

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE	PAGE OF PAGES 1   2
2. AMENDMENT/MODIFICATION NO. M0020	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO. See Schedule	5. PROJECT NO. (If applicable)
6. ISSUED BY US NRC - HQ ACQUISITION MANAGEMENT DIVISION MAIL STOP 3WFN-05-C64MP WASHINGTON DC 20555-0001	CODE NRCHQ	7. ADMINISTERED BY (If other than Item 6)	CODE
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) SOUTHWEST RESEARCH INSTITUTE ATTN PAUL MALDONADO 6220 CULEBRA RD SAN ANTONIO TX 78238-5166		(x) 9A. AMENDMENT OF SOLICITATION NO.	9B. DATED (SEE ITEM 11)
CODE 007936842	FACILITY CODE	x 10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-HQ-12-C-02-0089 NRCT009	10B. DATED (SEE ITEM 13) 11/30/2012

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)  
See Schedule Net Increase: \$103,675.00

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE X	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. 52.243-2 Changes Cost Reimbursement (Alternate 1)
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor  is not,  is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)  
The purpose of this modification is to: 1) revise the Statement of Work to add Subtask 3-B and exercise option Subtasks 1-C, 2-C and 4-B there by increase the task order ceiling by \$21,160.00 and from \$7,678,192.00 to \$7,699,352.00 inclusive of exercised optional subtasks work to accommodate additional contractor support, and 2) provide funding in the amount of \$103,675.00 from \$7,199,462.00 to \$7,303,137.00. Task Order NRCT009 under Contract NRC-HQ-12-C-02-0089 is hereby modified as follows:

- Attachment No. 1: Technical Direction to revised Statement of Work per RFP dated March 15, 2017 incorporates the changes in accordance with this direction.
- Section A.2 CONSIDERATION AND OBLIGATION-COST-PLUS-AWARD-FEE (AUG 2011) is hereby Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) R. B. Kalmbach Executive Director, Contracts	15B. CONTRACTOR/OFFEROR 	15C. DATE SIGNED 4/20/2017	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) SHARLENE M. MCCUBBIN	16B. UNITED STATES OF AMERICA 	16C. DATE SIGNED Digitally signed by Sharlene M. McCubbin DN: c=US, o=U.S. Government, ou=U.S. Nuclear Regulatory Commission, ou=NRE-PIV, cn=Sharlene M. McCubbin, 0.9.2342.19200300.100.1.1=200000241 Date: 2017.04.24 12:24:04-04'00
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STANDARD FORM 30 (REV. 10-83)  
Prescribed by GSA  
FAR (48 CFR) 53.243

TEMPLATE - ADM001 SUNSI REVIEW COMPLETE MAY - 1 2017 ADM002

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED  
 NRC-HQ-12-C-02-0089/NRCT009/M0020

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NAME OF OFFEROR OR CONTRACTOR  
 SOUTHWEST RESEARCH INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>revised as follows:</p> <p>(a) The total estimated cost to the Government for full performance of this contract is \$7,699,352.00 inclusive of exercised optional subtasks to accommodate additional contractor support, of which the sum of \$7,004,332.00 represents the estimated reimbursable costs, and of which \$278,005.80 represents the base fee.</p> <p>(b) An award fee pool of \$417,014.20 is hereby established for this task order. Evaluation of award fee earned will be accomplished in accordance with the attached Award Fee Plan (AFP). The Government reserves the right to unilaterally change the content of the AFP at any time during the life of this contract. Any changes to the plan will be furnished to the Contractor prior to the date they become effective. The amount of award fee available for each period of evaluation and the amount of time for each period will be set forth in the AFP. The final evaluation and determination as to the amount of award fee earned during an evaluation period shall be made unilaterally by the Fee Determination Official (FDO). The Contractor shall be advised of the award fee decision by letter which shall include the rationale for reaching the decision.</p> <p>(c) The amount obligated by the Government with respect to this task order is \$7,303,137.00 of which \$6,610,678.00 represents Cost, \$417,014.20 represents award fee and \$275,444.80 represents base fee.</p> <p>3. This actions provided funding in the amount of \$103,675.00.</p> <p>All other terms and conditions remain the same.                      Period of Performance: 11/21/12 - 09/30/2017.                      (unchanged)                      Total Order Ceiling: \$7,699,352.00 (changed)                      Exercised ceiling Amount: \$7,699,352.00 (changed)                      Total Amount Obligated: \$7,303,137.00 (changed)                      Period of Performance: 11/21/2012 to 09/30/2017</p>				

