

7-1966

## Development, verification, and use of methods to model chemical and thermal processes Lakes Mead and Powell

Bureau of Reclamation

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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION

Development, Verification, and Use of Methods  
to Model Chemical and Thermal Processes  
Lakes Mead and Powell

Negotiated Procurement

PART I

Section A

Award Form

STANDARD FORM 26, JULY 1966 GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41CFR) 1-16.101		AWARD/CONTRACT			PAGE <b>1</b>	OF <b>1</b>
1. CONTRACT (Proc. Inst. Ident.) NO.		2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST/PROJECT NO. <b>1000-1-1/DV-00131</b>	4. CERTIFIED FOR NATIONAL DEFENSE UNDER BDSA REG. 2 AND/OR DMS REG. 1. RATING:		
5. ISSUED BY <b>Bureau of Reclamation Procurement and Contracts Branch P O Box 25007, Bldg. 67, Rm. 674 Denver CO 80225</b>		CODE <b>D-810</b>	6. ADMINISTERED BY (If other than block 5)		CODE	7. DELIVERY FOB DESTI- NATION <input type="checkbox"/>  OTHER (See below) <input type="checkbox"/>
8. CONTRACTOR NAME AND ADDRESS   (Street, city, county, State, and ZIP code)		CODE	FACILITY CODE	9. DISCOUNT FOR PROMPT PAYMENT		
				10. SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK _____		
11. SHIP TO/MARK FOR  Same as block 5		CODE	12. PAYMENT WILL BE MADE BY  Same as block 5			
13. THIS PROCUREMENT WAS <input type="checkbox"/> ADVERTISED, <input checked="" type="checkbox"/> NEGOTIATED, PURSUANT TO: <input type="checkbox"/> 10 U.S.C. 2304 (a)( ) <input checked="" type="checkbox"/> 41 U.S.C. 252 (c)(1) (firm fixed price)						
14. ACCOUNTING AND APPROPRIATION DATA <b>100 0065 8801 004 01 0 0 8231000 2510</b>						
15. ITEM NO.	16. SUPPLIES/SERVICES		17. QUANTITY	18. UNIT	19. UNIT PRICE	20. AMOUNT
21. TOTAL AMOUNT OF CONTRACT \$						
CONTRACTING OFFICER WILL COMPLETE BLOCK 22 OR 26 AS APPLICABLE						
22. <input type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)			26. <input type="checkbox"/> AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____, including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.			
NAME OF CONTRACTOR			27. UNITED STATES OF AMERICA			
BY _____ (Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)			
24. NAME AND TITLE OF SIGNER (Type or print)		25. DATE SIGNED	28. NAME OF CONTRACTING OFFICER (Type or print)		29. DATE SIGNED	

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Attachments

PART I

Section B

Supplies or Services and Prices

B-1. CONTRACT TYPE

This contract is a firm-fixed price contract.

B-2. SCHEDULE

The following schedule is tentative and the offeror may prepare and submit with his proposal a new schedule, or schedules, which will more adequately describe his proposed method of accomplishing the work required under this solicitation. However, any new schedule prepared by the offeror must be complete and must represent payment in full for performance of all work required and by the detailed specifications attached thereto. The schedule or schedules under which payment will be made will be fixed prior to award of contract, as determined by agreement during contract negotiations.

<u>Item</u>	<u>Articles or services</u>	<u>Amount</u>
1	Phase 1 - Perform an analysis of available data with respect to existing two-dimensional reservoir thermal hydrodynamic models and submit an evaluation of models considered and recommendation of a model for usage, inclusive of an evaluation of Lake Mead data, all in accordance with this solicitation for the fixed amount of . . . . .	\$ _____
2	Phase 2 - Perform the analysis and development of a chemical subroutine to append to the main model and deliver the same, all in accordance with this solicitation for the fixed amount of . . . . .	_____
3	Phase 3a. - Calibrate and verify the model for Lake Powell using accepted split data base techniques, all in accordance with this solicitation for the fixed amount of . . . . .	_____
	b. Calibrate and verify the model for Lake Mead using accepted split data base techniques, all in accordance with this solicitation for the fixed amount of . . . . .	_____
4	Phase 4 - Conduct model simulations to determine the impact that operation of the reservoirs at current operating levels has on the salinity budget, all in accordance with this solicitation for the fixed amount of . . . . .	_____
5	Phase 5a. - Establish the model on the Bureau of Reclamation Cyber system and test the model to simulate five operating scenarios on Lake Powell, all in accordance with this solicitation for the fixed amount of . . . . .	_____



<u>Item</u>	<u>Articles or services</u>	<u>Amount</u>
b.	Test the model to simulate five operating scenarios on Lake Mead, all in accordance with this solicitation for the fixed amount of . . . . .	\$ _____
	Total for schedule . . . . .	\$ _____

PART I

Section C

Description/Specifications

## C-1. PURPOSE

The purpose of the proposed research is to quantify the effects that Lakes Mead and Powell have on the salinity in the Colorado River system, and to evaluate changes that can be made to the operating system of the reservoirs (within legal/institutional constraints) to enhance salt precipitation and/or minimize evaporation within the reservoirs. The effect of any changes (i.e., selective withdrawal uses, pumped storage, etc.) on reservoir evaporation could also be evaluated with a goal of minimizing evaporation. This will be accomplished through the development of a mathematical model of the reservoirs as described below.

## C-2. BACKGROUND

Two major problems with water in the Colorado River are its quantity and its salinity. The Colorado River is an extremely regulated system, and most of the sources of salinity and depletion mechanisms have been identified, with the exception of the behavior of the large reservoirs. Lakes Powell and Mead represent a storage capacity of up to 4 years mean annual flow of the Colorado River. To date, only minimal and uncoordinated attempts have been made to systematically model the chemical and thermal storage and transfer processes in these reservoirs.

Numerous attempts have been made to roughly account for salinity in the reservoirs. Hendrick (1973) determined that the best statistical correlation between inflow and outflow in Lake Mead was a monthly complete mixing of the reservoir contents with its inflows. This had a correlation coefficient of 0.78, but treated the whole system as a black box based on historical conditions and, thus, could not predict the results of any changes in reservoir operation.

Further work, however (Reynolds, 1978), indicates that certain polyphenals inhibit the precipitation of calcite and, therefore, the actual removal of calcite from Lake Powell may be less than expected. Preliminary studies done at the E&R Center indicate that TDS (total dissolved solids) storage is increasing in Lake Powell; the true increase is somewhat masked, however, by the increase in water stored during this period and the impact of bank storage.

Evaporation also plays an important part in the Colorado River water budget as a whole and in water and TDS budgets of the reservoirs in particular. Total evaporation from Lakes Powell and Mead has been estimated at 1,300,000 acre-feet/year, or approximately 8 to 10 percent of the natural flow of the Colorado River. While there is no practical way to eliminate this loss (monomolecular films have proven totally impractical for anything but very small reservoirs), it may be possible to reduce it through a different operating scheme.

### C-3. EXISTING DATA

A. The USGS maintains stream gages at:

1. Green River near Green River, Utah
2. Colorado River near Cisco, Utah
3. San Juan near Bluff, Utah
4. Colorado River at Lee's Ferry, Arizona
5. Colorado River at Grand Canyon, Arizona
6. Colorado River below Hoover Dam, Arizona

These gages have daily flow, temperature, and conductivity and monthly chemical analyses for varying periods of record. Figure 1 of the attachments shows the basin layout and the location of these gages.

B. The Bureau of Reclamation maintains a sampling program on Lake Powell which consists of seven stations on the lake, sampled at 50-foot intervals. This survey was conducted at quarterly intervals from 1964 to 1971 and at monthly intervals since then. These data consist of temperature, conductivity, dissolved oxygen, pH, and chemical analyses for major ions ( $\text{Ca}^{++}$ ,  $\text{Mg}^{++}$ ,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{CO}_3^{--}$ ,  $\text{HCO}_3^-$ ,  $\text{SO}_4^{--}$ ,  $\text{Cl}^-$ ). Figure 2 of the attachment shows the location of these sampling stations. These data will be supplied to the contractor. A sample of the data is made part of the attachments of this Solicitation as Appendix II.

C. Since 1965, the Bureau of Reclamation has operated three meteorological rafts on Lake Powell. Information available from these rafts consists of:

- a. Air temperature - daily high and low
- b. Relative humidity - daily high and low
- c. Water surface temperature - average daily
- d. Wind - miles/day

However, this record will have to be reduced by the contractor and may be incomplete.

D. The U.S. Weather Service operates a class A evaporation pan at Wahweap Bay, Lake Powell, and a weather station at the Page, Arizona Airport. A weather station is also operated by the U.S. Weather Service at the Las Vegas Airport, Nevada.

E. A contract study for the compilation of all available data on Lake Mead has been completed. It is uncertain whether there are sufficient data on Lake Mead to allow calibration and verification of a two-dimensional model, therefore, as part of the services the contractor shall evaluate the available data.

### C-4. AVAILABLE INFORMATION

The following information concerning Lakes Powell and Mead is available for review at Bureau of Reclamation, Engineering and Research Center, Building 67, Library Room 450, Denver Federal Center, Denver, Colorado, 80225. The

bibliography contains information from several agencies; however, it should not be considered as a complete list of the material available.

- A. Quality of Water, Colorado River Basin, Progress Report No. 10, published by the United States Department of the Interior, Water and Power Resources Service, January 1981
- B. Techniques for Modeling Reservoir Salinity, John Hendrick, Hydrology Paper No. 62, Colorado State University, Fort Collins, Colorado, August 1973
- C. The Effect of Lake Powell on Dissolved Silica Cycling in the Colorado River, L. M. Mayer, LPRP (Lake Powell Research Project), Bulletin No. 42, 1977
- D. Major Element Geochemistry of Lake Powell, by R. C. Reynolds, Jr., and N. M. Johnson, LPRP Bulletin No. 5, 1974
- E. Evaporation, Bank Storage, and Water Budget at Lake Powell, by G. C. Jacoby Jr., S. Patch, R. Nelson, and O. L. Anderson, LPRP Bulletin No. 48, July 1977
- F. Advective Circulation in Lake Powell, Utah-Arizona, by David H. Merritt, Noye M. Johnson, LPRP Bulletin No. 61, October 1977
- G. Sedimentation in Lake Powell, W. Condit, C. L. Drake, L. Mayer, and R. Syddell, LPRP Bulletin No. 64, June 1978
- H. Reservoir Influences on Salinity and Nutrient Fluxes in the Arid Colorado River Basin, by Steven P. Gloss, Robert C. Reynolds, Jr., L. M. Mayer, and D. E. Kidd, presented at the ASCE Surface Water Symposium, June 4-6, 1980, Minneapolis, Minnesota
- I. Polyphenol Inhibition of Calcite Precipitation in Lake Powell, by Robert C. Reynolds, Jr., 1978, Limnology and Oceanography 23 (4): 585-597
- J. Water Resources of the Upper Colorado River Basin - Technical Report, by W. V. Iorns, C. H. Hembree, and G. L. Oakland, 1965, U.S. Geological Survey Professional Paper 441
- K. Physical Limnology of Lake Mead, by E. R. Anderson and D. W. Pritchard, 1951, U.S. Navy Electronics Laboratory, San Diego, California, Report No. 256
- L. Lake Mead, A Case History, by D. A. Hoffman and A. R. Jonez, 1973, W. C. Ackerman, G. F. White, E. B. Worthington, "Man-made Lakes: Their Problems and Environmental Effects," Geophysical Monograph Series No. 17
- M. The Limnological Status of Lake Mead and Lake Mohave Under Present and Future Power Plant Operations of Hoover Dam, by L. J. Paulson, J. R. Baker, and J. E. Deacon (1980), Technical Report No. 1, Lake Mead Limnological Research Center, University of Nevada, Las Vegas

- N. Water Loss Investigations: Lake Mead Studies, by G. E. Harbeck, M. A. Kohler, G. A. Koberg, and others (1958), U.S. Geologic Survey Professional Paper No. 298
- O. Water Quality Study of Lake Mead, by D. A. Hoffman, P. R. Tramut, and F. C. Heller (1967), Bureau of Reclamation Report No. CHE-70, 151 pp.
- P. The 1963-64 Lake Mead Survey, by J. M. Lara and J. I. Sanders (1970), Bureau of Reclamation Report No. RCE-OCE-70-21
- Q. Comprehensive Survey of Sedimentation in Lake Mead, 1948-1949, by H. V. Smith, C. P. Jetter, G. B. Cummings, et al. (1960), U.S. Geological Survey Professional Paper No. 295
- R. Convective and Advective Circulation of Lake Powell, Utah-Arizona, During 1972-1975, by Noye Johnson and David H. Merritt (1979), Water Resources Research Vol. 15, No. 4, pp. 873-884
- S. Salinity of Surface Water in the Lower Colorado River - Salton Sea Area, Burgde, Ireland, U.S. Geological Survey Professional Paper No. 486-E, 1971

#### C-5. STUDY OBJECTIVE

The objective is to develop, test, and evaluate a two-dimensional width averaged thermal hydrodynamic model with salinity capability, and implement the model on the Bureau of Reclamation Centralized Computer System. This model shall be calibrated and verified to Lakes Powell and Mead. The work will be performed in five phases.

##### Phases. -

1. The Bureau of Reclamation will supply the contractor with the data collected on Lakes Powell and Mead. These data, in conjunction with the aforementioned USGS data base shall be evaluated with respect to the requirements of the various two-dimensional reservoir thermal hydrodynamic models presently in existence. The contractor shall submit an evaluation of the models considered and make a recommendation to the Bureau of Reclamation as to which model should be chosen. The contractor shall evaluate the data available for Lake Mead and make a recommendation as to its adequacy for utilization with the recommended two-dimensional model. Bureau of Reclamation, in conjunction with the contractor, will make the final selection. The model shall be capable of simulating a full year's cycle, a complete range of reservoir operating levels and graphically display the temporal and spatial distribution of the parameters modeled, in addition to total salt storage and reservoir evaporation.
2. A chemical subroutine shall be selected or developed to be appended to the main model that would include, but not be specifically limited to, the following parameters:

pH	magnesium
alkalinity	sulfate
pCO <sub>2</sub>	carbonate
sodium	chloride
potassium	bicarbonate
calcium	

3. Using split data base techniques, calibrate and verify the model to:

- a. Lake Powell
- b. Lake Mead (if data available is determined adequate)

4. Model simulations shall be conducted to determine the impact that operation of the reservoir(s) at current operating levels (1978-1981) has on the annual salt load of the Colorado River immediately below the reservoirs.

5. The model shall be set up on the Bureau of Reclamation Cyber system by the contractor. Contractor personnel, in conjunction with Bureau of Reclamation personnel, will then test the capability of the model to simulate five different operating scenarios on each reservoir. These scenarios will be chosen by Bureau of Reclamation and contractor personnel. These options would include but not be limited to:

- a. Modification of the intake and release structures at Glen Canyon Dam and/or Hoover Dam to selectively withdraw water from other levels that are not currently being used
- b. Varying reservoir operating levels
- c. Varying in monthly, weekly, daily, or hourly release patterns within general annual and demand constraints

The options tested shall be evaluated in view of the impacts on salinity and evaporation, both in the releasing and in the receiving reservoir (i.e., reduction of evaporation from Lake Powell through release of water may be offset by increased evaporation in Lake Mead). The impacts on power and recreation and the effects of a changed temperature regime shall also be evaluated. The contractor shall be limited to making a qualitative judgement of downstream impacts.

The model shall perform to the requirements of the model and subroutine as specified under phases 1 and 2 above.

PART I

Section D

Packaging and Marking  
(Not Applicable)



PART I

Section E

Inspection and Acceptance

#### E-1. REVIEW OF SUBMITTALS

All reports submitted by the contractor will be reviewed by the Bureau of Reclamation personnel. Materials will be reviewed for compliance with the specifications. Review and comments on materials do not constitute approval such as to relieve the contractor from responsibility for or professional adequacy thereof. The Bureau of Reclamation reserves the right to reject any phase of the work not meeting specifications for correction at the contractor's expense.

PART I

Section F

Deliveries or Performance

#### F-1. SUBMITTALS

The contractor shall submit quarterly progress reports, end-of-phase reports, and a final contract report. All reports shall be double-space typed.

Quarterly progress reports - Shall cover work completed and in progress during the contract quarter, difficulties encountered, and an estimate of work to be accomplished in the next quarter. Five copies are to be submitted.

End-of-phase reports - Shall be prepared and submitted at the end of each phase of the work, except phase 5, detailing the work performed during that phase and recommendations or materials to be submitted as a result thereof. Copies of pertinent materials or results developed shall be appended to the report. Ten copies of each report shall be submitted.

Final report - Shall summarize the work performed throughout the contract and encompass in detail the work performed in phase 5. Complete model documentation shall be included as an appendix. Fifteen copies of the report are to be submitted.

All reports shall include the rationale and methods used in arriving at assumptions, parameters, and conclusions so that they can be independently evaluated and checked. Published data and published computer programs may be included by reference. Unpublished data should have the pertinent portion included in the report. Any unpublished computer programs used shall be listed and printed in their entirety including the program abstract, writeup, and flow chart. Any copyrighted or proprietary material furnished should be so identified. For the purpose of information and coordination, Bureau personnel shall be permitted full access to all parts of the study.

#### F-2. DELIVERY POINT

All reports to be submitted under this contract shall be delivered at the contractor's expense to the Bureau of Reclamation, Attn D-1000 (Merritt), P O Box 25007, Denver CO 80225. Office location, Denver Federal Center, building 67, room 1322, Denver, Colorado.

#### F-3. PERFORMANCE COMPLETION - URGENCY OF

The contractor shall begin work as soon as possible and not later than 10 calendar days after receipt of notice of award of contract. All services required by this solicitation shall be completed within 730 calendar days after receipt of notice of award of contract. The services required by each phase, inclusive of submittal of the end-of-phase report, shall be completed within the following calendar days after receipt of award of contract. (Completion times to be established in proposals.)

	<u>Calendar days</u>
Phase 1	_____
Phase 2	_____
Phase 3	_____
Phase 4	_____

The Bureau will review and provide comments to the contractor on end-of-phase reports within 30 calendar days of receipt. Any deficiencies or errors shall be corrected by the contractor prior to acceptance for payment.

PART I

Section G

Contract Administration Data

G-1. CONTRACTUAL RELATIONSHIPS

- a. The Government will furnish to the contractor the name of the COTR to act in all technical matters during the term of the contract. The COTR's responsibilities are as stated in paragraph G-2 below.
- b. The contractor is cautioned that only the contracting officer can authorize changes in the scope of the work.

G-2. TECHNICAL DIRECTION/DESCRIPTION OF CONTRACTING OFFICER'S  
TECHNICAL REPRESENTATIVE

The scope of the COTR's authority shall be:

- a. Familiarization with the terms and conditions of the contract.
- b. Assurance of compliance with the provisions of the contract and remain cognizant of the contractor's technical efforts and progress.
- c. Reviewing contractor's progress reporting to determine if there has been technical and/or physical progress commensurate with the level of expenditures, and to certify for payment or reject for cause, requests for progress payments, if applicable.
- d. Discuss modifications with the contractor, subject to the COTR's limitations of authority and make recommendations to the contracting officer regarding proposed modifications to the contract.

The limitations of the COTR's authority, in accordance with Interior Procurement Regulations Part 14-1.450-2, are:

- a. The COTR is not empowered to award, agree to, or execute any contract or modification thereto or in any way obligate the payment of money by the Government.
- b. The COTR may not order changes in the scope of the contract, make final decisions on any matter which would be subject to appeal under the disputes clause of the contract, or terminate for any cause the contractor's right to proceed.

