constitute the Participant's share for which it will not be reimbursed by DOE. The total cost to DOE is hereby established as Ninety-Nine Thousand Four Hundred Thirty-Nine Dollars (\$99,439.00), and this amount is also the maximum amount of the project which is subject to reimbursement by DOE unless such maximum cost is changed in writing by the Contracting Officer.

B. As regards to any increase or decrease in the total estimated cost of this Agreement as a result of any change in the original Statement of Work as may be agreed upon by the parties during the term of this Agreement, the appropriate sharing of the funding, if any, of such increase or decrease shall be shared at the ratio of 93.38% DOE, 6.62% Participant, as agreed upon above.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. AD01 2. EFFECTIVE DATE 6/13/79 3. REQUISITION/PURCHASE REQUEST NO. 07-791012026, 301 4. PROJECT NO. (If applicable)

5. ISSUED BY CODE 6. ADMINISTERED BY (If other than block 5) CODE
 U. S. Department of Energy
 Idaho Operations Office
 550 Second Street
 Idaho Falls, Idaho 83401

7. CONTRACTOR NAME AND ADDRESS CODE FACILITY CODE
 University of Wyoming
 University Station Box 3354
 Laramie, Wyoming 82071
(Street, city, county, state, and ZIP Code)

8. AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9)
 MODIFICATION OF CONTRACT/ORDER NO. FC07-791012026 DATED 12/29/78 (See block 11)

9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS
 The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.
 Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:
 (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS
 (a) This Change Order is issued pursuant to _____
 The Changes set forth in block 12 are made to the above numbered contract/order.
 (b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.
 (c) This Supplemental Agreement is entered into pursuant to authority of Public Law 95-91
 It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION
 1. Item b is added to Article II, Description of Responsibility, to read as follows:
 b) The contractor shall perform assessment and investigations in the Gas Hills, the Red Desert of East Central Wyoming, and the Powder River Basin of North Central Wyoming.
 2. The total estimated cost under Article III, Financial Support of the Project, Paragraph A, is increased from \$106,587.00 to \$124,663.00 and the DOE share is increased by \$16,039.00 from \$89,549.00 to \$115,678.00.
 3. The amount of funds obligated under Paragraph C of Article III, Financial Support of the Project, is increased from \$99,539.00 to \$115,678.00.

Errors as provided herein, all terms and conditions of the document referenced in block 6, as heretofore changed, remain unchanged and in full force and effect.

13. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN HIS DOCUMENT AND RETURN IT TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR Elliott G. Hays 17. UNITED STATES OF AMERICA
(Signature of person authorized to sign) BY R. F. Simerly
(Signature of Contracting Officer)

15. NAME AND TITLE OF SIGNER (Type or print) Elliott G. Hays 16. DATE SIGNED 7/2/79
Vice President for Finance 18. NAME OF CONTRACTING OFFICER (Type or print) R. F. Simerly, Director
Contract Management Division 19. DATE SIGNED 7/27/79

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. A002	2. EFFECTIVE DATE 8/1/79	3. REQUISITION/PURCHASE REQUEST NO.	4. PROJECT NO. (If applicable)
5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401	CODE	6. ADMINISTERED BY (If other than block 5)	CODE

7. CONTRACTOR NAME AND ADDRESS University of Wyoming University Station Box 3355 Laramie, Wyoming 82071 Attn: Edward R. Decker, Professor of Geology	CODE	FACILITY CODE	8. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-FC07-79ID12026 DATED 12/29/78 (See block 11)
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9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.

Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS

(a) This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.

(c) This Supplemental Agreement is entered into pursuant to authority of Public Law 95-91 and other applicable laws.
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

1. Item 7 is added to Article II, Description of Responsibility to read:

7. Site-specific studies will be conducted in the following areas: the Cody-Horse Center Region, Thermopolis, Gillette, Saratoga, the Wyoming border area north of Northgate Colorado, and the Leucite Hills area in the Rock Springs Uplift. Studies will expand on current contracted work and will include temperature, gradient, and heat flow measurements.

2. The total estimated cost under Article III, Financial Support of the Project, Paragraph A is increased from \$123,663.00 to \$160,792.00 and the DOE share is increased by \$34,671.00 from \$115,478.00 to \$150,149.00. Total cost of cooperative agreement and share totals are delineated as follows:

CONTINUED.....

Except as provided herein, all terms and conditions of the documents referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. <input type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT		<input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>2</u> COPIES TO ISSUING OFFICE	
14. NAME OF CONTRACTOR/OFFEROR <u>University of Wyoming</u>		17. UNITED STATES OF AMERICA	
15. NAME AND TITLE OF SIGNER (Type or print) Elliott G. Hays Vice President for Finance		18. NAME OF CONTRACTING OFFICER (Type or print) J. P. Anderson, Chief Contract Administration Branch	
16. DATE SIGNED 8/1/79		19. DATE SIGNED JUL 25 1979	

1. AMENDMENT/MODIFICATION NO. A004	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO.	4. PROJECT NO. (If applicable)
5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401		6. ADMINISTERED BY (If other than block 5)	

CONTRACTOR NAME AND ADDRESS University of Wyoming University Station, Box 3355 Laramie, Wyoming 82071 Attn: Edward R. Decker Professor of Geology	CODE	FACILITY CODE	8. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-FC07-79ID12026 DATED 12-29-78 (See block 11)
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9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

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(a) This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.