**PROJECT TITLE:** OPERATION OF THE CENTER FOR NUCLEAR WASTE ANALYSES AS THE NRC'S FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER (FFRDC) – FIFTH RENEWAL

**TASK TITLE:** DISPOSAL-RELATED INTEGRATED SPENT NUCLEAR FUEL REGULATORY ACTIVITIES--IDENTIFICATION AND ANALYSIS OF KEY REGULATORY AND TECHNICAL ISSUES FOR DISPOSAL OF SPENT NUCLEAR FUEL AND HIGH-LEVEL WASTE

**TASK ORDER NUMBER:** 009  
**JOB CODE:** J5662  
**B&R NUMBER:**  
**ISSUING OFFICE:** Spent Fuel Management, NMSS  
**NRC CONTRACT SPECIALIST (CS):** Sharlene McCubbin (301) 415-5392  
**NRC CONTRACTING OFFICER'S REPRESENTATIVE (COR):** Jack Gwo (301) 415-8736  
**FEE RECOVERABLE:** No  
**CAC NUMBER:** A33017, A33020  
**DOCKET NUMBER:** NA

## **1.0 BACKGROUND**

On January 29, 2010, President Obama directed the Secretary of Energy to establish the Blue Ribbon Commission on America's Nuclear Future (BRC) to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle and recommend a new strategy. Pursuant to its Charter, the BRC provided its final recommendations to the Secretary of Energy on January 26, 2012. In 2013, DOE released a new waste management strategy that endorses a system containing a pilot interim storage facility; a larger, full-scale interim storage facility; and a geologic repository. In 2015, DOE noted its intent to pursue separate defense and commercial HLW disposal facilities. To remain positioned to support national policy changes in areas associated with its regulatory purview, NRC staff identified and has continued to analyze key regulatory and technical issues associated with high-level waste disposal in a variety of potential repository designs and geologic media.

NRC has identified actions from regulatory, environmental impacts assessment, and technical perspectives that will improve the ability of the Agency to quickly adapt to changes in national policy. NRC has identified an integrated approach for regulating the back end of the nuclear fuel cycle including long term storage and deferred transportation, reprocessing, and ultimate disposal of high level waste. An integrated perspective is needed because the subsystems in the back end of the fuel cycle are interdependent; long term storage may impact disposal options, and reprocessing can affect both storage and disposal, for example. Near-term flexibility is a key consideration because national policy is likely to remain in flux. The activities identified are needed regardless of direction of national policy, and are designed to support the Agency's mission under a range of policy outcomes. Because all plausible alternative scenarios for the back end of the nuclear fuel cycle produce residual waste, it is assumed that geological isolation will be a component of any new national policy.

## 2.0 OBJECTIVE

The objective of this task order is to obtain technical assistance with the identification and analysis of key regulatory and technical issues associated with a variety of potential repository systems.