The appointment shall remain in effect for the life of the contract unless:

- a. The appointment is terminated in writing by the contracting officer or by his successor contracting officer.
- b. The individual is reassigned.
- c. The individual's employment with the Government is terminated.

PART II

Section H

Special Contract Provisions



## H-1. PERMITS

The contractor shall, without additional expense to the Government, obtain all required licenses and permits required for his prosecution of the work.

## H-2. RIGHTS IN DATA

a. The term "Data" as used herein means recorded information regardless of form or characteristic, of a scientific or technical nature, or of an artistically creative nature, such as books and other writings, technical data, computer programs and software, sound recordings, motion pictures, sculptures, paintings, or other pictorial works or reproductions, drawings, or other graphic representations, and works of the performing arts, and works of similar nature (whether or not copyrighted), which are specified to be delivered under this contract. The term includes data such as management studies and data produced under support service contracts but does not include financial reports, cost analyses, and other information incidental to contract administration.

b. All data produced or composed in the course of or under this contract shall be the sole property of the Government. Except with the prior written permission of the contracting officer, the contractor agrees and warrants that its employees and such others who are likely to author contract data have agreed in writing not to assert any rights at law or in equity or establish any claim to a statutory copyright in such data. The contractor shall not publish or reproduce such data in whole or in part or in any manner or form, or authorize others to do so, without the written consent of the contracting officer, until such time as the Government may have released such data to the public.

c. The contractor hereby grants to or will obtain for the Government a royalty-free, nonexclusive, and irrevocable license throughout the world (1) to publish, exhibit, translate, reproduce, deliver, perform, use, or otherwise copy, and dispose of, in any manner, any and all data which are not produced or composed in the performance of this contract but which are incorporated in the work furnished under this contract; and (2) to authorize others to do as provided in c.(1) above.

d. The contractor shall indemnify and save and hold harmless the Government, its officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses (1) for violation of proprietary rights, copyrights, or rights of privacy, arising out of the public translation, reproduction, delivery, performance, use, or disposition of any data furnished under this contract; or (2) based upon libelous, defamatory, or other unlawful matter contained in such data.

e. Nothing contained in this clause shall imply a license to the Government under any patent, or be construed as affecting the scope of any license or other rights otherwise granted to the Government under any patent.

f. Subparagraphs d. and e. above are not applicable to material given to the contractor by the Government and incorporated in data furnished under the contract: Provided, That problems relative to the material are identified by the contractor at the time the material is given to him.

g. The contractor may not publish, translate, or release data first produced in the performance of this contract, in whole or in part, in any manner or form, or authorize others to do so, during performance of work under this contract, unless prior written approval is given by the contracting officer. Normally such written approval may be given only after submission of technical papers and reports in draft form by the contractor and written acceptance of technical papers and reports by the contracting officer.

h. Notwithstanding subparagraph g. above, if the contractor is an educational institution, the institution, an employee of, or a student at the institution, may at any time publish a document based on work performed, and data developed under this contract: Provided, That (1) the contractor submits an advance copy of the document to the contracting officer at least 60 days prior to the planned publication date, and (2) the document, solely in the judgment of the contracting officer, does not contain information detrimental to the interests of the Government. If the contracting officer determines that h.(2) above is applicable, he shall have the right to refuse approval for publication. Specific written approval must be given by the contracting officer before a document may be published.

i. Any approved publication or information released by the contractor must state that the data utilized was developed during performance of work under this contract, and that the Government does not endorse the publication or release. The document may not refer to a commercial product, commercial firm, or a trade name in such a way as to imply endorsement or approval by the Government. If data is used in a thesis for a graduate degree, the author must furnish to the contracting officer, free of charge, 50 copies (or fewer copies if agreed to by the contracting officer) of the thesis.

j. All data furnished to the Government under this contract which the contractor considers to be proprietary shall be so identified by an appropriate written legend on the document, recording, drawing, computer printout, etc., involved. Any such data not marked with a proprietary legend will be considered to be nonproprietary data subject to subparagraphs a. through c., and g. through i. above. Proprietary information will be retained in confidential status by the Government: Provided, That such data (1) are not generally known or available from other sources without obligation concerning their confidentiality, (2) have not been made available by the owner, and (3) are not already available to the Government without obligation concerning its confidentiality. The Government shall have the right to remove, cancel, correct, or ignore any marking not authorized by the terms on any data furnished hereunder, if upon delivery of the data the propriety of such marking is not substantiated by the contractor, in writing, to the satisfaction of the contracting officer. The contractor shall be notified of any such action contemplated

under this subparagraph j., and which will be taken if the contractor fails to respond thereto so as to substantiate the propriety of the markings within 60 days.

#### H-3. INDEMNITY AND REPORTING ACCIDENTS

The contractor shall indemnify and hold the Government harmless for any and all losses, damages, or liability on account of personal injury, death, or property damage, or claim for personal injury, death, or property damage of any nature whatsoever and by whomsoever made, arising out of the activities of the contractor, his employees, subcontractors, or agents under the contract.

The contractor shall promptly investigate and maintain a complete record of all accidents resulting in personal injury, death, or property damage incident to performance of work under the contract.

Loss of or damage to Government equipment or property in the custody of the contractor shall be immediately reported to the contracting officer together with full details relating to the incident.

#### H-4. SUBCONTRACTS

The contractor shall not, without prior written approval from the contracting officer, enter into any subcontract covering any part of the work contemplated by this contract. The contracting officer's approval of a subcontract will not in any way relieve the contractor from his absolute responsibility for the adequacy of the subcontractor's work. Nothing contained in this contract shall create any contractual relation between a subcontractor and the Government.

#### H-5. ORDER OF PRECEDENCE

In the event of an inconsistency between provisions of this solicitation, the inconsistency shall be resolved by giving precedence in the following order: (a) the Schedule; (b) Terms and Conditions of this solicitation, if any; (c) General Provisions; (d) other provisions of the contract, where attached or incorporated by reference; and (e) the Specifications.

#### H-6. KEY PERSONNEL

a. If identified as key personnel elsewhere in this contract, such personnel are considered to be essential to the work being performed hereunder. Prior to diverting any of the specified individuals to other programs, or making substitutions of personnel, the contractor shall notify the contracting officer reasonably in advance and shall submit justification (including proposed substitutions) in sufficient detail to permit evaluation of such changes on the contract effort. No changes in key personnel shall be made by the contractor without the written consent of the contracting officer: Provided, That the contracting officer may ratify in writing such changes and such ratification shall constitute the consent of the contracting officer required by this clause.

b. If key personnel are found to devote less effort than anticipated at the time of contract award, or are performing unsatisfactorily, the contracting officer may direct replacement of such personnel, contract modification, or contract termination as appropriate.

#### H-7. PAYMENT

The Government will pay the contract prices in accordance with the schedule and General Provisions clause No. 15 as supplemented below:

a. Progress payments, if requested, will be made at the stages of completion and in the amounts stated in the schedule.

b. In making such progress payments, there shall be retained 10 percent of the estimated amount until completion and acceptance of the final report and archived data. However, if the contracting officer, at any time after 50 percent of the work has been completed, finds that satisfactory progress is being made, he may authorize payment in full of each progress payment for work performed beyond the 50 percent stage of completion. Also, whenever the work is substantially complete, the contracting officer, if he considers the amount retained to be in excess of the amount adequate for the protection of the Government, at his discretion, may release to the contractor all or a portion of such excess amount.

c. All material and work covered by progress payments shall thereupon become the sole property of the Government, but this provision shall not be construed as relieving the contractor from the sole responsibility for all material and work upon which payments have been made, or the restoration of any damaged work, or as waiving the right of the Government to require the fulfillment of all of the terms of the contract.

d. Default. - If this contract is terminated for default, the contractor shall, upon demand, pay to the Government the amount of unliquidated progress payments, less any amounts payable to the contractor in accordance with the default clause.

e. Final payment. - When the terms of the contract shall have been fully complied with, including complete delivery and acceptance of all data and materials required by the contract or used to perform the required services, final payment will be made of the balance due under the contract. Upon completion of the services and prior to the final delivery, the contractor shall furnish to the contracting officer, if he requires, a release of claims against the United States arising out of the contract, other than claims specifically excepted from the operation of the release.

f. Submit invoice for payment to: Bureau of Reclamation, Attn D-800, P O Box 25007, Denver CO 80225.

#### H-8. FUNDS AVAILABLE FOR PAYMENTS

Pursuant to section 12 of the Reclamation Project Act of 1939 (43 U.S.C., Sec. 388), funds for payments under this contract shall be made available as provided in this paragraph.

a. Funds have been reserved to finance the contractor's earnings during the current fiscal year. The contractor shall be notified of the amount so reserved for payment.

b. Additional funds for payment to the contractor to cover earnings under the schedule items during subsequent fiscal years is contingent on the necessary appropriations being made therefor by the Congress and an appropriate reservation of funds thereunder. The Government shall not be liable for damages under this contract on account of delays in payment due to lack of funds.

In the event additional funds are not made available, if the contractor so elects, he may continue work under the conditions and restrictions of this solicitation after funds have been exhausted, so long as there are funds for inspection concerning which he will be notified in writing. No payment will be made for any work done after funds have been exhausted unless and until sufficient additional funds have been provided by Congress.

When funds again become available, the contractor will be notified in writing as to the amount thereof reserved for payments under this contract. However, if the contractor so elects, the work may be suspended when the available funds have been exhausted. Should work be thus suspended, additional time for delivery will be allowed equal to the period during which the work is necessarily so suspended.

Should Congress fail to provide the expected additional funds, the contract may, at the option of the contractor, by written notice, be terminated and considered to be completed without prejudice to him or liability to the Government at any time subsequent to 30 days after payments are discontinued.

PART II

Section I

General Contract Provisions

# GENERAL PROVISIONS

Negotiated  
(Fixed-Price)

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1. DEFINITIONS  
(FPR 1-7.302-1 & 1-7.102-1)

As used throughout this contract, the following terms shall have the meaning set forth below:

a. The term "head of the agency" or "Secretary" means the Secretary, the Under Secretary, any Assistant Secretary, or any other head or assistant head of the executive or military department or other Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the contracting officer) authorized to act for the head of the agency or the Secretary.

b. The term "contracting officer" means the person executing this contract on behalf of the Government, and any other officer or civilian employee who is a properly designated contracting officer; and the term includes, except as otherwise provided in this contract, the authorized representative of a contracting officer acting within the limits of his authority.

c. Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

2. STANDARDS OF WORK  
(FPR 1-7.302-3)

The contractor agrees that the performance of work and services pursuant to the requirements of this contract shall conform to high professional standards.

3. INSPECTION  
(FPR 1-7.302-4(b))

The Government, through any authorized representatives, has the right at all reasonable times to inspect, or otherwise evaluate the work performed or being performed hereunder and the premises in which it is being performed. If any inspection, or evaluation is made by the Government on the premises of the contractor or a subcontractor, the contractor shall provide and shall require his subcontractors to provide all reasonable facilities and assistance for the safety and convenience of the Government representatives in the performance of their duties. All inspections and evaluations shall be

performed in such a manner as will not unduly delay the work.

4. DISPUTES  
(FPR 1-7.302-11 & FPR Temp. Reg. 55)

a. This contract is subject to the Contract Disputes Act of 1978 (Public Law 95-563).

b. Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved in accordance with this clause.

c. (1) As used herein, "claim" means a written demand or assertion by one of the parties seeking, as a legal right, the payment of money, adjustment or interpretation of contract terms, or other relief, arising under or relating to this contract.

(2) A voucher, invoice, or request for payment that is not in dispute when submitted is not a claim for the purposes of the Act. However, where such submission is subsequently not acted upon in a reasonable time, or disputed either as to liability or amount, it may be converted to a claim pursuant to the Act.

(3) A claim by the contractor shall be made in writing and submitted to the contracting officer for decision. A claim by the Government against the contractor shall be subject to a decision by the contracting officer.

d. For contractor claims of more than \$50,000, the contractor shall submit with the claim a certification that the claim is made in good faith; the supporting data are accurate and complete to the best of the contractor's knowledge and belief; and the amount requested accurately reflects the contract adjustment for which the contractor believes the Government is liable. The certification shall be executed by the contractor if an individual. When the contractor is not an individual, the certification shall be executed by a senior company official in charge at the contractor's plant or location involved, or by an officer or general partner of the contractor having overall responsibility for the conduct of the contractor's affairs.

e. For contractor claims of \$50,000 or less, the contracting officer must render a decision within 60 days. For contractor claims in excess of \$50,000, the contracting officer must decide the claim within 60 days or notify the contractor of the date when the decision will be made.

f. The contracting officer's decision shall be final unless the contractor appeals or files a suit as provided in the Act.

g. The authority of the contracting officer under the Act does not extend to claims or disputes which by statute or regulation other agencies are expressly authorized to decide.

h. Interest on the amount found due on a contractor claim shall be paid from the date the claim is received by the contracting officer until the date of payment.

i. Except as the parties may otherwise agree, pending final resolution of a claim by the contractor arising under the contract, the contractor shall proceed diligently with the performance of the contract in accordance with the contracting officer's decision.

## 5. CHANGES (FPR 1-7.304-1)

a. The contracting officer may at any time, by a written order, and without notice to the sureties, if any, make changes, within the general scope of this contract, in any one or more of the following:

(i) Drawings, designs, or specifications;

(ii) Method of shipment or packing; and

(iii) Place of inspection, delivery, or acceptance.

b. If any such change causes an increase or decrease in the estimated cost of, or the time required for the performance of this contract, or otherwise affects any other provisions of this contract, whether changed or not changed by any such order, an equitable adjustment shall be made:

(i) In the contract price or time of performance, or both and

(ii) In such other provisions of the contract as may be affected, and the contract shall be modified in writing accordingly.

Any claim by the contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the contractor of the notification of change: Provided, however, That the contracting officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to final payment under this contract. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." However, nothing in this clause shall excuse the contractor from proceeding with the contract as changed.

## 6. NOTICE REGARDING LATE DELIVERY (FPR 1-7.304-5 & 1-7.204-4)

In the event the contractor encounters difficulty in meeting performance requirements, or anticipates difficulty in complying with the contract delivery schedule or date, the contractor shall immediately notify the contracting officer thereof in writing, giving pertinent details, including the date by which it expects to complete performance or make delivery: Provided however, That this data shall be informational only in character and that receipt thereof shall not be construed as a waiver by the Government of any contract delivery schedule or date, or any rights or remedies provided by law or under this contract.

## 7. BUY AMERICAN ACT (FPR 1-7.302-13 & 1-6.104-5)

a. In acquiring end products, the Buy American Act (41 U.S. Code 10a-10d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

(i) "Components" means those articles, materials, and supplies which are directly incorporated in the end products;

(ii) "End products" means those articles, materials, and supplies which are to be

acquired under this contract for public use; and

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purposes of this a.(iii)(B), components of foreign origin of the same type or kind as the products referred to in b.(ii) or (iii) of this clause shall be treated as components mined, produced, or manufactured in the United States.

b. The contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

(i) Which are for use outside the United States;

(ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;

(iii) As to which the Secretary determines the domestic preference to be inconsistent with the public interest; or

(iv) As to which the Secretary determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

#### 8. DEFAULT (FPR 1-7.302-9 & 1-8.710)

a. The Government may, subject to the provisions of subparagraph c. of this clause, by written notice of default to the contractor, terminate the whole or any part of this contract in any one of the following circumstances:

(1) If the contractor fails to perform the work called for by this contract within the time(s) specified herein or any extension thereof; or

(2) If the contractor fails to perform any of the other provisions of this contract, or so fails to prosecute the work as to endanger performance of this contract in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of 10 days (or such longer period as the contracting officer may authorize in writing) after receipt of notice from the contracting officer specifying such failure.

b. In the event the Government terminates this contract in whole or in part as provided in subparagraph a. of this clause, the Government may procure, upon such terms and in such manner as the contracting officer may deem appropriate, work similar to the work so terminated and the contractor shall be liable to the Government for any excess costs for such similar work: Provided, That the contractor shall continue the performance of this contract to the extent not terminated under the provisions of this clause.

c. Except with respect to defaults of subcontractors, the contractor shall not be liable for any excess costs if the failure to perform the contract arises out of causes beyond the control and without the fault or negligence of the contractor. Such causes may include, but are not restricted to, acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the contractor. If the failure to perform is caused by the default of a subcontractor, and if such default arises out of causes beyond the control of both the contractor and subcontractor, and without the fault or negligence of either of them, the contractor shall not be liable for any excess costs for failure to perform unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the

contractor to meet the required delivery schedule or other performance requirements.

d. If this contract is terminated as provided in subparagraph a. of this clause, the Government, in addition to any other rights provided in this clause, may require the contractor to transfer title and deliver to the Government, in the manner and to the extent directed by the contracting officer, any of the completed or partially completed work not theretofore delivered to, and accepted by, the Government and any other property, including contract rights, specifically produced or specifically acquired for the performance of such part of this contract as has been terminated; and the contractor shall, upon the direction of the contracting officer, protect and preserve property in the possession of the contractor in which the Government has an interest. The Government shall pay to the contractor the contract price, if separately stated, for completed work accepted by the Government and the amount agreed upon by the contractor and the contracting officer for (1) completed work for which no separate price is stated, (2) partially completed work, (3) other property described above which is accepted by the Government, and (4) the protection and preservation of property. Failure to agree shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." The Government may withhold from amounts otherwise due the contractor for such completed supplies or manufacturing materials such sum as the contracting officer determines to be necessary to protect the Government against loss because of outstanding liens or claims of former lien holders.

e. If, after notice of termination of this contract under the provisions of this clause, it is determined for any reason that the contractor was not in default under the provisions of this clause, or that the default was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for convenience of the Government, be the same as if the notice of termination had been issued pursuant to such clause. If after notice of termination of this contract under the provisions of this

clause, it is determined for any reason that the contractor was not in default under the provisions of this clause, and if this contract does not contain a clause providing for termination for convenience of the Government, the contract shall be equitably adjusted to compensate for such termination and the contract modified accordingly; failure to agree to any such adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

f. The right and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

g. As used in subparagraph c. of this clause, the terms "subcontractor" and "subcontractors" means subcontractor(s) at any tier.

#### 9. TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FPR 1-7.302-10(b) & 1-8.701)

a. The performance of work under this contract may be terminated by the Government in accordance with this clause in whole, or from time to time in part, whenever the contracting officer shall determine that such termination is in the best interest of the Government. Any such termination shall be effected by delivery to the contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.

b. After receipt of a Notice of Termination, and except as otherwise directed by the contracting officer, the contractor shall:

(1) Stop work under the contract on the date and to the extent specified in the Notice of Termination;

(2) Place no further orders or subcontracts for materials, services, or facilities, except as may be necessary for completion of such portion of the work under the contract as is not terminated;

(3) Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination;

(4) Assign to the Government, in the manner, at the times, and to the extent directed by the contracting officer, all of the right, title, and interest of the contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;

(5) Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the contracting officer, to the extent he may require, which approval or ratification shall be final for all the purposes of this clause;

(6) Transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the contracting officer, (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in connection with the performance of, the work terminated by the Notice of Termination, and (ii) the completed or partially completed plans, drawings, information and other property which, if the contract had been completed, would have been required to be furnished to the Government;

(7) Use his best efforts to sell, in the manner, at the times, to the extent, and at the price or prices directed or authorized by the contracting officer, any property of the types referred to in (6) above: Provided, however, That the contractor (i) shall not be required to extend credit to any purchaser, and (ii) may acquire any such property under the conditions prescribed by and at a price or prices approved by the contracting officer: And provided further, That the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Government to the contractor under this

contract or shall otherwise be credited to the price or cost of the work covered by this contract or paid in such other manner as the contracting officer may direct;

(8) Complete performance of such part of the work as shall not have been terminated by the Notice of Termination; and

(9) Take such action as may be necessary, or as the contracting officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the contractor and in which the Government has or may acquire an interest.