(c) This Supplemental Agreement is entered into pursuant to authority of Public Law 95-91 and other applicable laws.
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

1. Item 8 is added to Article II - Description of Responsibilities to read:

8. Conduct a drilling program in the Cody, Wyoming area as described in Participant's proposal dated October 23, 1979, which is hereby made a part of this Modification No. A004. Six geothermal gradient holes will be drilled and cased, four of which will be 100± meters deep, two of which will be 305± meters deep. Bottom hole temperatures, thermal gradients, and heat flow calculations will be measured for each hole. The Participant's representative for this drilling work will be responsible for generating daily drilling reports and lithology logs for all holes drilled. DOE will receive copies of all data, heat flow values, and final interpretations of the results of this drilling program as part of the reporting requirements of Article VII - Project Information.

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As provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

<input type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT		<input type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>3</u> COPIES TO ISSUING OFFICE	
NAME OF CONTRACTOR/OFFEROR <u>Elliott G. Hays</u> (Signature of person authorized to sign)		17. UNITED STATES OF AMERICA BY <u>J. P. Anderson</u> (Signature of Contracting Officer)	
NAME AND TITLE OF SIGNER (Type or print) Elliott G. Hays Vice President for Finance	16. DATE SIGNED <u>12/27/78</u>	18. NAME OF CONTRACTING OFFICER (Type or print) J. P. Anderson, Chief Contract Administration Branch	19. DATE SIGNED <u>1/2/79</u>

U. S. DEPARTMENT OF ENERGY
PROCUREMENT/FINANCIAL ASSISTANCE REQUEST-AUTHORIZATION

1. TO: J. P. Anderson, Chief, Contract Administration Branch
2. FROM INITIATING OFFICE: R. E. Wood, Director, Energy Technology Division

3. INITIAL: UPDATE: 4. PROCUREMENT: FINANCIAL ASSISTANCE:
5. PR NUMBER: _____ 6. PR CORRECTION LETTER: _____ 7. RELATED PR NUMBER: _____

8. SECTION IDENTIFICATION
9. TITLE: Geothermal Resource Assessment in Wyoming
Modification - new work, new money

10. UNSOLICITED PROPOSAL NO: _____ 11. PROJECT NO: _____ 12. CFDA NO: _____
13. PRODUCT OR SERVICE: * AG3X 14. SUPPORT SERVICES: YES NO 15. CONSULTANT AWARD: YES NO
16. CONTROLLED DELIVERABLE: * AGY 17. REPORT/DRAWING REQ: YES NO IF YES, ATTACH DETAILS.
18. CLASSIFICATION OF MATERIALS/WORK: U U - UNCLASSIFIED C - CONFIDENTIAL S - SECRET T - TOP SECRET
19. GOVERNMENT PROPERTY: N F - FURNISHED P - PURCHASED N - NOT INVOLVED IF CODE F OR P, ATTACH DETAILS.

20. AWARD AS ORDER UNDER BIN: DE-FC07-791012076 IF CODE T, ATTACH DETAILS.
21. DESIRED AWARD DATE: 06 01 80 22. KIND OF AWARD ACTION: * LP 23. TYPE OF AWARD: * T IF CODE T, ATTACH DETAILS.
24. IF MULTI-YEAR AWARD, INDICATE NUMBER OF YEARS: _____ 25. TYPE SOLICITATION INSTRUMENT: * _____
26. EXTENT OF COMPETITION: * _____ IF COMPETITIVE, ATTACH TECHNICAL EVALUATION PLAN. IF NON-COMPETITIVE, ATTACH JUSTIFICATION. REF: DOE-PR 9-3.805, 31 or 9-4.909(1).
27. SOURCE SELECTION PROCEDURE: 1 1 - A-E 2 - SEB 3 - OTHER 4 - NONE
28. FOR A-E, SHOW ESTIMATED CONSTRUCTION COST IN DOLLARS: _____

29. IF COMPETITIVE, HAS LIST OF SOURCES BEEN ATTACHED? YES NO IF NON-COMPETITIVE, COMPLETE 23 - 31.
30. NAME: University of Wyoming 31. ADDRESS: PO Box 3006
Department of Geology Laramie, Wyoming 82071
32. GOCO/LAB: D A - GOCO/LAB B - GOCO/NON-LAB C - NON-GOCO/LAB D - NOT APPLICABLE

33. FINANCIAL
34. AWARD VALUE
35. GOVT SHARE 154,500
36. TOTAL 169,713
37. CONSIDERATION IN KIND, LOAN, OR LOAN GUARANTEE DATA REPORTED ON PR-799C:
38. PROJECT PERIOD: * FROM 06 01 80 THRU 05 31 81
MONTH YEAR YEAR