## 3.0 STAFFING

Professional staff proposed for the effort shall be thoroughly familiar with the technical aspects of the activities they are tasked with. Technical expertise in the following areas will be needed: geology; seismology and volcanology; hydrology, including coupled thermal-hydrology-geochemical processes; materials science and corrosion; geochemistry; engineered barrier systems, including cementitious materials; mechanical or mining engineering familiarity with a variety of disposal media and depths, including salt and deep boreholes; nuclear engineering; waste form; source term (thermal loads, inventory as function of different waste streams, burn-ups, and storage times); radionuclide release; radionuclide transport; performance assessment, and health physics. Preclosure safety analysis expertise is needed to address specific aspects of operational safety issues associated with very long term storage and deferred transportation of fuel that could be handled in different potential waste disposal systems.

## 4.0 SCOPE OF WORK AND DELIVERABLES

The overall objective of this task is for NRC and CNWRA staffs to collaborate in further analyzing important regulatory and technical issues associated with high-level waste disposal alternatives. The current task will build on the work completed in this area in FY12 through FY15 and discussed in the staff's report of key regulatory and technical issues associated with disposing of spent fuel and high-level waste in a repository other than Yucca Mountain (key issues report). The work conducted under this task order shall be subject to the project management requirements described in Section 5.0. The work required is described in detail below and in Appendix A. Note that Subtasks 2-C and 4-B, and a component of subtask 1-C are optional. The exercise of these options is subject to fund availability and further NRC evaluation of contractor performance.

### 4.1 TASK 1: COUPLED THERMAL, HYDROLOGICAL, MECHANICAL AND CHEMICAL (THMC) PROCESSES

The contractor (CNWRA) shall respond to NRC staff comments and finalize the following subtask deliverables and administrative items:

#### SUBTASK 1-A – Complete FY15 Reports and DECOVALEX-2015 Manuscript Review

The contractor shall respond to NRC staff comments and finalize the report: *Modeling of the Bentonite HE-E Test for DECOVALEX.*

The contractor shall provide input and review, as needed, the DECOVALEX-2015 Task B1 final report and three journal articles on the Task B1 subtasks. This report and these journal articles are being developed by lead authors from other organizations in DECOVALEX-2015.

**Deliverables:** The contract shall deliver two sets of products: (1) a final HE-E test modeling report, and (2) DECOVALEX Task B1 team manuscripts with review comments,

SUBTASK 1-B – Modeling of the DECOVALEX Bentonite Column and HE-E Test

The contractor shall develop a journal paper on Task B1 modeling of the column and HE-E tests, with or without collaboration with other DECOVALEX-2015 teams. The contractor shall document in the paper extra analyses conducted by CNWRA staff during the last phase of DECOVALEX-2015.

**Deliverables:** The contract shall deliver a journal article manuscript for column and HE-E test modeling.

SUBTASK 1-C – THC coupling of xFlo and Geochemist's Workbench

The contractor shall develop two-way coupling of xFlo and FLAC and transfer the technology to NRC. The contractor shall also update the userguide of xFlo if the development requires changes to the model.

The following component of subtask 1-C is optional:

The contractor shall develop a prototype of a coupled xFlo and Geochemist's Workbench (GWB) model. In coupling xFlo and GWB, the contractor should consider the effect of buffer chemistry on corrosion and spent fuel dissolution, including key geochemical species such as chloride (copper corrosion) and carbonate/bicarbonate (spent fuel dissolution). The contractor should also consider the effects of thermal process, mineral precipitation and dissolution on the performance of bentonite buffer materials. The contractor shall provide a technical report describing the coupled model and examples used to verify the coupling of the two codes.

**Deliverables:** The contract shall deliver three sets of products: (1) updated xFlo model code, including a verification test suite of inputs and outputs, Matlab and FISH files used to couple xFlo and FLAC, FISH files for CAM-Clay constitutive model, and an updated xFlo user's manual if applicable, (2) either a workshop at NRC or an NRC staff exchange to CNWRA to transfer modeling technology of the coupled xFlo-FLAC code to NRC, with the objective to improve NRC staff's knowledge and modeling capability for coupled THM systems, and **optionally** (3) a prototype, coupled xFlo-GWB model, a technical report describing the coupled model, including the model verification examples.