At any time after expiration of the plant clearance period, as defined in subpart 1-8.1 of the Federal Procurement Regulations (41 CFR 1-8.1), as the definition may be amended from time to time, the contractor may submit to the contracting officer a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorized by the contracting officer, and may request the Government to remove such items or enter into a storage agreement covering them. Not later than 15 days thereafter, the Government will accept title to such items and remove them or enter into a storage agreement covering the same: Provided, That the list submitted shall be subject to verification by the contracting officer upon removal of the items or, if the items are stored, within 45 days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.

c. After receipt of a Notice of Termination, the contractor shall submit to the contracting officer his termination claim, in the form and with certification prescribed by the contracting officer. Such claims shall be submitted promptly but in no event later than 1 year from the effective date of termination, unless one or more extensions in writing are granted by the contracting officer upon request of the contractor made in writing within such 1-year period or authorized extension thereof. However, if the contracting officer determines that the facts justify such

action, he may receive and act upon any such termination claim at any time after such 1-year period or any extension thereof. Upon failure of the contractor to submit his termination claim within the time allowed, the contracting officer may, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the contractor by reason of the termination and shall thereupon pay to the contractor the amount so determined.

d. Subject to the provisions of subparagraph c., and subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, the contractor and the contracting officer may agree upon the whole or any part of the amount or amounts to be paid to the contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts may include a reasonable allowance for profit on work done: Provided, That such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. The contract shall be amended accordingly, and the contractor shall be paid the agreed amount. Nothing in subparagraph e. of this clause, prescribing the amount to be paid to the contractor in the event of failure of the contractor and the contracting officer to agree upon the whole amount to be paid to the contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the contractor pursuant to this subparagraph d.

e. In the event of the failure of the contractor and the contracting officer to agree as provided in subparagraph d. upon the whole amount to be paid to the contractor by reason of the termination of work pursuant to this clause, the contracting officer shall, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, determine, on the basis of information available to him, the

amount, if any, due to the contractor by reason of the termination and shall pay to the contractor the amounts determined as follows:

(1) For completed supplies accepted by the Government (or sold or acquired as provided in subparagraph b.(7) above) and not theretofore paid for, a sum equivalent to the aggregate price for such supplies computed in accordance with the price or prices specified in the contract, appropriately adjusted for any saving of freight or other charges;

(2) The total of--

(i) The costs incurred in the performance of the work terminated, including initial costs and preparatory expense allocable thereto, but exclusive of any costs attributable to supplies paid or to be paid for under subparagraph e.(1) hereof;

(ii) The cost of settling and paying claims arising out of the termination of work under subcontracts or orders, as provided in subparagraph b.(5) above, which are properly chargeable to the terminated portion of the contract (exclusive of amounts paid or payable on account of supplies or materials delivered or services furnished by subcontractors or vendors prior to the effective date of the Notice of Termination, which amounts shall be included in the costs payable under (i) above); and

(iii) A sum, as profit on (i), above, determined by the contracting officer pursuant to § 1-8.303 of the Federal Procurement Regulations (41 CFR 1-8.303), in effect as of the date of execution of this contract, to be fair and reasonable: Provided, however, That if it appears that the contractor would have sustained a loss on the entire contract had it been completed, no profit shall be included or allowed under this subdivision (iii) and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

(3) The reasonable costs of settlement, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to this contract.

The total sum to be paid to the contractor under (1) and (2) of this subparagraph e. shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. Except for normal spoilage and except to the extent that the Government shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the contractor as provided in e.(1) and (2)(i) above, the fair value, as determined by the contracting officer, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government, or to a buyer pursuant to subparagraph b.(7).

f. Costs claimed, agreed to, or determined pursuant to subparagraphs c., d., and e. of this clause shall be in accordance with the applicable contract cost principles and procedures in part 1-15 of the Federal Procurement Regulations (41 CFR 1-15) in effect on the date of this contract.

g. The contractor shall have the right to appeal, under the clause of this contract entitled "Disputes" from any determination made by the contracting officer under subparagraph c. or e. above, except that, if the contractor has failed to submit his claim within the time provided in subparagraph c. above and has failed to request extension of such time, he shall have no such right of appeal. In any case where the contracting officer has made a determination of the amount due under subparagraph c. or e. above, the Government shall pay to the contractor the following: (1) if there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the contracting officer; or (2) if an appeal has

been taken, the amount finally determined on such appeal.

h. In arriving at the amount due the contractor under this clause there shall be deducted (1) all unliquidated advance or other payments on account theretofore made to the contractor, applicable to the terminated portion of this contract; (2) any claim which the Government may have against the contractor in connection with this contract; and (3) the agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the contractor or sold, pursuant to the provisions of this clause, and not otherwise recovered by or credited to the Government.

i. If the termination hereunder be partial, prior to the settlement of the terminated portion of this contract, the contractor may file with the contracting officer a request in writing for an equitable adjustment of the price or prices specified in the contract relating to the continued portion of the contract (the portion not terminated by the Notice of Termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices.

j. The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the contractor in connection with the terminated portion of this contract whenever, in the opinion of the contracting officer, the aggregate of such payments shall be within the amount to which the contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this clause, such excess shall be payable by the contractor to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41 [50 U.S.C. App. 1215(b)(2)] for the Renegotiation Board, for the period from the date such excess payment is received by the contractor to the date on which such excess is repaid to the Government: Provided, however, that no interest shall be charged with respect to any such excess payment attributable to a reduction in the contractor's claim by reason

of retention or other disposition of termination inventory until 10 days after the date of such retention or disposition, or such later date as determined by the contracting officer by reason of the circumstances.

k. Unless otherwise provided for in this contract, or by applicable statute, the contractor, from the effective date of termination and for a period of 3 years after final settlement under this contract, shall preserve and make available to the Government at all reasonable times at the office of the contractor but without direct charge to the Government, all his books, records, documents, and other evidence bearing on the costs and expenses of the contractor under this contract and relating to the work terminated hereunder, or, to the extent approved by the contracting officer, photographs, microphotographs, or other authentic reproductions thereof.

#### 10. TERMINATION FOR CONVENIENCE OF THE GOVERNMENT FPR 1-7.302-10(b) and 1-8.704-1

(The following clause is applicable if this contract is with an educational institution or other nonprofit institution.)

a. The performance of work under this contract may be terminated, in whole or from time to time in part, by the Government whenever for any reason the contracting officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

b. After receipt of the Notice of Termination, the contractor shall cancel his outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of his outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to

the performance of any work terminated by the notice. With respect to such canceled commitments, the contractor agrees to (1) settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with the approval or ratification of the contracting officer, to the extent he may require, which approval or ratification shall be final for all purposes of this clause, and (2) assign to the Government, in the manner, at the time, and to the extent directed by the contracting officer, all of the right, title, and interest of the contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

c. The contractor shall submit his termination claim to the contracting officer promptly after receipt of a Notice of Termination, but in no event later than 1 year from the effective date thereof, unless one or more extensions in writing are granted by the contracting officer upon written request of the contractor within such 1-year period or authorized extension thereof. Upon failure of the contractor to submit his termination claim within the time allowed, the contracting officer may, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the contractor by reason of the termination and shall thereupon pay to the contractor the amount so determined.

d. Any determination of costs under paragraph (c) shall be governed by the contract cost principles and procedures in subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3) in effect on the date of this contract, except that if the contractor is not an educational institution any costs claimed, agreed to, or determined pursuant to paragraphs (c) or (e) hereof shall be in accordance with subpart 1-15.2 of the Federal Procurement Regulations (41 CFR 1-15.2) in effect on the date of this contract.

e. Subject to the provisions of paragraph (c) above, and subject to any review required by the contracting agency's procedures in effect



as of the date of execution of this contract, the contractor and the contracting officer may agree upon the whole or any part of the amount or amounts to be paid to the contractor by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the contractor and any reasonable loss upon outstanding commitments for personal services which he is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the contractor is unable to cancel, the contractor shall have exercised reasonable diligence to divert such commitments to his other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the contractor shall be paid the agreed amount.

f. The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the contractor in connection with the terminated portion of this contract whenever, in the opinion of the contracting officer, the aggregate of such payments is within the amount to which the contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this clause, such excess shall be payable by the contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the contractor to the Government at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41 (50 U.S.C. App. 1215(b)(2) for the Renegotiation Board, beginning 30 days from the date of such demand.

g. The contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the contracting officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the contracting officer, be sold or acquired by the contractor under the conditions prescribed by and at a price or prices approved by the contracting officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the contractor under this contract or shall otherwise be credited to the price or cost of work covered by this contract or paid in such other manner as the contracting officer may direct. Pending final disposition of property arising from the termination, the contractor agrees to take such action as may be necessary, or as the contracting officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the contractor and in which the Government has or may acquire an interest.

h. Any disputes as to questions of fact which may arise hereunder shall be subject to the "Disputes" clause of this contract.

#### 11. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (FPR 1-7.302-22 & 1-7.103-4)

The provisions of this clause shall be applicable only if the amount of this contract exceeds \$10,000.

a. The contractor shall report to the contracting officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the contractor has knowledge.

b. In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed hereunder, the contractor shall furnish to the Government, when requested

by the contracting officer, all evidence and information in possession of the contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the contractor has agreed to indemnify the Government.

**12. ASSIGNMENT OF CLAIMS**  
(FPR 1-7.302-5 & 1-30.703)

a. Pursuant to the provisions of the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), if this contract provides for payments aggregating \$1,000 or more, claims for moneys due or to become due the contractor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned and reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. Unless otherwise provided in this contract, payments to assignee of any moneys due or to become due under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or setoff. (The preceding sentence applies only if this contract is made in time of war or national emergency as defined in said Act and is with the Department of Defense, the General Services Administration, the Energy Research and Development Administration, the National Aeronautics and Space Administration, the Federal Aviation Administration, or any other department or agency of the United States designated by the President pursuant to clause 4 of the proviso of section 1 of the Assignment of Claims Act of 1940, as amended by the Act of May 15, 1951, 65 Stat. 41.)

b. In no event shall copies of this contract or of any plans, specifications, or other similar documents relating to work under this contract, if marked "Top Secret," "Secret," or "Confidential," be furnished to any assignee

of any claim arising under this contract or to any other person not entitled to receive the same. However, a copy of any part or all of this contract so marked may be furnished, or any information contained therein may be disclosed, to such assignee upon the prior written authorization of the contracting officer.

**13. EXAMINATION OF RECORDS BY  
COMPTROLLER GENERAL**  
(FPR 1-7.302-6 & 1-7.103-3)

a. This clause is applicable if the amount of this contract exceeds \$10,000 and was entered into by means of negotiation, including small business restricted advertising, but is not applicable if this contract was entered into by means of formal advertising.

b. The contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of 3 years after final payment under this contract or such lesser time specified in either appendix M of the Armed Services Procurement Regulation or the Federal Procurement Regulations Part 1-20, as appropriate, have access to and the right to examine any directly pertinent books, documents, papers, and records of the contractor involving transactions related to this contract.

c. The contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of 3 years after final payment under the subcontract or such lesser time specified in either appendix M of the Armed Services Procurement Regulation or the Federal Procurement Regulations part 1-20, as appropriate, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (1) purchase orders not exceeding \$10,000 and (2) subcontracts or purchase orders for public

utility services at rates established for uniform applicability to the general public.

d. The periods of access and examination described in b. and c., above, for records which relate to (1) appeals under the "Disputes" clause of this contract, (2) litigation or the settlement of claims arising out of the performance of this contract, or (3) costs and expenses of this contract as to which exception has been taken by the Comptroller General or any of his duly authorized representatives, shall continue until such appeals, litigation, claims, or exceptions have been disposed of.

**14. INTEREST**  
(FPR 1-7.303-26 &  
1-7.203-15)

Notwithstanding any other provision of this contract, unless paid within 30 days, all amounts that become payable by the contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code) shall bear interest at the rate determined by the Secretary of the Treasury pursuant to Public Law 92-41, 85 Stat. 97. Amounts shall be due upon the earliest of (a) the date fixed pursuant to this contract; (b) the date of the first written demand for payment, consistent with this contract, including demand consequent upon default termination; (c) the date of transmittal by the Government to the contractor of a proposed supplemental agreement to confirm completed negotiations fixing the amount; or (d) if this contract provides for revision of prices, the date of written notice to the contractor stating the amount of refund payable in connection with a pricing proposal or in connection with a negotiated pricing agreement not confirmed by contract supplement.

**15. PAYMENTS**  
(FPR 1-7.302-2)

The contractor shall be paid, upon submission of proper invoices or vouchers, the prices stipulated herein for work delivered or rendered and accepted, less deductions, if any, as herein provided. Unless otherwise specified, payment will be made upon acceptance of any portion of the work delivered or rendered for which a price is separately stated in the contract.

**16. PRICING OF ADJUSTMENTS**  
(FPR 1-7.302-29 & 1-7.102-20)

When costs are a factor in any determination of a contract price adjustment pursuant to the "Changes" clause or any other provision of this contract, such costs shall be in accordance with the contract cost principles and procedures in part 1-15 of the Federal Procurement Regulations (41 CFR 1-15).

**17. FEDERAL, STATE, AND LOCAL TAXES**  
(FPR 1-7.302-7 & 1-11.401-1(c))

(The following clause is applicable to contracts in excess of \$10,000.)

a. Except as may be otherwise provided in this contract the contract price includes all applicable Federal, State, and local taxes and duties.

b. Nevertheless, with respect to any Federal excise tax or duty on the transactions of property covered by this contract, if a statute, court decision, written ruling, or regulation takes effect after the contract date, and

(1) Results in the contractor being required to pay or bear the burden of any such Federal excise tax or duty or increase in the rate thereof which would not otherwise have been payable on such transactions or property, the contract price shall be increased by the amount of such tax or duty or rate increase: Provided, That the contractor if requested by the contracting officer, warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the contract price as a contingency reserve or otherwise; or

(2) Results in the contractor not being required to pay or bear the burden of, or in his obtaining a refund or drawback of, any such Federal excise tax or duty which would otherwise have been payable on such transactions or property or which was the basis of an increase in the contract price, the contract price shall be decreased by the amount of the relief, refund, or drawback, or that amount shall be paid to the Government, as directed by the

contracting officer. The contract price shall be similarly decreased if the contractor, through his fault or negligence or his failure to follow instructions of the contracting officer, is required to pay or bear the burden of, or does not obtain a refund or drawback of, any such Federal excise tax or duty.

c. No adjustment pursuant to paragraph b. above will be made under this contract unless the aggregate amount thereof is or may reasonably be expected to be over \$100.

d. As used in paragraph b. above, the term "contract date" means the date set for the bid opening, or if this is a negotiated contract, the date of this contract. As to additional supplies or services procured by modification to this contract, the term "contract date" means the date of such modification.

e. Unless there does not exist any reasonable basis to sustain an exemption, the Government, upon request of the contractor, without further liability, agrees, except as otherwise provided in this contract, to furnish evidence appropriate to establish exemption from any tax which the contractor warrants in writing was excluded from the contract price. In addition, the contracting officer may furnish evidence to establish exemption from any tax that may, pursuant to this clause, give rise to either an increase or decrease in the contract price. Except as otherwise provided in this contract, evidence appropriate to establish exemption from duties will be furnished only at the discretion of the contracting officer.

f. The contractor shall promptly notify the contracting officer of matters which will result in either an increase or decrease in the contract price, and shall take action with respect thereto as directed by the contracting officer.

**18. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT-OVERTIME COMPENSATION**  
(FPR 1-7.302-16 & 1-12.303)

This contract, to the extent that it is of a character specified in the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333), is subject to the following provisions and to all

other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder.

a. Overtime requirements.—No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, apprentices, trainees, watchmen, and guards shall require or permit any laborer, mechanic, apprentice, trainee, watchman, or guard in any workweek in which he is employed on such work to work in excess of 8 hours in any calendar day or in excess of 40 hours in such workweek on work subject to the provisions of the Contract Work Hours and Safety Standards Act unless such laborer, mechanic, apprentice, trainee, watchman, or guard receives compensation at a rate not less than one and one-half times his basic rate of pay for all such hours worked in excess of 8 hours in any calendar day or in excess of 40 hours in such workweek, whichever is the greater number of overtime hours.

b. Violation; liability for unpaid wages; liquidated damages.—In the event of any violation of the provisions of subparagraph a., the contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, apprentice, trainee, watchman, or guard employed in violation of the provisions of subparagraph a. in the sum of \$10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of 8 hours or in excess of his standard workweek of 40 hours without payment of the overtime wages required by subparagraph a.

c. Withholding for unpaid wages and liquidated damages.—The contracting officer may withhold from the Government prime contractor, from any moneys payable on account of work performed by the contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages

and liquidated damages as provided in the provisions of subparagraph b.

d. Subcontracts.—The contractor shall insert subparagraphs a. through d. of this clause in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

e. Records.—The contractor shall maintain payroll records containing the information specified in 29 CFR 516.2(a). Such records shall be preserved for 3 years from the completion of the contract.

19. FAIR AND EQUITABLE COMPENSATION TO PROFESSIONAL EMPLOYEES  
(FPR Temp. Reg. 45, Supplement 2)

(The following is applicable if this contract exceeds \$250,000 and will employ professional employees.)

a. Instructions to offerors.—

(1) Total compensation (salary and fringe benefits) of professional employees under service contracts may, in some cases, be lowered by recompetition of these contracts. Lowering of compensation can be detrimental in obtaining the necessary quality of professional services needed for adequate performance of service contracts. It is, therefore, in the best interest of the Government that professional employees, as defined in 29 CFR part 541, be properly and fairly compensated in these contracts. As a part of their proposals, offerors will submit a "Total Compensation Plan" (salaries and fringe benefits) for these professional employees for evaluation purposes. Supporting information will include data, such as recognized national and regional compensation surveys and studies of professional public and private organizations, used in establishing the total compensation structure.

(2) The Government will evaluate the Total Compensation Plan to ensure that this compensation reflects a sound management approach and an understanding of the requirements to be

performed. It will include an assessment of the offeror's ability to provide uninterrupted work of high quality. The total compensation proposed will be evaluated in terms of enhancing recruitment and retention of personnel and its realism and consistency with a total plan for compensation (both salaries and fringe benefits).

(3) Criteria for evaluation, therefore, will include an assessment of the Total Compensation Plan submitted by each offeror.

b. Evaluation criteria.—

(1) Total compensation plan (professional employees).—In establishing compensation levels for professional employees, the total compensation (both salaries and fringe benefits) proposed shall reflect a clear understanding of the requirements of the work to be accomplished and the suitability of the proposed compensation structure to obtain and retain qualified personnel to meet mission objectives. The salary rates or ranges must recognize the distinct differences in professional skills and the complexity of varied disciplines as well as job difficulty. Proposals offering total compensation levels less than currently being paid by the predecessor contractor for the same work will be evaluated, in addition to the above, on the basis of maintaining program continuity, uninterrupted work of high quality, and availability of required competent professional employees. Offerors are cautioned that instances of lowered compensation for essentially the same professional work may be considered a lack of sound management judgment in addition to indicating a lack of understanding of the requirement.

(2) Cost (professional compensation).—Proposals which are unrealistically low or do not reflect a reasonable relationship of compensation to the professional job categories so as to impair the contractor's ability to recruit and retain competent professional employees, may be viewed as reflecting a failure to comprehend the complexity of the contract requirements.

The Government is concerned with the quality and stability of the work force to be employed on this contract. The compensation data required will be used in evaluation of the offeror's understanding of the contract requirements.