39. PROJECT MANAGER
40. NAME: M. A. Wilmann
41. SIGNATURE: Margaret A. Wilmann
42. DATE: 04 01 80 43. OFFICE CODE: _____
44. FTS TELEPHONE NUMBER: _____

CURRENT BY FUNDS COMMITTED		
36. B&R NUMBER	37. FUND CLASS	38. DOLLAR AMOUNT
<u>AMIS 10</u>	<u>-</u>	<u>154,500</u>
-----	-----	-----
-----	-----	-----
45. FROM PR-799B (PART A)	<u>-----</u>	<u>-----</u>
46. TOTAL THIS PR	<u>-----</u>	<u>154,500</u>
47. FUNDING PERIOD: FROM <u>06 01 80</u> THRU <u>05 31 81</u> <small>MONTH YEAR YEAR</small>		
48. APPROPRIATION SYMBOL: _____		
49. ALLOTMENT SYMBOL: _____		
50. SUBJECT CLASS: _____		

51. PROGRAM OFFICIAL
52. NAME: R. E. Wood
53. SIGNATURE: R. E. Wood
54. DATE: 01 01 80

55. CERTIFYING OFFICIAL
56. NAME: F. S. Smith
57. I HEREBY CERTIFY THAT THE FUNDS LISTED IN ITEM 36 ARE AVAILABLE.
58. SIGNATURE: _____
59. DATE: 06 07 79

University of Wyoming, Department of Geology
modification to Cooperative Agreement

DE-FC07-79 ID 12026

period of performance: June 1, 1980 to May 31, 1981

Ways and Means:

DOE Operational FY 80	154,500
Participant's Share	<u>15,213</u>
Total modification	<u><u>\$169,713</u></u>

There is NO CAPITAL EQUIPMENT REQUESTED in this PR.

Scope of Work

1. A compilation of locations, temperatures, depths, gradients, and, if possible, depths to water for ^{all thermal wells and springs in} ~~the four quadrants of~~ Wyoming. Regional maps of subsurface temperatures and depths ^{will} ~~would~~ be supplied with the data, as would written reports. Available water quality and aquifer production data ^{will} ~~would~~ be incorporated into the reports, as ^{will} ~~would~~ relevant stratigraphy and geologic structure. The maps ^{will} ~~would~~ show pertinent control points and relevant geology.
2. Regional ^{thermal} gradient maps and interpretations thereof ^{will} ~~would~~ be prepared and delivered. These deliverables ^{will} ~~would~~ reflect local geology and the thermal properties of local rock units. ~~This would be done because the conductive gradient varies sympathetically with corresponding conductivities of the local rocks.~~ Reports ^{will} ~~would~~ ~~also~~ summarize available shallow and deep water quality data, aquifer disposition, and aquifer production. ~~We expect to deliver~~ ^{will be prepared} detailed reports and maps ^{will} ~~would~~ for areas that could be prospectively valuable for near term direct-heat or other applications.

3. ~~program would be arranged so that~~ research ^{will be conducted in the} ~~in the~~ Saratoga, Casper-Midwest, Auburn and DuBois areas ~~is expected~~ to include data for regions within a 20-30 mile radius of each suggested resource. This detailed research will be done to better define their lateral extents, and to quantify the magnitude of each reservoir. Other systems ^{will} ~~would~~ be analyzed in a similar manner as data are located. Reports ^{will include} ~~would directly follow~~ available drill hole data, the geologic and hydrologic literature, and the proximity of resources to population centers.

4. Chemical analyses will be delivered for six heretofore unanalyzed springs or spring systems. These were to be furnished by the now terminating project, but bad weather and the urgency of drilling in the Cody area prevented us from doing such. Water samples and analyses ^{will} ~~would~~ be accompanied by descriptions of collection sites, local geology and other pertinent geoscience data. From cooperative studies with qualified personnel elsewhere (e.g. the USGS), we expect to deliver preliminary interpretations of the chemical analyses. ~~following procedures of Breckenridge and Hinkle (1978), these analyses would be done in the laboratory of the Wyoming State Chemist. We also plan to try to collect~~ ^{of 70-75} ~~samples of~~ subsurface waters in areas where gradient data are collected and where existing waters, etc., are flowing or can be pumped. ~~As mentioned above,~~ ^{will} analysis of these samples will be done by UURI.

5. An updated (1981) regional heat flow map ^{will} ~~would~~ be delivered, as ^{will} ~~would~~ detailed maps of gradients and heat flow in prospectively valuable areas. All maps ^{will} ~~would~~ be ^{accompanied by} ~~interpreted by~~ Both heat flow and available radioactivity data ^{will} ~~would~~ be used in interpretations. ^{Heat flow information} ~~We expect to acquire heat flow data for at least twenty new stations.~~ ^{will be obtained for approximately 20 new stations.}

6. Reporting REQUIREMENTS will be met, as specified in the original cooperative agreement.
7. All pertinent information will be provided to the USGS GEOTHERM file.