4.2 TASK 2: SPENT FUEL (SIMFUEL) AND WASTE PACKAGE MATERIALS

SUBTASK 2-A – FY15 Laboratory Experiments on Waste Form and Waste Package Materials

The contractor shall respond to NRC staff comments and finalize the reports: *SIMFUEL Dissolution Experiments* and *Waste Package Corrosion Experiments—Copper and Carbon Steel*. Experiments started in FY15 and continued into FY16 should be finalized and terminated within a time frame as directed by NRC staff. Data collected in these experiments should be analyzed and added to the reports.

The contractor shall prepare summary papers of the two reports and submit them to peer reviewed journals for publication.

**Deliverables:** The contractor shall deliver two sets of products: (1) revised SIMFUEL and waste package reports that incorporate recent laboratory data and analyses, and (2) summary papers of the two sets of experiments to be submitted as manuscripts of peer reviewed journal articles.

SUBTASK 2-B – Generation and Fate of Gaseous Species in the Near Field

The contractor should conduct literature review and quantitative analysis, if applicable, of the mechanisms of gas generation, including information of hydrogen fugacity, around the interface between waste package and bentonite buffer.

**Deliverables:** A technical report summarizing findings of the literature review and quantitative analysis, if available.

OPTIONAL SUBTASK 2-C – Short Term Laboratory Experiments on Waste Package Materials and Spent Fuel

The contractor shall conduct two short term tests in the laboratory: (1) electrochemical experiments to elucidate the effects of chloride on copper corrosion and that of cathodic hydrogen on carbon steel and (2) immersion experiments of SIMFUEL to identify a second potential mechanism of spent fuel dissolution, in addition to electrochemical processes.

**Deliverables:** The contractor shall deliver two technical reports describing methods, results, analysis, and conclusions with respect to the two sets of experiments mentioned above.

4.3 TASK 3: MODELING SALT ROCK GEOMECHANICAL DEFORMATION

SUBTASK 3-A – Modeling of WIPP Heater Test

The contractor shall continue the FY15 modeling of WIPP in-situ test, focusing on the heated room test.

**Deliverables:** The contractor shall deliver a technical report summarizing the approaches, constitutive models, numerical models and input parameters, results and analysis, and conclusion of the modeling task mention above.

OPTIONAL SUBTASK 3-B – Modeling of WIPP Heater Test With Subsurface Heterogeneity

The contractor shall wrap up the modeling of WIPP in-situ test during the first half of FY17, focusing on the heated room test with consideration of the subsurface heterogeneity of the site.

4.4 TASK 4: PERFORMANCE ASSESSMENT MODEL SOAR

SUBTASK 4-A – Enhancement to SOAR

The contractor shall update the SOAR code and user guide to include the following components:

1. A flexible link between buffer failure/reheal and waste package corrosion; and
2. A shaft transport pathway.

The contractor shall conduct testing of the SOAR model and document the testing results and findings.

**Deliverables:** the contractor shall deliver an updated SOAR model, model testing summary and an updated user guide.

#### **OPTIONAL SUBTASK 4-B – THMC Support to SOAR**

The contractor shall work with the THMC team (Subtask 1) to apply the coupled xFlo-FLAC model to determine potential evolutions of buffer performance, including effects of temperature from unaged spent nuclear fuel. The SOAR and THMC teams should work closely with NRC staff lead to identify approaches and methodologies aiming at providing technical basis for the abstraction of buffer material performance during the life-cycle of a geological high-level waste repository.

**Deliverables:** the contractor shall deliver a technical report documenting the application of xFlo-FLAC to bentonite buffer performance analysis and the SOAR abstraction of the performance as a result.