(3) Other (labor relations).—An assessment of the potential for adverse effect upon performance and maintenance of the required number of professional employees with requisite skills resulting from an unrealistically low compensation structure will also be made.

## 20. AUDIT

(FPR 1-7.303-28 & 1-3.814-2(a))

(The following clause is applicable if: (1) The contract exceeds \$100,000 or (2) In connection with the initial pricing of the contract, (i) a certificate of cost or pricing data is required in accordance with FPR 1-3.807-3(c), or (ii) partial cost or pricing data are obtained in accordance with FPR 1-3.807-3.)

a. General.—The contracting officer or his representatives shall have the audit and inspection rights described in the applicable subparagraphs b., c., and d. below.

b. Examination of costs.—If this is a cost-reimbursement type, incentive, time-and-materials, labor-hour, or price-redeterminable contract, or any combination thereof, the contractor shall maintain, and the contracting officer or his representatives shall have the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of this contract. Such right of examination shall include inspection at all reasonable times of the contractor's plants, or such parts thereof, as may be engaged in the performance of this contract.

c. Cost or pricing data.—If the contractor submitted cost or pricing data in connection with the pricing of this contract or any change or modification thereto, unless such pricing was based on adequate price competition, established catalog or market prices of

commercial items sold in substantial quantities to the general public, or prices set by law or regulation, the contracting officer or his representatives who are employees of the United States Government shall have the right to examine all books, records, documents and other data of the contractor related to the negotiation, pricing or performance of such contract, change or modification, for the purpose of evaluating the accuracy, completeness and currency of the cost or pricing data submitted. Additionally, in the case of pricing any change or modification exceeding \$100,000 to formally advertised contracts, the Comptroller General of the United States or his representatives who are employees of the United States Government shall have such rights. The right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein.

d. Availability.—The materials described in b. and c. above, shall be made available at the office of the contractor, at all reasonable times, for inspection, audit or reproduction, until the expiration of 3 years from the date of final payment under this contract or such lesser time specified in part 1-20 of the Federal Procurement Regulations (41 CFR Part 1-20) and for such longer period, if any, as is required by applicable statute, or by other clauses of this contract, or by (1) and (2) below:

(1) If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for a period of 3 years from the date of any resulting final settlement.

(2) Records which relate to appeals under the "Disputes" clause of this contract, or litigation or the settlement of claims arising out of the performance of this contract, shall be made available until such appeals, litigation, or claims have been disposed of.

e. The contractor shall insert a clause containing all the provisions of this clause, including this subparagraph e., in all subcontracts hereunder except altered as necessary for proper identification of the

contracting parties and the contracting officer under the Government prime contract.

**21. PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA**  
(FPR 1-7.303-16 & 1-3.814-1(a))

(Under the conditions set forth in FPR 1-3.814-1(a), the following shall be applicable.)

If any price, including profit or fee, negotiated in connection with this contract or any cost reimbursable under this contract was increased by any significant sums because:

- a. The contractor furnished cost or pricing data which were not accurate, complete and current as certified in the contractor's Certificate of Current Cost or Pricing Data;
- b. A subcontractor, pursuant to the clause of this contract entitled "Subcontractor Cost or Pricing Data" or "Subcontractor Cost or Pricing Data-Price Adjustments" or any subcontract clause therein required, furnished cost or pricing data which were not accurate, complete and current as certified in the subcontractor's Certificate of Current Cost or Pricing Data;
- c. A subcontractor or prospective subcontractor furnished cost or pricing data which were required to be accurate, complete and current and to be submitted to support a subcontract cost estimate furnished by the contractor but which were not accurate, complete and current as of the date certified in the contractor's Certificate of Current Cost or Pricing Data; or
- d. The contractor or a subcontractor or prospective subcontractor furnished any data, not within a., b. or c. above, which were not accurate as submitted; the price or cost shall be reduced accordingly and the contract shall be modified in writing as may be necessary to reflect such reduction. However, any reduction in the contract price due to defective subcontract data of a prospective subcontractor when the subcontract was not subsequently awarded to such subcontractor, will be limited to the amount (plus applicable overhead and profit markup) by which the actual subcontract, or actual cost to the contractor if there was no subcontract, was

less than the prospective subcontract cost estimate submitted by the contractor: Provided, The actual subcontract price was not affected by defective cost or pricing data.

(NOTE: Since the contract is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with certain subcontracts, it is expected that the contractor may wish to include a clause in each such subcontract requiring the subcontractor to appropriately indemnify the contractor. It is also expected that any subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data required to be submitted by his lower tier subcontractors.)

**22. SUBCONTRACTOR COST OR PRICING DATA**  
(FPR 1-7.303-29 & 1-3.814-3)

a. The contractor shall require subcontractors hereunder to submit, actually or by specific identification in writing, cost or pricing data under the following circumstances:

- (1) Prior to the award of any subcontract the amount of which is expected to exceed \$100,000 when entered into;
- (2) Prior to the pricing of any subcontract modification which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed \$100,000; except where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

b. The contractor shall require subcontractors to certify, in substantially the same form as that used in the certificate by the prime contractor to the Government, that to the best of their knowledge and belief, the cost and pricing data submitted under a. above are accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract change or modification.

c. The contractor shall insert the substance of this clause including this subparagraph c. in each subcontract hereunder which exceeds \$100,000 when entered into except where the price thereof is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation. In each such excepted subcontract hereunder in excess of \$100,000, the contractor shall insert the substance of the following clause:

**SUBCONTRACTOR COST OR PRICING  
DATA-PRICE ADJUSTMENTS**

a. Subparagraphs b. and c. of this clause shall become operative only with respect to any modification made pursuant to one or more provisions of this contract which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed \$100,000. The requirements of this clause shall be limited to such contract modifications.

b. The contractor shall require subcontractors hereunder to submit, actually or by specific identification in writing, cost or pricing data under the following circumstances:

(1) Prior to award of any subcontract, the amount of which is expected to exceed \$100,000 when entered into;

(2) Prior to the pricing of any subcontract modification which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed \$100,000; except where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

c. The contractor shall require subcontractors to certify, in substantially the same form as that used in the certificate by the prime contractor to the Government, that to the best of their knowledge and belief the cost and pricing data submitted under b. above are accurate, complete, and current as of the date of agreement on the negotiated price of the

subcontract or subcontract change or modification.

d. The contractor shall insert the substance of this clause including this subparagraph d. in each subcontract hereunder which exceeds \$100,000 when entered into.

**23. COST ACCOUNTING STANDARDS-  
NONDEFENSE CONTRACT  
(FPR 1-7.303-55 & 1-3.1204-2(a))**

(If this contract is in excess of \$100,000 and the contract is not exempt pursuant to FPR 1-3.1203-2(a), (b), and (c), the following shall apply.)

a. Unless the Administrator of General Services has prescribed rules or regulations exempting the contractor or this contract from standards, rules, and regulations promulgated by the Cost Accounting Standards Board, the contractor, in connection with this contract, shall:

(1) Follow consistently the cost accounting practices established or disclosed as required by regulations of the Cost Accounting Standards Board and administered under the Administration of Cost Accounting Standards clause. If any change in disclosed practices is made for purposes of any contract or subcontract subject to those disclosure requirements, the change must be applied in a consistent manner to this contract.

(2) Comply with all cost accounting standards which the contractor is required to comply with by reason of concurrent performance of any contract or subcontract subject to the Cost Accounting Standards clause (4 CFR 331) and administered under the Administration of Cost Accounting Standards clause. The contractor also shall comply with any cost accounting standard which hereafter becomes applicable to such a contract or subcontract. Such compliance shall be required prospectively from the date of applicability to such contract or subcontract. Compliance shall continue until the contractor completes performance of work under this contract.



(3) Agree to an equitable adjustment (as provided in the Changes clause of this contract, if any) if the contract cost is affected by a change which, pursuant to (2) above, the contractor is required to make to his established cost accounting practices whether such practices are covered by a Disclosure Statement or not.

(4) Negotiate with the contracting officer to determine the terms and conditions under which a change to either a disclosed cost accounting practice or an established cost accounting practice, other than a change under a.(3) above, or a.(6) below, may be made. A change to a practice may be proposed by either the Government or the contractor: Provided, however, that no agreement may be made under this provision that will increase costs paid by the United States.

(5) Agree to an adjustment of the contract price or cost allowance, as appropriate, if it or a subcontractor fails to comply with the applicable Cost Accounting Standards or to follow any practice disclosed or established pursuant to subparagraph a.(1) or (2) above and such failure results in any increased costs paid by the United States. Such adjustment shall provide for recovery of the increased costs to the United States together with interest thereon computed at the rate determined by the Secretary of the Treasury pursuant to P.L. 92-41 (50 U.S.C. App. 1215(b)(2)), or 7 percent per annum, whichever is less, from time the payment by the United States was made to the time the adjustment is effected.

(6) Negotiate an equitable adjustment (as provided in the Changes clause of this contract, if any) when the parties agree to a change to either a disclosed cost accounting practice or an established cost accounting practice.

b. The contractor shall permit any authorized representatives of the head of the agency, of the Cost Accounting Standards Board, or of the Comptroller General of the United States to examine and make copies of any documents, papers, or records relating to compliance with the requirements of this clause until the expiration of 3 years after final

payment under this contract or such lesser time specified in the Federal Procurement Regulations (FPR) part 1-20.

c. Unless a subcontract or subcontractor is exempt under rules or regulations prescribed by the administrator of General Services, the contractor: (1) shall include the substance of this clause, including this subparagraph c., in all negotiated subcontracts under this contract with subcontractors that are currently performing a national defense contract or subcontract that contains the clause entitled Cost Accounting Standards and that are currently required to accept the clause in applicable national defense awards, and (2) shall include the substance of the Consistency of Cost Accounting Practices-Nondefense Contract clause set forth in § 1-3.1204-2(b) of the FPR in negotiated subcontracts under this contract with all other subcontractors. The contractor may elect to use the substance of the solicitation notice set forth in § 1-3.1203-2(b) of the FPR in his determination of applicability cost accounting standards to subcontracts.

d. The terms defined in § 331.20 of part 331 of title 4, Code of Federal Regulations, shall have the same meaning herein. As there defined, "negotiated subcontract" means "any subcontract except a firm fixed-price subcontract made by a contractor or subcontractor after receiving offers from at least two firms not associated with each other or such contractor or subcontractor, providing (1) the solicitation to all competing firms is identical, (2) price is the only consideration in selecting the subcontractor from among the competing firms solicited, and (3) the lowest offer received in compliance with the solicitation from among those solicited is accepted."

e. The administration of this clause by the Government shall be accomplished in conjunction with the administration of the contractor's national defense contracts and subcontracts subject to rules and regulations of the Cost Accounting Standards Board, pursuant to the Administration of Cost Accounting Standards clause. For the purpose of the Administration of Cost Accounting Standards clause contained in this contract, references to the Cost Accounting Standards

clause shall be deemed to include this Cost Accounting Standards-Nondefense Contract clause and reference to the Disclosure and Consistency of Cost Accounting Practices clause shall be deemed to include the Consistency of Costing Accounting Practices-Nondefense Contract clause.

**24. CONSISTENCY OF COST ACCOUNTING PRACTICES-NONDEFENSE CONTRACT (FPR 1-7.303-55 & 1-3.1204-2(b))**

(This clause shall apply if this contract is the first negotiated nondefense contract over \$500,000 received by a contractor business unit not performing a cost accounting standard contract or subcontract pursuant to FPR 1-3.1203-2(c)(3).)

a. Unless the Administrator of General Services has prescribed rules or regulations exempting the contractor or this contract from standards, rules, and regulations promulgated by the Cost Accounting Standards Board, the contractor, in connection with this contract, shall:

(1) Comply with the requirements of 4 CFR parts 401, Consistency in Estimating, Accumulating, and Reporting Costs, and 402, Consistency in Allocating Costs Incurred for the Same Purpose, in effect on the date of award of this contract and administered under the Administration of Cost Accounting Standards clause. Compliance shall continue until the contractor completes performance of work under this contract.

(2) Follow consistently the cost accounting practices established or disclosed as required by regulations of the Cost Accounting Standards Board and administered under the Administration of Cost Accounting Standards clause. If any change is made in established practices or in disclosed practices for purposes of any contract or subcontract subject to those disclosure requirements, the change must be applied in a consistent manner to this contract. A change to these practices may be proposed, however, by either the Government or the contractor and the contractor agrees to negotiate with the contracting officer the terms and

conditions under which a change may be made. After the terms and conditions under which the change is to be made have been agreed to, the change must be applied prospectively to this contract. No agreement may be made under this provision that will increase costs paid by the United States.

(3) Agree to an adjustment of the contract price or cost allowance, as appropriate, if it or a subcontractor fails to comply with the applicable Cost Accounting Standards or to follow any practice disclosed or established pursuant to subparagraph a.(2) above and such failure results in any increased costs paid by the United States. Such adjustment shall provide for recovery of the increased costs to the United States together with interest thereon computed at the rate determined by the Secretary of the Treasury pursuant to P.L. 92-41 (50 U.S.C. App. 1215(b)(2)), or 7 percent per annum, whichever is less from the time the payment by the United States was made to the time the adjustment is effected.

(4) Negotiate an equitable adjustment (as provided in the Changes clause of this contract, if any) when the parties agree to a change to either a disclosed cost accounting practice or an established cost accounting practice.

b. The contractor shall permit any authorized representatives of the head of the agency, of the Cost Accounting Standards Board, or of the Comptroller General of the United States to examine and make copies of any documents, papers, or records relating to compliance with the requirements of this clause until the expiration of 3 years after final payment under this contract or such lesser time specified in the Federal Procurement Regulations (FPR) part 1-20.

c. Unless a subcontract or subcontractor is exempt under rules or regulations prescribed by the Administrator of General Services, the contractor shall include the substance of this clause, including this subparagraph c., in all negotiated subcontracts under this contract, except that it shall include the substance of the Cost Accounting Standards-Nondefense Contract clause set forth in § 1-3.1204-2(a)

of the FPR in negotiated subcontracts under this contract with subcontractors that are currently performing a national defense contract or subcontract that contains the clause entitled Cost Accounting Standards and that are currently required to accept that clause in applicable negotiated national defense contracts. The contractor may elect to use the substance of the solicitation notice set forth in § 1-3.1203-2(b) of the FPR in his determination of applicability of cost accounting standards to subcontracts.

d. The terms defined in 4 CFR 331.20 and 332.20 shall have the same meanings herein. As there defined, "negotiated subcontract" means "any subcontract except a firm fixed-price subcontract made by a contractor or subcontractor after receiving offers from at least two firms not associated with each other or such contractor or subcontractor, providing (1) the solicitation to all competing firms is identical, (2) price is the only consideration in selecting the subcontractor from among the competing firms solicited, and (3) the lowest offer received in compliance with the solicitation from among those solicited is accepted."

e. The administration of this clause by the Government shall be accomplished in conjunction with the administration of the contractor's national defense contracts and subcontracts, if any, subject to rules and regulations of the Cost Accounting Standards Board, pursuant to the Administration of Cost Accounting Standards clause. For the purposes of the Administration of Cost Accounting Standards clause contained in this contract, references to the Disclosure and Consistency of Cost Accounting Practices clause shall be deemed to include this Consistency of Cost Accounting Practices-Nondefense Contract clauses and references to the Cost Accounting Standards clauses shall be deemed to include the Cost Accounting Standards-Nondefense Contract clause.

**25. ADMINISTRATION OF COST  
ACCOUNTING  
STANDARDS  
(FPR 1-7.303-55 & 1-3.1204-2(c))**

(If this contract is in excess of \$100,000 and the

contract is not exempt pursuant to FPR 1-3.1203-2(a), (b), and (c), the following shall apply.)

For the purpose of administering Cost Accounting Standards requirements under this contract, the contractor shall:

a. Submit to the cognizant contracting officer a description of the accounting change and the general dollar magnitude of the change to reflect the sum of all increases and the sum of all decreases for all contracts containing the Cost Accounting Standards clause or the Disclosure and Consistency of Cost Accounting Practices clause:

(1) For any change in cost accounting practices required to comply with a new cost accounting standard in accordance with subparagraphs a.(3) and (4)(A) of the Cost Accounting Standards clause within 60 days (or such other date as may be mutually agreed to) after award of a contract requiring such change;

(2) For any change to cost accounting practices proposed in accordance with subparagraph a.(4)(B) or a.(4)(C) of the Cost Accounting Standards clause or with subparagraph a.(3) or a.(5) of the Disclosure and Consistency of Cost Accounting Practices clause not less than 60 days (or such other date as may be mutually agreed to) prior to the effective date of the proposed change; or

(3) For any failure to comply with an applicable Cost Accounting Standard or to follow a disclosed practice as contemplated by subparagraph a.(5) of the Cost Accounting Standards clause or with subparagraph a.(4) of the Disclosure and Consistency of Cost Accounting Practices clause within 60 days (or such other date as may be mutually agreed to) after the date of agreement of such noncompliance by the contractor.

b. Submit a cost impact proposal in the form and manner specified by the cognizant contracting officer within 60 days (or such other date as may be mutually agreed to) after the date of determination of the adequacy and

compliance of a change submitted pursuant to a.(1), (2), or (3) above.

c. Agree to appropriate contract and subcontract amendments to reflect adjustments established in accordance with subparagraphs a.(4) and (5) of the Cost Accounting Standards clause or with subparagraphs a.(3), (4), or (5) of the Disclosure and Consistency of Cost Accounting Practices clause.

d. When the subcontract is subject to either the Cost Accounting Standards clause or the Disclosure and Consistency of Cost Accounting Practices clause so state in the body of the subcontract and/or in the letter of award. Self-deleting clauses shall not be used.

e. Include the substance of this clause in all negotiated subcontracts containing either the Cost Accounting Standards clause or the Disclosure and Consistency of Cost Accounting Practices clause. In addition, include a provision in these subcontracts which will require such subcontractors, within 30 days after receipt of award (or such other date as may be mutually agreed to) to submit the following information to the Contract Administration Office cognizant of the subcontractor's facility.

- (1) Subcontractor's name and subcontract number.
- (2) Dollar amount and date of award.
- (3) Name of contractor making the award.
- (4) A statement as to whether the subcontractor has made or proposes to make any changes to accounting practices that affect prime contracts or subcontracts containing the Cost Accounting Standards clause or Disclosure and Consistency of Cost Accounting Practices clause unless such changes have already been reported. If award of the subcontract results in making a cost accounting standard(s) effective for the first time, this shall also be reported.

f. For negotiated subcontracts containing the Cost Accounting Standards clause,

require the subcontractor to comply with all standards in effect on the date of final agreement on price as shown on the subcontractor's signed Certificate of Current Cost or Pricing Data or date of award, whichever is earlier.

g. In the event an adjustment is required to be made to any subcontract hereunder, notify the contracting officer in writing of such adjustment and agree to an adjustment in the price or estimated cost and fee of this contract, as appropriate, based upon the adjustment established under the subcontract. Such notice shall be given within 30 days after receipt of the proposed subcontract adjustment, and shall include a proposal for adjustment to such higher tier subcontract or prime contract as appropriate.

h. When either the Cost Accounting Standards clause or the Disclosure and Consistency of Cost Accounting Practices clause and this clause are included in subcontracts, the term "contracting officer" shall be suitably altered to identify the purchaser.

## 26. OFFICIALS NOT TO BENEFIT (FPR 1-7.302-18 & 1-7.102-17)

No member of or delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

## 27. COVENANT AGAINST CONTINGENT FEES (FPR 1-7.302-19 & 1-1.503)

The contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employee or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such

commission, percentage, brokerage, or contingent fee.

**28. CONVICT LABOR**  
(FPR 1-7.302-14 & 1-12.204)

In connection with the performance of work under this contract, the contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965 (18 U.S.C. 4082(c)(2)) Executive Order No. 11755, December 29, 1973.

**29. EQUAL OPPORTUNITY**  
(FPR 1-7.302-16 & 1-12.803-2)

(The following clause is applicable unless this contract is exempt under the rules, regulations, and relevant orders of the Secretary of Labor (41 CFR, ch. 60).)

During the performance of this contract, the contractor agrees as follows:

a. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

b. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

c. The contractor will send to each labor union or representative of workers, with which

it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the contracting officer, advising the said labor union or workers' representative of the contractor's commitments under section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

d. The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

e. The contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the contracting officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

f. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the such rules, regulations, or orders, this contract may be canceled, terminated, or suspended, in whole or in part, and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

g. The contractor will include the provisions of subparagraphs a. through g. in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including

sanctions for noncompliance; Provided, however, That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Note: Equal Employment Opportunity provisions are directed by Executive Order No. 11246 of September 24, 1965 (3 CFR page 167, 1965 Supplement), as amended by Executive Order No. 11375 of October 13, 1967 (3 CFR page 320, 1967 Compilation), and Executive Order No. 12086 of October 5, 1978."

30. DISABLED VETERANS AND  
VETERANS OF THE VIETNAM  
ERA  
(FPR 1-7.302-30 & Temporary  
Regulation 39)

a. The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based upon their disability or veteran's status in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay, or other forms of compensation, and selection for training, including apprenticeship.

b. The contractor agrees that all suitable employment openings of the contractor which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract and including those occurring at an establishment of the contractor other than the one wherein the contract is being performed, but excluding those of independently operated corporate affiliates, shall be listed at an appropriate local office of the State employment service system wherein the opening occurs. The contractor

further agrees to provide such reports to such local office regarding employment openings and hires as may be required.

State and local Government agencies holding Federal contracts of \$10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service, but are not required to provide those reports set forth in subparagraphs d. and e.

c. Listing of employment openings with the employment service system pursuant to this clause shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and nonveterans. The listing of employment openings does not require the hiring of any particular job applicant or from any particular group of job applicants, and nothing herein is intended to relieve the contractor from any requirements in Executive orders or regulations regarding nondiscrimination in employment.

d. The reports required by subparagraph b. of this clause shall include, but not be limited to, periodic reports which shall be filed at least quarterly with the appropriate local office, or where the contractor has more than one hiring location in a State, with the central office of that State employment service. Such reports shall indicate for each hiring location: (1) the number of individuals hired during the reporting period, (2) the number of nondisabled veterans of the Vietnam era hired, (3) the number of disabled veterans of the Vietnam era hired, and (4) the total number of disabled veterans hired. The reports should include covered veterans hired for on-the-job training under 38 U.S.C. 1787. The contractor shall submit a report within 30 days after the end of each reporting period wherein any performance is made on this contract identifying data for each hiring location. The contractor shall maintain at each hiring location copies of the reports submitted until the expiration of 1 year after final payment under the contract, during which time these reports and related documentation shall be made available, upon request, for examination by any authorized representatives of the contracting officer or of

the Secretary of Labor. Documentation would include personnel records respecting job openings, recruitment, and placement.

e. Whenever the contractor becomes contractually bound to the listing provisions of this clause, it shall advise the employment service system in each State where it has establishments of the name and location of each hiring location in the State. As long as the contractor is contractually bound to these provisions and has so advised the State system, there is no need to advise the State system of subsequent contracts. The contractor may advise the State system when it is no longer bound by this contract clause.

f. This clause does not apply to the listing of employment openings which occur and are filled outside the 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

g. The provisions of subparagraphs b., c., d., and e. of this clause do not apply to openings which the contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement. This exclusion does not apply to a particular opening once an employer decides to consider applicants outside of his own organization or employer-union arrangement for that opening.

h. As used in this clause:

(1) "All suitable employment openings" includes, but is not limited to, openings which occur in the following job categories: production and nonproduction; plant and office; laborers and mechanics; supervisory and nonsupervisory; technical; and executive, administrative, and professional openings that are compensated on a salary basis of less than \$25,000 per year. This term includes full-time employment, temporary employment of more than 3 days' duration, and part-time employment. It does not include openings which the contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement, nor openings in an educational institution which are restricted to students of that institution. Under the

most compelling circumstances, an employment opening may not be suitable for listing, including such situations where the needs of the Government cannot reasonably be otherwise supplied, where listing would be contrary to national security, or where the requirement of listing would otherwise not be for the best interest of the Government.

(2) "Appropriate office of the State employment service system" means the local office of the Federal/State national system of public employment offices with assigned responsibility for serving the area where the employment opening is to be filled, including the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

(3) "Openings which the contractor proposes to fill from within his own organization" means employment openings for which no consideration will be given to persons outside the contractor's organization (including any affiliates, subsidiaries, and the parent companies) and includes any openings which the contractor proposes to fill from regularly established "recall" lists.

(4) "Openings which the contractor proposes to fill pursuant to a customary and traditional employer-union hiring arrangement" means employment openings which the contractor proposes to fill from union halls, which is part of the customary and traditional hiring relationship which exists between the contractor and representatives of his employees.

i. The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

j. In the event of the contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

k. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a

form to be prescribed by the director, provided by or through the contracting officer. Such notice shall State the contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era for employment, and the rights of applicants and employees.

l. The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the contractor is bound by terms of the Vietnam Era Veteran's Readjustment Assistance act and is committed to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era.

m. The contractor will include the provisions of this clause in every subcontract or purchase order of \$10,000 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to the act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director of Federal contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

**31. EMPLOYMENT OF THE HANDI-  
CAPPED**  
(FPR 1-7.302-33 & Temporary  
Reg 38)

a. The contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

b. The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Rehabilitation Act of 1973, as amended.

c. In the event of the contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

d. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, Office of Federal Contract Compliance Programs, Department of Labor, provided by or through the contracting officer. Such notices shall state the contractor's obligations under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment, and the rights of applicants and employees.

e. The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the contractor is bound by the terms of section 503 of the Act and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.

f. The contractor will include the provisions of this clause in every subcontract or purchase order of \$2,500 or more unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 503 of the Act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director, Office of Federal Contract Compliance Programs, may direct to enforce such provisions, including action for noncompliance.



**32. UTILIZATION OF LABOR SURPLUS  
AREA CONCERNS**  
(FPR 1-7.302-26 & 1-1.805-3(a))

(The following clause is applicable if this contract exceeds \$10,000 and is for services which are not personal in nature.)

a. It is the policy of the Government to award contracts to labor surplus area concerns that agree to perform substantially in labor surplus areas, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The contractor agrees to use his best efforts to place his subcontracts in accordance with this policy.

b. In complying with subparagraph a. of this clause and with subparagraph b. of the clause of this contract entitled "Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals," the contractor in placing his subcontracts shall observe the following order of preference: (1) small business concerns that are labor surplus area concerns, (2) other small business concerns, and (3) other labor surplus area concerns.

c. (1) The term "labor surplus area" means a geographical area identified by the Department of Labor as an area of concentrated unemployment or underemployment or an area of labor surplus.

(2) The term "labor surplus area concern" means a concern that together with its first-tier subcontractors will perform substantially in labor surplus areas.

(3) The term "perform substantially in a labor surplus area" means that the costs incurred on account of manufacturing, production, or appropriate services in labor surplus areas exceed 50 percent of the contract price.

**33. LABOR SURPLUS AREA SUBCON-  
TRACTING PROGRAM**  
(FPR 1-7.302-26 & 1-1.805-3(b))

(The following clause is applicable if this contract exceeds \$500,000.)

a. The contractor agrees to establish and conduct a program which will encourage labor surplus area concerns to compete for subcontracts within their capabilities. In this connection, the contractor shall—

(1) Designate a liaison officer who will (i) maintain liaison with duly authorized representatives of the Government on labor surplus area matters, (ii) supervise compliance with the Utilization of Concerns in Labor Surplus Areas clause, and (iii) administer the contractor's "Labor Surplus Area Subcontracting Program";

(2) Provide adequate and timely consideration of the potentialities of labor surplus area concerns in all "make-or-buy" decisions;

(3) Assure that labor surplus area concerns will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of labor surplus area concerns;

(4) Maintain records showing the procedures which have been adopted to comply with the policies set forth in this clause and report subcontract awards (see 41 CFR 1-16.804-5 regarding use of Optional Form 61). Records maintained pursuant to this clause will be kept available for review by the Government until the expiration of 1 year after the award of this contract, or for such longer period as may be required by any other clause of this contract or by applicable law or regulations; and

(5) Include the Utilization of Concerns in Labor Surplus Areas clause in subcontracts which offer substantial labor surplus area subcontracting opportunities.

b. (1) The term "labor surplus area" means a geographical area identified by the Department of Labor as an area of concentrated unemployment or underemployment or an area of labor surplus.

(2) The term "concern located in a labor surplus area" means a labor surplus area concern.

(3) The term "labor surplus area concern" means a concern that, together with its first-tier subcontractors, will perform substantially in labor surplus areas.

(4) The term "perform substantially in labor surplus areas" means that the costs incurred on account of manufacturing, production, or appropriate services in labor surplus areas exceed 50 percent of the contract price.

c. The contractor further agrees to insert, in any subcontract hereunder which may exceed \$500,000 and which contains the Utilization of Concerns in Labor Surplus Areas clause, provisions which shall conform substantially to the language of this clause, including this subparagraph c., and to notify the contracting officer of the names of such subcontractors.

#### 34. UTILIZATION OF WOMEN-OWNED BUSINESS CONCERNS (FPR Temporary Regulation 54)

(The following clause is applicable if the contract is over \$10,000 except (1) contracts which, including all subcontracts thereunder, are to be performed entirely outside the United States, its possessions, Puerto Rico, and the Trust Territory of the Pacific Islands; and (2) contracts for services which are personal in nature.)

a. It is the policy of the United States Government that women-owned businesses shall have the maximum practicable opportunity to participate in the performance of contracts awarded by any Federal agency.

b. The contractor agrees to use his best efforts to carry out this policy in the award of subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, a "woman-owned business" concern means a business that is at least 51 percent owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management. "Women" mean all women business owners.

#### 35. WOMEN-OWNED BUSINESS CONCERNS SUBCONTRACTING PROGRAM (FPR Temporary Regulation 54)

(The following clause is applicable if this contract exceeds \$500,000.)

a. The contractor agrees to establish and conduct a program which will enable women-owned business concerns to be considered fairly as subcontractors and suppliers under this contract. In this connection, the contractor shall:

(1) Designate a liaison officer who will administer the contractor's "Women-Owned Business Concerns Program."

(2) Provide adequate and timely consideration of the potentialities of known women-owned business concerns in all "make-or-buy" decisions.

(3) Develop a list of qualified bidders that are women-owned businesses and assure that known women-owned business concerns have an equitable opportunity to compete for subcontracts, particularly by making information on forthcoming opportunities available, by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of women-owned business concerns.

(4) Maintain records showing (i) procedures which have been adopted to comply with the policies set forth in this clause, including the establishment of a

source list of women-owned business concerns; (ii) awards to women-owned businesses on the source list by minority and nonminority women-owned business concerns; and (iii) specific efforts to identify and award contracts to women-owned business concerns.

(5) Include the "Utilization of Women-Owned Business Concerns" clause in subcontracts which offer substantial subcontracting opportunities.

(6) Cooperate in any studies and surveys of the contractor's women-owned business concerns procedures and practices that the contracting officer may from time to time conduct.

(7) Submit periodic reports of subcontracting to women-owned business concerns with respect to the records referred to in subparagraph (4) above, in such form and manner and at such time (not more often than quarterly) as the contracting officer may prescribe.

b. The contractor further agrees to insert, in any subcontract hereunder which may exceed \$500,000 or \$1,000,000 in the case of contracts for the construction of any public facility and which offers substantial subcontracting possibilities, provisions which shall conform substantially to the language of this clause, including this subparagraph b., and to notify the contracting officer of the names of such subcontractors.

c. The contractor further agrees to require written certification by its subcontractors that they are bona fide women-owned and controlled business concerns in accordance with the definition of a women-owned business concern as set forth in the Utilization Clause 1(b) above at the time of submission of bids or proposals.

**36. UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL BUSINESS CONCERNS OWNED AND CONTROLLED BY SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS**  
(FPR Temporary Regulation 50, Supplement 2)

(The following clause is applicable if this contract exceeds \$10,000 except (1) contracts for services which are personal in nature and (2) contracts which will be performed entirely (including all subcontracts) outside any State, territory, or possession of the United States, the District of Columbia, or the Commonwealth of Puerto Rico.)

a. It is the policy of the United States that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunity to participate in the performance of contracts let by any Federal agency.

b. The contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with the official performance of this contract. The contractor further agrees to cooperate in any studies or surveys as may be conducted by the Small Business Administration or the contracting agency which may be necessary to determine the extent of the contractor's compliance with this clause.

c. (1) As used in this contract, the term "small business concern" shall mean a small business as defined pursuant to section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

(2) The term "small business concern owned and controlled by socially and

economically disadvantaged individuals" shall mean a small business concern:

(a) which is at least 51 per centum owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly owned business, at least 51 per centum of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(b) whose management and daily business operations are controlled by one or more of such individuals.

The contractor shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, and other minorities, or any other individual found to be disadvantaged by the Small Business Administration pursuant to section 8a. of the Small Business Act.

d. Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

**37. SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS SUBCONTRACTING PLAN (Negotiated) (FPR Temporary Regulation 50, Supplement 2)**

a. This provision does not apply to small business concerns.

b. The term "subcontract" means any agreement (other than one involving an employer-employee relationship) entered into by a Federal Government prime contractor or subcontractor calling for supplies or services required for the performance of the original contract or subcontract.

c. The offeror acknowledges that it is aware of the subcontracting plan requirements in this provision; and if it is the apparent successful offeror, and if the contract offers subcontracting possibilities, agrees to negotiate a plan which includes:

(1) Percentage goals (expressed in terms of percentage of total planned subcontracting dollars) for the utilization as subcontractors of small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals (for the purposes of the subcontracting plan, the contractor may include all purchases which contribute to the performance of the contract, including a proportionate share of products, services, etc., whose costs are normally allocated as indirect or overhead costs).

As part of its establishment of percentage goals, the apparent successful offeror shall also include in its subcontracting plan:

(a) A statement of: (1) total dollars planned to be subcontracted, (2) total dollars planned to be subcontracted to small business, and (3) total dollars planned to be subcontracted to disadvantaged business.

(b) A description of the principal product and service areas to be subcontracted and an identification of those areas where it is planned to use (1) small business subcontractors and (2) small disadvantaged business subcontractors.

(c) A statement of the method used in developing proposed subcontracting goals for (1) small business, (2) small disadvantaged business concerns (e.g., did the offeror use for subcontract solicitation purposes company source lists, the small business and disadvantaged small business source identification system provided by the Small Business Administration's Procurement Automated Source System, the National Minority Purchasing Council Vendor Information Service, Office of Minority Business Data Center in the Department of Commerce, and the facilities of local small business and minority associations?)

(d) If the offeror includes indirect and overhead costs as an element in establishing the goals in the

subcontracting plan, the method used in determining the proportionate share of indirect and overhead costs incurred with (1) small business and (2) small disadvantaged business subcontractors shall be explained.

(2) The name of an individual within the employ of the offeror who will administer the subcontracting program of the offeror and a description of the duties of such individual;

(3) A description of the efforts the offeror will take to assure that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals will have an equitable opportunity to compete for subcontracts;

(4) Assurances that the offeror will include the clause entitled Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals in all subcontracts which offer further subcontracting opportunities and to require all subcontractors (except small business concerns) which receive subcontracts in excess of \$500,000, or in the case of a contract for the construction of any public facility, \$1,000,000 to adopt and comply with a plan similar to the plan agreed to by the offeror. Such assurances shall describe the offeror's procedures for the review, approval, and monitoring for compliance with such plans;

(5) Assurances that the offeror will submit such periodic reports and cooperate in any studies or surveys as may be required by the contracting agency or the Small Business Administration in order to determine the extent of compliance by the offeror with the subcontracting plan; and

(6) A recitation of the types of records the offeror will maintain to demonstrate procedures which have been adopted to comply with the requirements and goals set forth in the plan, including the establishment of source lists of small business concerns and small business concerns owned and controlled by socially

and economically disadvantaged individuals; and efforts to identify and award subcontracts to such small business concerns. The records shall include at least the following (these records may be maintained on a plantwide or companywide basis unless otherwise indicated):

(a) Small and disadvantaged business source lists, guides, and other data identifying small and small disadvantaged business vendors.

(b) Organizations contacted for small and disadvantaged business sources.

(c) On a contract-by-contract basis, records on all subcontract solicitations over \$100,000, indicating on each solicitation (1) whether small business was solicited, and if not why not, (2) whether small disadvantaged business was solicited, and if not why not, and (3) reasons for the failure of solicited small business or small disadvantaged business to receive the subcontract award.

(d) Records to support other outreach efforts:

- Contacts with minority and small business trade associations.
- Contacts with business development organizations
- Attendance at small and minority business procurement conferences and trade fairs

(e) Records to support internal activities to guide and encourage buyers:

- Workshops, seminars, training programs, etc.
- Monitoring activities to evaluate compliance

(f) On a contract-by-contract basis, records to support award data submitted to the Government to include name and address of subcontractor.

d. The offeror understands that:

(1) No contract will be awarded unless and until an acceptable plan is negotiated with the contracting officer which plan will be incorporated into the contract as a material part thereof.

(2) An acceptable plan must, in the determination of the contracting officer, provide the maximum practicable opportunity for small business concerns and small business concerns owned and controlled by socially and economically disadvantaged persons to participate in the performance of the contract.

(3) If a subcontracting plan acceptable to the contracting officer is not negotiated within the time limits prescribed by the contracting activity and such failure arises out of causes within the control and with the fault or negligence of the offeror, the offeror shall be ineligible for an award. The contracting officer shall notify the contractor in writing of his reasons for determining a subcontracting plan to be unacceptable. Such notice shall be given early enough in the negotiation process to allow the contractor to modify the plan within the time limits prescribed.

(4) Prior compliance of the offeror with other such subcontracting plans under previous contracts will be considered by the contracting officer in determining the responsibility of the offeror for award of the contract.

(5) It is the offeror's responsibility to develop a satisfactory subcontracting plan with respect to both small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals and that each such aspect of the offeror's plan will be judged independently of the other.

(6) The offeror will submit, as required by the contracting officer, subcontracting reports in accordance with the instructions thereon, and as further directed by the contracting officer. Subcontractors will also submit these reports to the Government's contracting officer or as otherwise directed, with a copy to the

prime contractor's designated small and disadvantaged business liaison.

e. The failure of any contractor or subcontractor to comply in good faith with (1) the clause entitled Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals; or (2) an approved plan required by this Small Business and Small Disadvantaged Business Subcontracting Plan (Negotiated) provision, will be a material breach of such contract or subcontract.

f. Commercial products.—If a commercial product (defined below) is offered, the required subcontracting plan may relate to the company's production generally (both for commercial and noncommercial products) rather than solely to the item being procured under the Government contract. In such cases, the contractor shall be required to submit one companywide annual plan to be reviewed for approval by the first agency with which it enters into a prime contract (which requires a subcontracting plan) during the fiscal year, or by another agency satisfactory to the contracting officer. The approved plan will remain in effect for the company's entire fiscal year for all of the company's or division's commercial products.

The term "commercial products" means products in regular production sold in substantial quantities to the general public and/or industry at established market or catalog prices. A product which, in the opinion of the contracting officer, differs only insignificantly from the contractor's commercial product may be regarded for the purpose of this clause as a commercial product.

**38. INCENTIVE SUBCONTRACTING  
PROGRAM FOR SMALL BUSI-  
NESS AND SMALL DISAD-  
VANTAGED BUSINESS  
(NEGOTIATED)  
(FPR Temporary Regulation 50,  
Supplement 2)**

a. The contractor has established, in its subcontracting plan, the following goals for

awards to small business and small disadvantaged business concerns:

(1) \_\_\_\_\_<sup>1</sup> percent of the total planned subcontract amount of \$\_\_\_\_\_<sup>1</sup> to small business concerns and

(2) \_\_\_\_\_<sup>2</sup> percent of the total planned subcontract amount of \$\_\_\_\_\_<sup>2</sup> to small business concerns owned and controlled by socially and economically disadvantaged individuals.

b. To the extent that the contractor exceeds such subcontract goals in the performance of this contract, it will receive \_\_\_\_\_<sup>3</sup> percent (not to exceed 10 percent) of the dollar amount of such excesses, unless the contracting officer determines that such excess was not due to efforts by the contractor, i.e., subcontractor costs in excess of those contractually agreed upon or where the actual subcontract amount exceeds that estimated in the subcontract plan; or planned subcontracts which were not disclosed in the subcontract plan during contract negotiation.

c. If the contract is a cost plus fixed-fee type, the total of the fixed fee and the incentive payments made pursuant to this clause is subject to the limitations set forth in FPR 1-3.405-5(c)(2) and DAR 3-405.6(c)(2).

### 39. CLEAN AIR AND WATER (FPR 1-7.302-34 & 1-1.2302-2)

(Applicable only if the contract exceeds \$100,000, or the contracting officer has determined that orders under an indefinite quantity contract in any one year will exceed \$100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or the contract is not otherwise exempt.)

a. The contractor agrees as follows:

<sup>1</sup> Identified elsewhere in the contract.

<sup>2</sup> Identified elsewhere in the contract.

<sup>3</sup> Exact percentage to be inserted into the contract document.

(1) To comply with all the requirements of section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Public Law 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251, et seq., as amended by Public Law 92-500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use his best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed.

(4) To insert the substance of the provisions of this clause in any nonexempt subcontract, including this subparagraph a.(4).

b. The terms used in this clause have the following meanings:

(1) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Public Law 91-604).

(2) The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Public Law 92-500).

(3) The term "clean air standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order No. 11738, an applicable implementation

plan as described in section 110(d) of the Clean Air Act (42 U.S.C. 1857c-5(d)), an approved implementation procedure or plan under section 111(c) or section 111(d), respectively, of the Air Act (42 U.S.C. 1857c-6(c) or (d)), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(4) The term "clean water standards" means any enforceable limitation, control, condition, prohibition, standard, or other requirement which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a state under an approved program as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. 1317).

(5) The term "compliance" means compliance with clean air or water standards. Compliance shall also mean compliance with schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency, or an air or water pollution control agency in accordance with the requirements of the Air Act or Water Act and regulations issued pursuant thereto.

(6) The term "facility" means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a contractor or subcontractor, to be utilized in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location or site shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.



PART III

Section J

List of Documents

## J-1. CONTRACT DOCUMENTS

### Part I - The Contract Schedule

- Standard Form 26 (July 1966) (Section A)
- Table of Contents (Section A)
- Supplies or Services and Prices (Section B)
- Description of Requirement (Section C)
- Contract Terms and Conditions (Sections E through H)

### Part II - General Contract Provisions

- General Provisions (Section I)

## J-2. SOLICITATION DOCUMENTS

- Representations/Certifications, and Other Statements of Offerors (Section K)
- Certificate of Independent Price Determination (Section K)
- Solicitation Instructions, Conditions, and Notices to Offerors (Section L)
- Evaluation Factors (Technical Proposal) (Section M)

## J-3. ATTACHMENTS

- Appendix 1 (Definitions)
- Appendix 2 (Sample of Lake Powell Data)
- Figure 1 (Colorado River Basin/USGS Gages)
- Figure 2 (Lake Powell/Bureau Sampling Stations)
- Optional Form 60 (Contract Pricing Proposal)

PART IV

Section K

Representations, Certifications, and Other  
Statements of Offerors

(9/80)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
WATER AND POWER RESOURCES SERVICE

REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS

To be completed, signed, and returned with proposal. Penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

This offeror represents: (Check appropriate boxes)

1. Small Business

He ☐ is, ☐ is not, a small business concern. (A small business concern for the purpose of Government procurement is a concern, including its affiliates, which is independently owned and operated, is not dominant in the field of operations in which it is bidding on Government contracts, and can further qualify under the criteria concerning number of employees, average annual receipts, or other criteria as prescribed by the Small Business Administration. For additional information, see governing regulations of the Small Business Administration (13 CFR, Part 121)).

2. Minority Business Enterprise

He ☐ is, ☐ is not, a minority business enterprise. A minority business enterprise is defined as a "business, at least 50 percent of which is owned by minority group members or, in case of publicly owned businesses, at least 51 percent of the stock of which is owned by minority group members." For the purpose of this definition, minority group members are Negroes, Spanish-speaking American persons, American-Orientals, American-Indians, American-Eskimos, and American-Aleuts.

3. Contingent Fee

a. He ☐ has, ☐ has not, employed or retained any company or person (other than a full-time bona fide employee working solely for him) to solicit or secure this contract, and

b. that He ☐ has, ☐ has not, paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for him) any fee, commission, percentage, or brokerage fee, contingent upon or resulting from the award of this contract; and

Agrees to furnish information relating to a. and b. above as requested by the Contracting Officer.

(For interpretation of the representation, including the term "bona fide employee," see Code of Federal Regulations, Title 41, Subpart 1-1.5.)

4. Type of Business Organization

The offeror, by checking the applicable box, represents that it operates as ☐ an individual, ☐ a partnership, ☐ a nonprofit organization, ☐ a joint venture, or ☐ a corporation incorporated under the laws of the State of \_\_\_\_\_.

5. Parent Company and Employer Identification Number

Each offeror shall furnish the following information by filling in the appropriate blocks:

a. Is the offeror owned or controlled by a parent company as described below? ☐ Yes ☐ No. [For the purpose of this offer, a parent company is defined as one which either owns or controls the activities and basic business policies of the offeror. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting rights in that company. To control another company, such ownership is not required; if another company is able to formulate, determine, or veto basic business policy decisions of the offeror, such other company is considered the parent company of the offeror. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.]

b. If the answer to a. above is "Yes," offeror shall insert in the space below the name and main office address of the parent company.

NAME OF PARENT COMPANY	MAIN OFFICE ADDRESS (No., Street, City, State, and ZIP Code)
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c. Offeror shall insert in the applicable space below, if he has no parent company, his own E.I. No. (Employer's Identification Number) (Federal Social Security Number used on Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941); or, if he has a parent company, the E.I. No. of his parent company.

EMPLOYER IDENTIFICATION NUMBER OF	PARENT COMPANY	OFFEROR
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6. Equal Opportunity

a. He ☐ has, ☐ has not, participated in a previous contract or subcontract subject to the Equal Opportunity clause in the General Provisions of the solicitation identified above, the clause originally contained in section 301 of Executive Order No. 10925, or the clause contained in section 201 of Executive Order No. 11114; that he ☐ has, ☐ has not, filed all required compliance reports; and that representations indicating submission of required compliance reports signed by proposed subcontractors, will be obtained prior to subcontract awards.

b. The offeror represents that he ☐ has developed and has on file, ☐ has not developed and does not have on file, at each establishment, affirmative action programs as required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or he ☐ has not previously had contracts subject to the written affirmative action program requirement of the rules and regulations of the Secretary of Labor. (The above representation shall be completed by each offeror whose offer is \$50,000 or more and who has 50 or more employees.)

7. Clean Air and Water Certification

[Applicable if the contract exceeds \$100,000, or the contracting officer has determined that orders under an indefinite quantity contract in any year will exceed \$100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA (Environmental Protection Agency), or is not otherwise exempt.]

The offeror certifies as follows:

a. Any facility to be utilized in the performance of this proposed contract

☐ has

☐ has not

been listed on the EPA's List of Violating Facilities.

b. He will promptly notify the contracting officer, prior to award, of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that any facility which he proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities.

c. He will include substantially this certification, including this paragraph c., in every nonexempt subcontract.

8. Woman-owned Business

Concern is ☐ is not ☐ a woman-owned business.

A woman-owned business is a business which is, at least, 51 percent owned, controlled, and operated by a woman or women. Controlled is defined as exercising the power to make policy decisions. Operated is defined as actively involved in the day-to-day management.

For the purposes of this definition, businesses which are publicly owned, joint stock associations, and business trusts are exempted. Exempted businesses may voluntarily represent that they are, or are not, woman-owned if this information is available.

9. Percent of Foreign Content

The offeror will represent (as an estimate), immediately after the award of a contract, the percent of the foreign content of the item or service being procured expressed as a percent of the contract award price (accuracy within plus or minus 5 percent is acceptable).

10. Identification

Each offeror is required to fill in the information set forth below:

Duns Identification No. \_\_\_\_\_. This number is assigned by Dun and Bradstreet, Inc., and it is contained in that company's DUNS (Data Universal Numbering System). If the number is not known, it can be obtained from the local Dun and Bradstreet office. If no number has been assigned by Dun and Bradstreet, insert the word "none."

11. Place of Performance

a. The offeror or quoter ☐ intends, ☐ does not intend (check applicable block) to perform any part of the work required under any contract that might result from this solicitation at one or more plants or facilities located at a different address from the address of the offeror or quoter as indicated in this proposal or quotation.

b. If the offeror or quoter checks "intends" in paragraph a. above, it shall provide the following information:

Place of Performance  
(Street Address, City,  
County, State, Zip Code)

Name and Address of Owner and Operator  
of the Plant or Facility if Other Than  
Offeror or Quoter

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CERTIFICATE OF INDEPENDENT PRICE DETERMINATION

(a) By submission of this bid or proposal, each bidder or offeror certifies, and in the case of a joint bid or proposal each party thereto certifies as to its own organization, that in connection with this procurement:

(1) The prices in this bid or proposal have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or offeror or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid or proposal have not been knowingly disclosed by the bidder or offeror and will not knowingly be disclosed by the bidder or offeror prior to opening, in the case of a bid, or prior to award, in the case of a proposal, directly or indirectly to any other bidder or offeror or to any competitor; and

(3) No attempt has been made or will be made by the bidder or offeror to induce any other person or firm to submit or not to submit a bid or proposal for the purpose of restricting competition.

(b) Each person signing this bid or proposal certifies that:

(1) He is the person in the bidder's or offeror's organization responsible within that organization for the decision as to the prices being bid or offered herein and that he has not participated, and will not participate, in any action contrary to (a)(3) above; or

(2) (i) He is not the person in the bidder's or offeror's organization responsible within that organization for the decision as to the prices being bid or offered herein but that he has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (a)(1) through (a)(3) above, and as their agent does hereby so certify; and (ii) he has not participated and will not participate, in any action contrary to (a)(1) through (a)(3) above.

(c) This certification is not applicable to a foreign bidder or offeror submitting a bid or proposal for a contract which requires performance or delivery outside the United States, its possessions, and Puerto Rico.



(d) A bid or proposal will not be considered for award where (a)(1), (a)(3), or (b) above has been deleted or modified. Where (a)(2) above has been deleted or modified, the bid or proposal will not be considered for award unless the bidder or offeror furnishes with the bid or proposal a signed statement which sets forth in detail the circumstances of the disclosure and the head of the agency, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

PART IV

Section L

Solicitation Instructions and Notice  
to Offerors

## L-1. NOTICE OF SMALL BUSINESS SET-ASIDE

a. Restriction. - Proposals for services under this solicitation are solicited from small business concerns only and contract will be awarded only to one or more small business concerns. This action is based on a determination by the contracting officer, alone or in conjunction with a representative of the Small Business Administration, that it is in the interest of maintaining or mobilizing the Nation's full productive capacity, in the interest of war or national defense programs, or in the interest of assuring that a fair proportion of Government procurement is placed with small business concerns. Proposals received from firms which are not small business concerns shall be considered nonresponsive.

b. Definitions. - A "small business concern" is a concern, including its affiliates, which (1) is independently owned and operated, (2) is not dominant in the field of operation in which it is bidding on Government contracts, and (3) its number of employees does not exceed 500 persons. (For additional information, see Government Regulations of the Small Business Administration.)

## L-2. GENERAL

Your firm is invited to submit technical and cost proposals for the performance of services in accordance with this solicitation. Specific information for evaluation shall be submitted in accordance with section M. Proposals should be submitted, in triplicate, to the attention of Richard Grotzke, D-810, or hand-carried to the Denver Federal Center, building 67, room 674. The technical proposal and cost proposal should be bound separately and should be submitted as one complete package. The package should clearly indicate this solicitation number, title, and the time, zone, and date, and should be transmitted by certified mail or some other secured method of transportation.

## L-3. TIME FOR SUBMITTAL

Proposals must be received at the point of receipt no later than 3:30 p.m., local time, on August 10, 1981.

## L-4. LATE PROPOSALS, MODIFICATIONS OF PROPOSALS, AND WITHDRAWALS OF PROPOSALS

a. Any proposal received at the office designated in this solicitation after the exact time specified for receipt will not be considered unless it is received before award is made, and:

(1) It was sent by registered or certified mail not later than the fifth calendar day prior to the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th or earlier);

(2) It was sent by mail (or telegram if authorized), and it is determined by the Government that the late receipt was due solely to mishandling by the Government after receipt of the Government installation; or

(3) It is the only proposal received.

b. Any modification of a proposal, except a modification resulting from the contracting officer's request for "Best and Final" offer, is subject to the same conditions as in a.(1) and a.(2) of this provision.

c. A modification resulting from the contracting officer's request for "Best and Final" offer received after the time and date specified in the request will not be considered unless received before award and the late receipt is due solely to mishandling by the Government after receipt at the Government installation.

d. The only acceptable evidence to establish:

(1) The date of mailing of a late proposal or modification sent either by registered or certified mail is the U.S. Postal Service postmark on both the envelope or wrapper and on the original receipt from the U.S. Postal Service. If neither postmark shows a legible date, the proposal or modification shall be deemed to have been mailed late. [The term "postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed on the date of mailing by employees of the U.S. Postal Service. Therefore, offerors should request the postal clerk to place a hand cancellation bull's-eye "postmark" on both the receipt and the envelope or wrapper.]

(2) The time of receipt at the Government installation is the time-date stamp of such installation on the proposal wrapper or other documentary evidence of receipt maintained by the installation.

e. Notwithstanding a., b., and c. of this provision, a late modification of an otherwise successful proposal which makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

f. Proposals may be withdrawn by written or telegraphic notice received at any time prior to award. Proposals may be withdrawn in person by an offeror or his authorized representative, provided his identity is made known and he signs a receipt for the proposal prior to award.

Note: The term "telegram" includes mailgrams.

#### L-5. DISCLOSURE OF PROPOSALS

All proposals may be disclosed by the Department of the Interior to any person upon request pursuant to the Freedom of Information Act unless the data has been restricted. Data so restricted shall not be disclosed by the

Department of the Interior: Provided, That such data are determined by the Department of the Interior to be exempt from disclosure in accordance with the exemption provisions of the Freedom of Information Act. If a proposer wishes to restrict its proposal, it shall mark the title page with the following legend:

These data, furnished in connection with Request for Proposal/Quotation No. \_\_\_\_\_, shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than to evaluate the proposal: Provided, That if a contract is awarded to this offeror as a result of or in connection with the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets \_\_\_\_\_.

The offeror shall mark each sheet of data which he wishes to restrict with the following legend:

Use or disclosure of proposal data is subject to the restriction on the title page of this proposal.

Proposals received which require restriction of data other than stated in preceding paragraph will not be acceptable and may be returned to the offeror.

#### L-6. UNNECESSARILY ELABORATE PROPOSALS

Unnecessarily elaborate brochures or other presentations beyond that sufficient to present a complete and effective proposal are not desired. Elaborate artwork, expensive paper and bindings, or expensive visual and other presentation aids are neither necessary nor wanted.

#### L-7. TECHNICAL PROPOSAL

##### 1. General

a. Inasmuch as your Technical Proposal will primarily describe the capability of your organization to participate in this program, it should be specific and complete in every detail. The proposal should be prepared simply and economically, providing straightforward, concise delineation of capabilities to perform satisfactorily the contract being sought. The proposal should therefore be practical, legible, clear, and coherent. In order that evaluation may be accomplished strictly on the merit of the materials submitted, no dollar costs are to be included in your Technical Proposal. If deemed necessary to provide clarity, estimated man-hour figures only will be quoted, with no indication of the cost of said man-hours.

b. The proposal shall contain an outline of the proposed investigation, method of approach to the problem, any recommended changes to

the technical exhibit, the phases or steps into which this project might logically be divided, estimated time required to complete each phase or step, and any other information considered pertinent to the problem. The proposal shall not merely offer to conduct an investigation in accordance with the technical exhibit but shall outline the actual investigation proposed as specifically as possible. Repeating the exhibit without sufficient elaboration will not be acceptable. The technical exhibit reflects the problems and objectives of the program under consideration and on occasion some of the possible approaches to the problem as recognized by this agency. Unless otherwise specified, the prospective contractor is not limited to the suggested approaches for equal or even preferred consideration. However, any deviations must be fully substantiated in the proposal.

## 2. Format and Specific Content

a. To aid in the evaluation of your proposal, it is desired that the following general format be followed:

(1) Table of Contents.

(2) List of Tables, etc.

(3) Short introduction and summary.

(4) Description of technical approach. - This section shall contain the major portion of the Technical Proposal. It should contain as a minimum the following:

(a) A detailed plan of study outlining the scientific approach giving detail as to anticipated effort devoted to various phases of research.

(b) Performance schedule proposed including delivery schedule of data and reports.

(c) Subcontracting anticipated with a list of items or effort to be subcontracted.

(5) Personnel qualifications. - This section shall identify key personnel to be assigned for direct work on the study and as direct technical supervisors, plus:

(a) Education, background, accomplishments, and other pertinent information concerning personnel specified.

(b) Estimated person-hours each individual will contribute to this study (no costs of these person-hours are to be shown in the Technical Proposal).

(6) Supporting data and other information. -

(a) List Government contracts in this and related fields held in the past, including cost of contract, title, agency, contract number, and point of contact.

(b) Any other pertinent information which will aid in evaluation of your proposal should be included.

#### L-8. RETENTION OF OFFERS

Offers submitted in response to this solicitation will not be returned but will be retained by the Government for official record.

#### L-9. DISPOSITION OF UNCLASSIFIED MATERIAL

Unclassified material and data supplied with this solicitation, including drawings and specifications, shall not be returned to the procuring office but may be disposed of at the discretion of the offeror.

#### L-10. INSTRUCTIONS FOR PREPARING COST PROPOSALS

Cost proposals shall be separate from the technical proposals and submitted utilizing Optional Form 60 (Attachment ). Offerors may, however, submit the necessary information in a different format, acceptable to the contracting officer, where an offeror's accounting system makes the use of the form impractical, or when required for a more effective or efficient presentation of cost or pricing information. The following data shall be included in the cost proposal:

a. Direct personnel costs. -

(1) List the hourly rate of each job classification to be used.

(2) Give the estimated total hours of effort for each job classification that will be devoted to each task required by the study. Indicate number of hours of supervision and how it is allocated to each task.

b. Personnel overhead costs. -

(1) List the various overhead cost items.

(2) Show the method used to allocate these overhead costs.

c. General and administrative expenses. -

(1) Give a detailed breakdown of general and administrative expenses for the preceding 3 years.

(2) Give a detailed breakdown of general and administrative expenses to be charged to this proposed contract.

(3) Show the method used to allocate these overhead costs.

- d. Material costs. - Identify any material costs included in the cost proposal.
- e. Equipment costs. - Identify any equipment you propose to use in performing these studies and list the hours of proposed use, cost, and calculations showing how cost was determined.
- f. Travel and per diem costs. - Please identify all anticipated travel and per diem costs.
- g. Miscellaneous costs.
- h. Profit or fee desired for performing the study.



PART IV

Section M

Evaluation Factors for Award

## M-1. EVALUATION PROCEDURES

The Government will select the best overall offer, based on technical merit, cost, and other pertinent factors. The evaluation process is described below:

a. Phase 1 of the overall evaluation process will be the evaluation of all technical proposals by a technical evaluation team. Cost data will not be considered during this phase. The criteria for technical evaluation are attached and will be the sole basis for determining the technical acceptability of proposals.

b. Unless strong reasons exist which would justify award without discussions, phase 2 of the overall evaluation process will be the determination of the competitive range. This determination is made by the contracting officer and is based on a combination of technical rating and cost considerations.

c. If discussions are held, phase 3 of the overall evaluation process will be the conduct of negotiations, both the technical and cost, with all offerors in the competitive range. At the conclusion of negotiations, a final, common cutoff date which allows a reasonable opportunity for submission of written "Best and Final" offers will be established and all offerors in the competitive range will be so notified. The date will be common to all offerors and will be the final date that "Best and Final" offers will be accepted by the Government.

d. The final phase of the overall evaluation process will be the selection of that offer which represents the best combination of technical merit and related cost to the Government. For purposes of this solicitation, technical merit will be weighted at 70 percent and the related cost will be weighted at 30 percent. (If a combination of 0 percent technical and 100 percent cost has been indicated, selection will be based on the lowest-priced technically acceptable offer.)

## M-2. EVALUATION CRITERIA OF TECHNICAL PROPOSALS (100 points available)

Evaluation criteria and assigned weights to be used in determining a technical proposal to be acceptable are listed below in descending order of their importance.

### a. Evaluation elements. -

(1) Understanding of the scope of work and technical merits of approach to perform the study.

(2) Qualifications, inclusive of education and related experience, of assigned personnel and level of effort committed to the study (inclusive of subcontractors).

(3) Offerors level of responsibility and managerial structure of the firm and for this study.

(4) Offeror's past experience and performance on similar or related studies. (Offerors should include the name and telephone number of a contact for which similar services were performed.)

b. Evaluation rating. - Each element of the evaluation criteria will be based on a rating of 1 to 10 points using the following schedule:

Above normal: 10  
9

A proposal element which has a high probability of exceeding expected RFP requirements:

Normal: 8  
7  
6

A proposal element which, in all probability, will meet the requirements established by the RFP:

Below normal: 5  
4  
3

A proposal element which may fail to meet the stated requirements but has correction potential:

Unacceptable: 2  
1

A proposal element which does not meet the stated requirements and has little or no correction potential without drastic revision.

c. The proposals will be numerically rated using the following format:

(1) Evaluation element	(2) Numerical rating (1 to 10)	(3) Weight	(4) Col. 2 x 3 = weighted rating
(1)		3.5	
(2)		3.5	
(3)		1.5	
(4)		1.5	

100 = maximum total weighted rating.

#### M-3. AWARD DECISION

Award will be made to that responsible offeror whose offer, conforming to this RFP, is most advantageous to the Government.

Determining an Offeror's Final Weighted Evaluation Score. - After receipt of "best and final" offers, the appropriate weight factors must be applied to determine which offer is the most advantageous to the Government. The following demonstrates the calculations required:

<u>Technical Scores</u>	<u>Best and Final Price</u>
ABC - 96	\$60,000
DEF - 88	\$56,000
GHI - 70	\$50,000

Technical score will be weighted at 70% and cost at 30%. The first step is to select a "base" score for both factors. The highest technical score and the lowest price are logical selections and will be used in this example. Once one has chosen the bases, they must be applied consistently to each offeror.

ABC: Technical at 70% with a score of 96. Compare this score to the base score and multiply by the weight as follows:

$$\frac{96}{96} \times .70 \times 100 = 70$$

Cost at 30% with a price of \$60,000. Compare this price to the base price and multiply by the weight as follows:

$$\frac{50,000}{60,000} \times .30 \times 100 = 25$$

Add the weighted factors (.70 plus .25) for a total evaluated score of 95 for ABC.

DEF: Technical at 70% with a score of 88. Compare this score to the base score and multiply by the weight as follows:

$$\frac{88}{96} \times .70 \times 100 = 64.167$$

Cost at 30% with a price of \$56,000. Compare this price to the base price and multiply by the weight as follows:

$$\frac{50,000}{56,000} \times .30 \times 100 = 26.786$$

Add the weighted factors (64.167 plus 26.786) for a total evaluated score of 90.953 for DEF.

GHI: Technical at 70% with a score of 70. Compare this score to the base score and multiply by the weight as follows:

$$\frac{70}{96} \times .70 \times 100 = 51.042$$

Cost at 30% with a price of \$50,000. Compare this price to the base price and multiply by the weight as follows:

$$\frac{50,000}{50,000} \times .30 \times 100 = 30$$

Add the weighted factors (51.042 plus 30) for a total evaluated score of 81.042 for GHI.

In this example ABC with a score of 95 (the highest total score) is determined to be the most advantageous to the Government.

## ATTACHMENTS

## APPENDIX 1

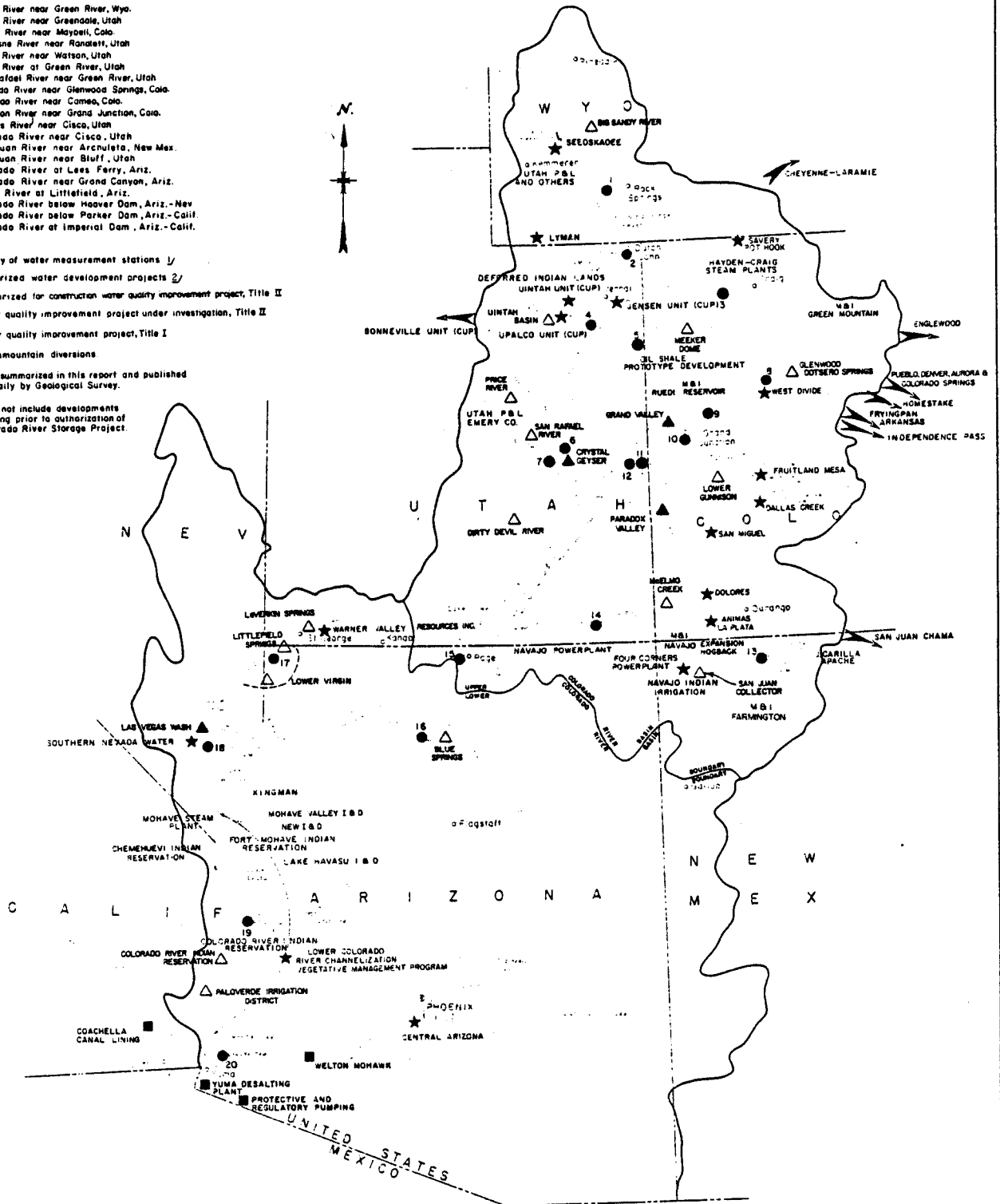
### Definitions

Model verification. - Model verification shall be construed to be predicted values within 5 percent of historical values, or appropriate statistical correlation at the 5-percent confidence level.

TDS (total dissolved solids). - The use of TDS in this RFP shall be construed to mean the sum of the eight major constituent ions.

Two-dimensional (2-D) model. - A 2-D model is herein defined to be a mathematical model that handles the longitudinal and vertical dimensions of a reservoir.

- LEGEND**  
**STATION**
- 1 Green River near Green River, Wyo.
  - 2 Green River near Grandale, Utah
  - 3 Yampa River near Maybell, Colo.
  - 4 Duchesne River near Randlett, Utah
  - 5 White River near Watson, Utah
  - 6 Green River at Green River, Utah
  - 7 San Rafael River near Green River, Utah
  - 8 Colorado River near Glenwood Springs, Colo.
  - 9 Colorado River near Cameo, Colo.
  - 10 Gunnison River near Grand Junction, Colo.
  - 11 Colorado River near Cisco, Utah
  - 12 Colorado River near Cisco, Utah
  - 13 San Juan River near Archuleta, New Mex.
  - 14 San Juan River near Bluff, Utah
  - 15 Colorado River at Lees Ferry, Ariz.
  - 16 Colorado River near Grand Canyon, Ariz.
  - 17 Virgin River at Littlefield, Ariz.
  - 18 Colorado River below Hoover Dam, Ariz.-Nev.
  - 19 Colorado River below Parker Dam, Ariz.-Calif.
  - 20 Colorado River at Imperial Dam, Ariz.-Calif.
- Quality of water measurement stations 1/  
★ Authorized water development projects 2/  
▲ Authorized for construction water quality improvement project, Title II  
△ Water quality improvement project under investigation, Title II  
■ Water quality improvement project, Title I  
← Transmountain diversions  
1/ Data summarized in this report and published annually by Geological Survey.  
2/ Does not include developments existing prior to authorization of Colorado River Storage Project.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
**COLORADO RIVER BASIN**  
QUALITY OF WATER MAP

75 0 10 20 30 40 50  
SCALE OF MILES  
65-400-70  
JULY 17, 1962  
REVISED JANUARY 1979

Fig. 1



APPENDIX II

Lake Powell Water Quality Sampling Data

January 1976

## CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by	<u>Furneaux, Hyde, Hatfield, Sory</u>	Date	<u>2-12-76</u>	Project	<u>Upper Colorado River Storage</u>
Analyzed by		Date		Location	

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (@ 25°C)	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index		Equivalents per million or milliequivalents per liter							
												Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
11623	13	1-5-76		758	8.1	489		1.8				3.12	1.84	2.88	.09	0	2.38	1.22	4.44
Equivalent Weights												20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	PPM D.O.	Time Sampled	Temp °F
1623	Colorado River below Glen Canyon Dam - surface	6.8	8:30	47

# CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by Furneaux, Hyde, Hatfield, Sory Date 2-12-76 Project Upper Colorado River Storage  
Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-12-76 Location

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (25°C)	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1618	5	1-8-76		939	8.0	644		2.1			3.84	2.28	3.76	.10	0	2.76	1.72	5.60
1619	4	1-8-76		961	7.9	642		2.2			3.84	2.28	3.84	.10	0	2.76	1.74	5.52
1620	3	1-8-76		930	8.3	633		2.2			3.84	2.28	3.80	.09	.40	2.48	1.72	5.60
1621	2	1-8-76		961	8.3	653		2.2			3.96	2.36	3.92	.10	.41	2.38	1.79	5.64
1622	1	1-8-76		966	7.9	657		2.2			4.00	2.36	3.92	.10	0	2.83	1.81	5.64
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPM D.O.	Time Sampled	Temp °F
1618	Lake Powell at Wahweap	3350	5.8	12:58	45
1619	Lake Powell at Wahweap	3300	5.8	12:58	44
1620	Lake Powell at Wahweap	3250	5.8	12:58	44
1621	Lake Powell at Wahweap	3200	4.8	12:58	44
1622	Lake Powell at Wahweap	3180	3.9	12:58	44

# CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-12-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> @ 25°C	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
11611	12	1-8-76		735	8.0	489		1.8			3.04	1.80	2.80	.08	0	2.38	1.10	4.36
11612	11	1-8-76		737	7.9	492		1.8			3.04	1.80	2.80	.09	0	2.36	1.12	4.24
11613	10	1-8-76		729	8.0	474		1.8			3.04	1.80	2.80	.09	0	2.36	1.12	4.20
11614	9	1-8-76		730	8.1	490		1.8			3.04	1.80	2.80	.08	0	2.34	1.18	4.36
11615	8	1-8-76		739	8.0	471		1.8			3.04	1.80	2.76	.08	0	2.38	1.20	4.24
11616	7	1-8-76		873	8.0	582		2.0			3.60	2.12	3.44	.10	0	2.67	1.44	5.28
11617	6	1-8-76		909	8.0	606		2.1			3.80	2.20	3.64	.10	0	2.67	1.66	5.32
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPH D.O.	Time Sampled	Temp °F
11611	Lake Powell at Wahweap	3667	7.8	12:58	48
11612	Lake Powell at Wahweap	3650	7.8	12:58	48
11613	Lake Powell at Wahweap	3600	7.8	12:58	48
11614	Lake Powell at Wahweap	3550	7.9	12:58	48
11615	Lake Powell at Wahweap	3500	7.9	12:58	48
11616	Lake Powell at Wahweap	3450	6.2	12:58	46
11617	Lake Powell at Wahweap	3400	6.8	12:58	44

# CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
 Analyzed by James W. Hyde, Hatfield, Sory Date 2-10-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	EC x 10 <sup>6</sup> @ 25°C	pH	Dissolved Solids p.p.m.	Baron p.p.m.	Sodium Adsorption Ratio	pHc	Saturation Index	Equivalents per million or milliequivalents per liter							
											Ca++	Mg++	Na+	K+	CO <sub>3</sub> <sup>2-</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1582	42	1-8-76		709	8.3	485		1.7			3.00	1.80	2.68	.08	.33	2.05	1.06	4.20
1583	41	1-8-76		713	8.3	458		1.8			3.00	1.76	2.72	.08	.39	2.03	1.06	4.06
1584	40	1-8-76		709	8.2	473		1.7			3.00	1.80	2.64	.08	0	2.38	1.08	4.14
1585	39	1-8-76		708	8.3	459		1.7			3.02	1.82	2.62	.08	.25	2.14	1.05	4.04
1586	38	1-8-76		808	8.3	538		1.9			3.36	2.00	3.16	.09	.32	2.27	1.26	4.76
1587	37	1-8-76		900	8.0	601		2.2			3.72	2.20	3.80	.10	0	2.71	1.70	5.20
1588	36	1-8-76		749	8.0	508		1.8			3.12	1.88	2.90	.09	0	2.50	1.20	4.28
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPM D.O.	Time Sampled	Temp °F
1582	Lake Powell at Crossing of the Fathers	3667	7.4	10:25	49
1583	Lake Powell at Crossing of the Fathers	3650	7.3	10:25	50
1584	Lake Powell at Crossing of the Fathers	3600	7.4	10:25	50
1585	Lake Powell at Crossing of the Fathers	3550	7.8	10:25	50
1586	Lake Powell at Crossing of the Fathers	3500	6.0	10:25	49
1587	Lake Powell at Crossing of the Fathers	3450	6.1	10:25	47
1588	Lake Powell at Crossing of the Fathers	3400	7.4	10:25	48

# CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by Furneaux, Hyde, Hatfield, Sory Date 2-10-76 Project Upper Colorado River Storage  
 Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-10-76 Location

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> @ 25°C	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1589	35	1-8-76		225	7.9	617		2.2			3.72	2.20	3.80	.10	0	2.71	1.70	5.24
1590	34	1-8-76		213	7.9	627		2.1			3.76	2.24	3.62	.10	0	2.71	1.74	5.28
1591	33	1-8-76		243	8.2	642		2.2			3.84	2.28	3.84	.10	0	2.77	1.74	5.52
1592	32	1-8-76		723	8.0	483		1.7			3.00	1.78	2.68	.08	0	2.35	1.08	4.14
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	PPM		Time Sampled	Temp °F
		Elev.	D.O.		
1589	Lake Powell at Crossing of the Fathers	3350	5.8	10:25	44
1590	Lake Powell at Crossing of the Fathers	3300	5.8	10:25	44
1591	Lake Powell at Crossing of the Fathers	3250	4.8	10:25	44
1592	Lake Powell at Crossing of the Fathers	3205	6.3	10:25	48

# CHEMICAL ANALYSIS OF WATER SAMPLES

illected by Furneaux, Hyde, Hatfield, Sory Date 2-10-76 Project Upper Colorado River Storage  
 alyzed by Furneaux, Hyde, Hatfield, Sory Date 2-10-76 Location

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (at 25°C)	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorp-tion Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1593	31	1-8-76		674	8.0	430		1.6			2.92	1.64	2.48	.03	0	2.30	.97	3.66
1594	30	1-8-76		671	8.0	431		1.7			2.84	1.64	2.48	.08	0	2.30	.97	3.76
1595	29	1-8-76		670	8.3	438		1.6			2.90	1.66	2.46	.07	.40	1.92	.97	3.76
1596	28	1-8-76		674	8.4	433		1.7			2.86	1.64	2.52	.08	.32	2.00	.97	3.66
1597	27	1-8-76		706	7.9	469		1.8			2.98	1.72	2.70	.08	0	2.38	1.06	3.98
1598	26	1-8-76		1020	7.9	697		2.4			4.08	2.52	4.36	.10	0	2.91	2.09	6.00
1599	25	1-8-76		877	7.9	687		2.3			3.96	2.44	4.16	.10	0	2.91	1.97	5.80
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

ob. No.	Location	Elev.	PHI D.O.	Time Sampled	Temp °F
1593	Lake Powell at Oak Canyon	3667	7.9	9:19	48
1594	Lake Powell at Oak Canyon	3650	7.9	9:19	48
1595	Lake Powell at Oak Canyon	3600	7.9	9:19	48
1596	Lake Powell at Oak Canyon	3550	7.9	9:19	48
1597	Lake Powell at Oak Canyon	3500	7.5	9:19	48
1598	Lake Powell at Oak Canyon	3450	5.7	9:19	48
1599	Lake Powell at Oak Canyon	3400	6.1	9:19	46

# CHEMICAL ANALYSIS OF WATER SAMPLES

9

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-12-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (25°C)	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
11600	24	1-8-76		894	7.9	611		2.1			3.68	2.16	3.64	.10	0	2.67	1.66	5.12
11601	23	1-8-76		909	8.2	625		2.2			3.80	2.16	3.72	.10	0	2.78	1.70	5.48
11602	22	1-8-76		913	8.0	644		2.2			3.76	2.16	3.72	.10	0	2.71	1.70	5.44
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	FPM D.O.	Time Sampled	Temp °F
11600	Lake Powell at Oak Canyon	3350	6.2	9:19	46
11601	Lake Powell at Oak Canyon	3300	6.4	9:19	44
11602	Lake Powell at Oak Canyon	3260	5.9	9:19	44



# CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-12-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> @25°C	pHa	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorp-tion Ratio	pHc	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
11603	21	1-6-76		625	8.3	424		1.4			3.08	1.40	2.16	.07	.40	1.80	.49	4.04
11604	20	1-6-76		637	8.0	434		1.5			3.04	1.36	2.16	.06	0	2.20	.53	4.04
11605	19	1-6-76		629	8.2	424		1.5			3.04	1.36	2.16	.08	0	2.22	.49	4.00
11606	18	1-6-76		630	8.0	428		1.5			3.04	1.36	2.16	.08	0	2.22	.49	4.00
11607	17	1-6-76		642	7.9	452		1.5			3.24	1.36	2.20	.08	0	2.21	.45	4.40
11608	16	1-6-76		820	8.3	556		1.9			3.64	1.92	3.20	.09	.32	2.22	1.16	5.20
11609	15	1-6-76		934	7.9	624		2.1			3.88	2.16	3.68	.10	.0	2.71	1.41	5.60
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPM D.O.	Time Sampled	Temp °F
11603	Lake Powell at Cha Canyon	3667	7.4	1:34	50
11604	Lake Powell at Cha Canyon	3650	7.4	1:34	49
11605	Lake Powell at Cha Canyon	3600	7.4	1:34	49
11606	Lake Powell at Cha Canyon	3550	7.4	1:34	49
11607	Lake Powell at Cha Canyon	3500	3.8	1:34	47
11608	Lake Powell at Cha Canyon	3450	4.1	1:34	48
11609	Lake Powell at Cha Canyon	3400	4.4	1:34	45

## CHEMICAL ANALYSIS OF WATER SAMPLES

7

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-12-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (Q 25°C)	pHa	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pHc	Sat-uration Index	Equivalents per million or milliequivalents per liter								
											Ca++	Mg++	Na+	K+	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>	
11610	14	1-6-76		909	7.8	626		2.1				3.84	2.16	3.68	.10	0	2.79	1.52	5.60
Equivalent Weights												20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

PFM  
D.O.

Time  
SampledTemp  
°F

Lab. No.	Location	Elev.	D.O.	Time Sampled	Temp °F
11610	Lake Powell at Cha Canyon	3360	4.4	1:34	45

# CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project \_\_\_\_\_  
 Analyzed by L. H. Hays, Hydr. Engr., Hatfield, Sory Date 2-9-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	EC x 10 <sup>6</sup> @ 25°C	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
11559	65	1-7-76		691	7.9	437		1.6			2.90	1.68	2.46	.08	0	2.42	1.04	3.76
11560	64	1-7-76		693	7.9	448		1.7			2.96	1.66	2.52	.09	0	2.42	.99	3.68
11561	63	1-7-76		689	8.0	444		1.7			2.92	1.64	2.54	.09	0	2.38	.97	3.78
11562	62	1-7-76		687	8.0	446		1.7			2.94	1.64	2.58	.08	0	2.37	.95	3.82
11563	61	1-7-76		1050	7.9	685		2.5			4.12	2.52	4.52	.11	0	2.92	2.17	6.20
11564	60	1-7-76		1030	7.9	700		2.4			4.12	2.48	4.32	.10	0	2.94	2.07	6.08
11565	59	1-7-76		986	7.9	663		2.4			3.92	2.32	4.20	.11	0	2.84	1.91	5.64
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	D.O. PPM	Elev.	Time Sampled	Temp °F
11559	Lake Powell at Escalante	5.9	3667	3:15	50
11560	Lake Powell at Escalante	6.4	3650	3:15	49
11561	Lake Powell at Escalante	6.4	3600	3:15	49
11562	Lake Powell at Escalante	7.0	3550	3:15	49
11563	Lake Powell at Escalante	5.0	3500	3:15	50
11564	Lake Powell at Escalante	6.1	3450	3:15	48
11565	Lake Powell at Escalante	5.7	3400	3:15	47

## CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-9-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (25°C)	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index		Equivalents per million or milliequivalents per liter							
												Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1566	58	1-7-76		066	8.0	626		2.3				3.84	2.28	4.08	.10	0	2.85	1.87	5.48
1567	57	1-7-76		052	7.9	626		2.3				3.84	2.28	3.96	.10	0	2.81	1.81	5.32
Equivalent Weights												20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPM D.O.	Time Sampled	Temp °F
11566	Lake Powell at Escalante	3350	5.4	3:15	46
11567	Lake Powell at Escalante	3335	4.8	3:15	46

# CHEMICAL ANALYSIS OF WATER SAMPLES

lected by \_\_\_\_\_ Date \_\_\_\_\_ Project Upper Colorado River Storage  
alyzed by Furneaux, Hyde, Hatfield, Sory Date 2-9-76 Location \_\_\_\_\_

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>8</sup> (Q 25°C)	pHa	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorp-tion Ratio	pHc	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca++	Mg++	Na+	K+	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1568	56	1-7-76		729	8.0	472		1.8			3.08	1.76	2.80	.08	0	2.36	1.12	4.00
1569	55	1-7-76		691	8.2	466		1.7			3.00	1.74	2.60	.08	0	2.38	1.06	3.90
1570	54	1-7-76		690	8.0	460		1.7			2.98	1.70	2.54	.08	0	2.38	1.06	3.90
1571	53	1-7-76		668	8.0	440		1.5			2.90	1.66	2.34	.08	0	2.33	.99	3.80
1572	52	1-7-76		1030	8.0	722		2.3			4.28	2.60	4.24	.11	0	2.89	2.05	6.08
1573	51	1-7-76		953	8.0	628		2.1			3.88	2.56	3.72	.09	0	2.75	1.81	5.52
1574	50	1-7-76		974	8.1	658		2.2			4.00	2.40	4.00	.10	0	2.81	1.91	5.64
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPM/10 D.O.	Time Sampled	Temp °F
1568	Lake Powell at Bullfrog	3667	7.4	12:52	50
1569	Lake Powell at Bullfrog	3650	7.4	12:52	48
1570	Lake Powell at Bullfrog	3600	7.4	12:52	48
1571	Lake Powell at Bullfrog	3550	7.0	12:52	48
1572	Lake Powell at Bullfrog	3500	6.4	12:52	48
1573	Lake Powell at Bullfrog	3450	7.6	12:52	46
1574	Lake Powell at Bullfrog	3400	7.2	12:52	45

30. 10. 1954

Collected by \_\_\_\_\_  
Analyzed by James M. Hays, 10-1-54, Sovy

Date \_\_\_\_\_  
Date 2-10-76

**Project** Upper Colorado River Storage

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> (at 25°C)	pH <sub>o</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
1575	49	1-7-76		981	8.4	654		2.3			4.00	2.44	4.08	.10	.48	2.44	2.01	5.88
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

ab. No.	Location	Elev.	PPM D.O.	Time Sampled	Temp °F
1575	Lake Powell at Bullfrog	3355	7.2	12:52	45

## CHEMICAL ANALYSIS OF WATER SAMPLES

Collected by Furneaux, Hyde, Hatfield, Sory Date 2-10-76 Project Upper Colorado River Storage  
 Analyzed by Furneaux, Hyde, Hatfield, Sory Date 2-10-76 Location

Lab No.	Field No.	Sampling Date	Flow c.f.s.	ECx10 <sup>6</sup> @ 25°C	pH <sub>a</sub>	Dis-solved Solids p.p.m.	Boron p.p.m.	Sodium Adsorption Ratio	pH <sub>c</sub>	Sat-uration Index	Equivalents per million or milliequivalents per liter							
											Ca <sup>++</sup>	Mg <sup>++</sup>	Na <sup>+</sup>	K <sup>+</sup>	CO <sub>3</sub> <sup>=</sup>	HCO <sub>3</sub> <sup>-</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>=</sup>
11576	48	1-7-76		839	8.0	570		1.9			3.56	2.08	3.16	.08	0	2.50	1.38	4.96
11577	47	1-7-76		850	8.4	564		1.9			3.52	2.08	3.20	.09	.48	2.06	1.42	5.02
11578	46	1-7-76		837	8.1	557		1.9			3.56	2.08	3.20	.08	0	2.55	1.38	5.08
11579	45	1-7-76		837	8.3	574		1.9			3.60	2.08	3.24	.08	.32	2.22	1.46	4.92
11580	44	1-7-76		966	8.0	653		2.3			4.00	2.40	4.04	.10	0	2.87	1.95	5.60
11581	43	1-7-76		968	7.8	656		2.2			3.96	2.40	4.00	.10	0	2.84	1.95	5.50
						A <sub>v</sub> <sup>3</sup> 596												
Equivalent Weights											20.0	12.2	23.0	39.1	30.0	61.0	35.5	48.0

Lab. No.	Location	Elev.	PPM D.O.	Time Sampled	Temp °F
11576	Lake Powell at Hite	3667	8.5	10:37	48
11577	Lake Powell at Hite	3650	7.9	10:37	48
11578	Lake Powell at Hite	3600	7.9	10:37	48
11579	Lake Powell at Hite	3550	7.9	10:37	48
11580	Lake Powell at Hite	3500	8.6	10:37	42
11581	Lake Powell at Hite	3475	7.9	10:37	41

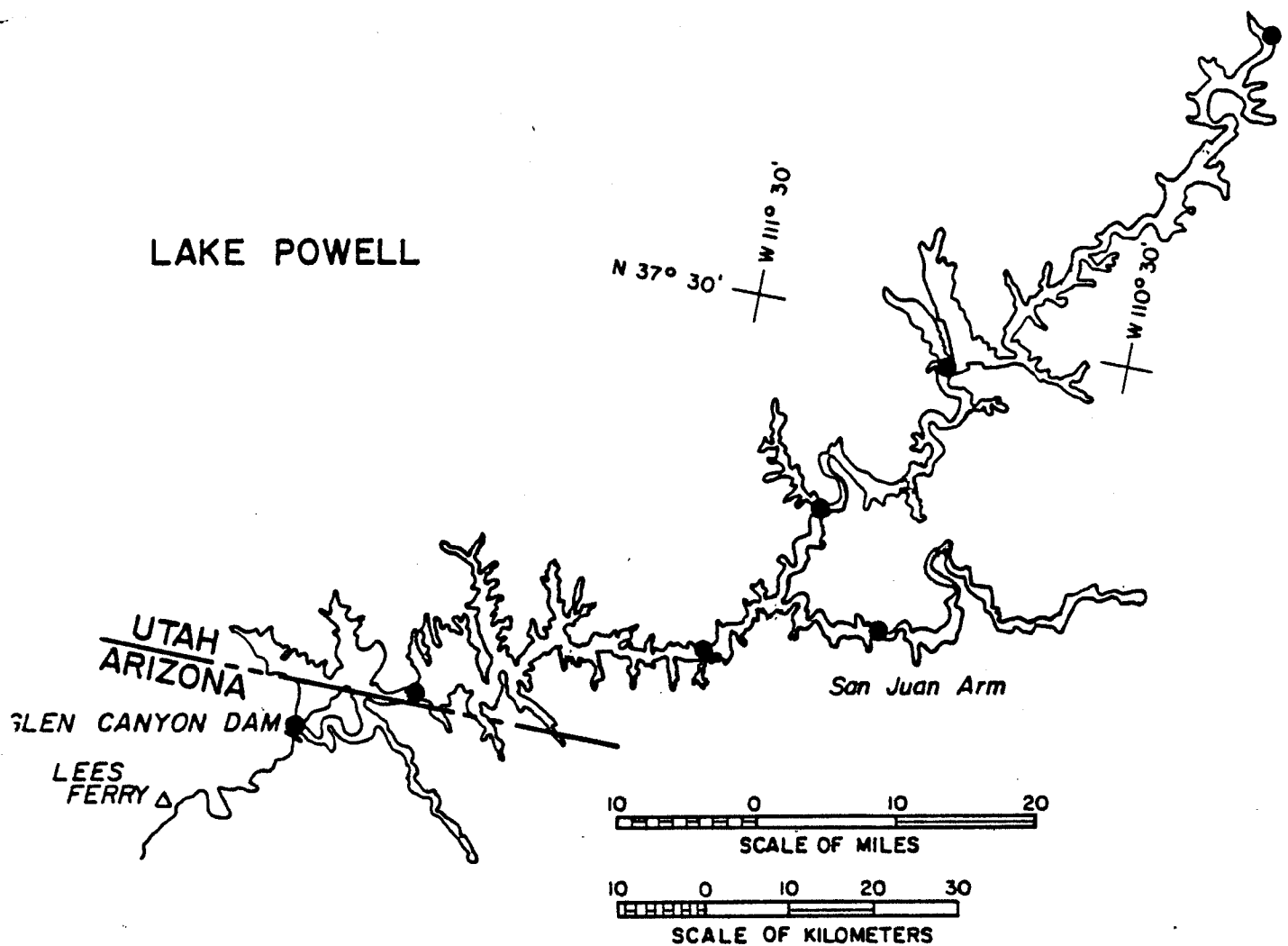


FIG.2 AREAL EXTENT OF LAKE POWELL AND  
LOCATION OF SAMPLING STATIONS



CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR		SUPPLIES AND/OR SERVICES TO BE FURNISHED			
HOME OFFICE ADDRESS					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED		TOTAL AMOUNT OF PROPOSAL \$		GOV'T SOLICITATION NO.	
<b>DETAIL DESCRIPTION OF COST ELEMENTS</b>					
1. DIRECT MATERIAL (Itemize on Exhibit A)		EST COST (\$)		TOTAL EST COST <sup>1</sup>	
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS					
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
<b>TOTAL DIRECT MATERIAL</b>					
2. MATERIAL OVERHEAD <sup>2</sup> (Rate % of \$ basis)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	TOTAL EST COST <sup>1</sup>
<b>TOTAL DIRECT LABOR</b>					
4. LABOR OVERHEAD (Specify Department or Cost Center) <sup>3</sup>		O.H. RATE	X BASE =	EST COST (\$)	TOTAL EST COST <sup>1</sup>
<b>TOTAL LABOR OVERHEAD</b>					
5. SPECIAL TESTING (Including field work at Government installations)				EST COST (\$)	
<b>TOTAL SPECIAL TESTING</b>					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)				EST COST (\$)	
a. TRANSPORTATION					
b. PER DIEM OR SUBSISTENCE					
<b>TOTAL TRAVEL</b>					
8. CONSULTANTS (Identify—purpose—rate)				EST COST (\$)	
<b>TOTAL CONSULTANTS</b>					
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
<b>TOTAL DIRECT COST AND OVERHEAD</b>					
10. GENERAL AND ADMINISTRATIVE EXPENSE (Rate % of cost element Nos. )					
12. ROYALTIES					
<b>TOTAL ESTIMATED COST</b>					
14. FEE OR PROFIT					
<b>TOTAL ESTIMATED COST AND FEE OR PROFIT</b>					

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

**SIGNATURE**

DATE OF SUBMISSION

**COST EL NO.**

ITEM DESCRIPTION (See footnote 3)

EST COST (\$)

☐ YES ☐ NO (If yes, identify below.)

TELEPHONE NUMBER/EXTENSION

☐ YES ☐ NO (If yes, identify on reverse or separate page)

☐ YES ☐ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☐ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

☐ YES ☐ NO (If yes, identify.):

☐ YES ☐ NO (If no, explain on reverse or separate page)

OPTIONAL FORM 60 (10-71)

## INSTRUCTIONS TO OFFERORS

1. The purpose of this form is to provide a standard format by which the offeror submits to the Government a summary of incurred and estimated costs (and attached supporting information) suitable for detailed review and analysis. Prior to the award of a contract resulting from this proposal the offeror shall, under the conditions stated in FPR 1-3.807-3 be required to submit a Certificate of Current Cost or Pricing Data (See FPR 1-3.807-3(h) and 1-3.807-4).

2. In addition to the specific information required by this form, the offeror is expected, in good faith, to incorporate in and submit with this form any additional data, supporting schedules, or substantiation which are reasonably required for the conduct of an appropriate review and analysis in the light of the specific facts of this procurement. For effective negotiations, it is essential that there be a clear understanding of:

- a. The existing, verifiable data.
- b. The judgmental factors applied in projecting from known data to the estimate, and
- c. The contingencies used by the offeror in his proposed price.

In short, the offeror's estimating process itself needs to be disclosed.

3. When attachment of supporting cost or pricing data to this form is impracticable, the data will be described (with schedules as appropriate), and made available to the contracting officer or his representative upon request.

4. The formats for the "Cost Elements" and the "Proposed Contract Estimate" are not intended as rigid requirements. These may be presented in different format with the prior approval of the Contracting Officer if required for more effective and efficient presentation. In all other respects this form will be completed and submitted without change.

5. By submission of this proposal the offeror grants to the Contracting Officer, or his authorized representative, the right to examine, for the purpose of verifying the cost or pricing data submitted, those books, records, documents and other supporting data which will permit adequate evaluation of such cost or pricing data, along with the computations and projections used therein. This right may be exercised in connection with any negotiations prior to contract award.

## FOOTNOTES

1. Enter in this column those necessary and reasonable costs which in the judgment of the offeror will properly be incurred in the efficient performance of the contract. When any of the costs in this column have already been incurred (e.g., on a letter contract or change order), describe them on an attached supporting schedule. Identify all sales and transfers between your plants, divisions, or organizations under a common control, which are included at other than the lower of cost to the original transferee or current market price.

2. When space in addition to that available in Exhibit A is required, attach separate pages as necessary and identify in this "Reference" column the attachment in which the information supporting the specific cost element may be found. No standard format is prescribed; however, the cost or pricing data must be accurate, complete and current, and the judgment factors used in projecting from the data to the estimates must be stated in sufficient detail to enable the Contracting Officer to evaluate the proposal. For example, provide the basis used for pricing materials such as by vendor quotations, shop estimates, or invoice prices; the reason for use of overhead rates which depart significantly from experienced rates (reduced volume, a planned major re-arrangement, etc.); or justification for an increase in labor rates (anticipated wage and salary increases, etc.). Identify and explain any contingencies which are included in the proposed price, such as anticipated costs of rejects and defective work, or anticipated technical difficulties.

3. Indicate the rates used and provide an appropriate explanation. Where agreement has been reached with Government representatives on the use of forward pricing rates, describe the nature of the agreement. Provide the method of computation and application of your overhead expense, including cost breakdown and showing trends and budgetary data as necessary to provide a basis for evaluation of the reasonableness of proposed rates.

4. If the total cost entered here is in excess of \$250, provide on a separate page the following information on each separate item of royalty or license fee: name and address of licensor; date of license agreement; patent numbers, patent application serial numbers, or other bases on which the royalty is payable; brief description, including any part or model numbers of each contract item or component on which the royalty is payable; percentage or dollar rate of royalty per unit; unit price of contract item; number of units; and total dollar amount of royalties. In addition, if specifically requested by the contracting officer, a copy of the current license agreement and identification of applicable claims of specific patents shall be provided.

5. Provide a list of principal items within each category indicating known or anticipated source, quantity, unit price, competition obtained, and basis of establishing source and reasonableness of cost.

CONTINUATION OF EXHIBIT A—SUPPORTING SCHEDULE AND REPLIES TO QUESTIONS II AND V.