### **5.0 PROJECT MANAGEMENT**

The contractor (Center) shall maintain effective communication with NRC staff to help coordinate and integrate this effort with NRC's technical and decision-making activities. The contractor (Center) shall also coordinate all necessary NRC communication through the NRC COR and/or NRC TO COR. We expect strong NRC staff involvement in the development of, and participation in conducting, the work in the various topic areas identified in Section 3.0. The NRC may assign a technical lead (principal investigator) from the NRC staff for each of the topic areas who will serve as the Center's direct technical interface for the topic. This principal investigator will be responsible for: (1) correctly defining the focus for the Center's activities for their assigned topic, in coordination with the NRC COR and/or the NRC TO COR (see Section 13 for restrictions on providing technical direction); (2) ensuring the proper focus is maintained during the technical activities; and (3) ensuring integration of efforts for the specific topic between the Center and the NRC. Any redirection not given by the NRC COR or NRC TO COR should be reported to the NRC COR and NRC TO COR immediately.

### **6.0 ACCEPTANCE CRITERIA**

The contractor shall describe any applicable quality assurance program. Specifically, any work (i.e., data, interpretations, models, computations, methods, etc.) developed under the contract shall be performed under an adequate quality assurance program (discussed with and approved by the NRC COR and/or the NRC TO COR) to ensure the technical accuracy and quality of the documents produced. Quality assurance comprises all those planned and systematic actions necessary to provide adequate confidence that the assessments have been satisfactory performed. Quality assurance shall include verification for completeness, accuracy, consistency, and sufficient documentation to assure the reproducibility of the results of all calculations, laboratory experiments (if any), or modeling.

Because the funding for this effort is not from the Nuclear Waste Fund, but represents fee-based

funds, all documentation (e.g., Scientific Notebooks or Deliverables) shall be separate from documentation of Nuclear Waste Fund work and should not be directed to the Part 63 docket.

## **7.0 LEVEL OF EFFORT**

The estimated funding level of the subtasks outlined in section 4.0 is \$500,000 and is subject to fund availability. The fund ceiling will also be ~~was~~ increased by \$499,890,500,000 to \$7,699,352,485. The funding should only be used for the new subtask 3B and the to exercise optional subtasks 1-C, 2-C, ~~3-B~~, and 4-B and excludes the remaining subtasks performed earlier (Subtasks 1-A, 1-B, 2-A, 2-B, 3-A, and 4-A) in FY17.

The performance period is extended to September 30, 2017.

A revised spending plan for the remainder of ~~FY16~~ and the first and second quarters of FY17 and technical and cost change pages should be submitted to NRC for review and approval.

## **8.0 MEETINGS AND TRAVEL**

Domestic, and any potential international travel, related to this effort shall require the prior approval by the NRC COR or NRC TO COR. To enhance integration and support the collaborative effort expected between the staffs of the NRC and the contractor (Center) on this task, the NRC staff may participate in staff exchanges with the Center, subject to prior approval by the NRC and the Center.

## **9.0 NRC FURNISHED MATERIAL**

The NRC TO COR and/or NRC task leads will provide the necessary information to conduct the activities for each topic to the pertinent, identified, Center staff.

## **10.0 CONTRACTOR ACQUIRED MATERIAL**

No materials are expected to be acquired.

## **11.0 PERIOD OF PERFORMANCE**

The period of performance of this task order shall begin on November 21, 2012, and will expire on or about ~~March~~ September 30~~1~~, 2017. The revised deliverables and schedule for work conducted under this task order are summarized in Appendix A.

## **12.0 REPORTS**

All reports are to be developed in the contractor (CNWRA) SharePoint system. Submittals for all Task deliverables shall be submitted via electronic mail with electronic attachments consistent with the word processor in use at the NRC or in portable document format (*i.e.*, \*.pdf), as appropriate. The contractor shall also include the NRC COR and NRC TO COR for Job Code J5662 and the relevant NRC principle investigators in the electronic mail. Reports by the contractor shall be in letter report form. The deliverables should attribute work to both NRC and CNWRA when the outcome is a result of joint effort between NRC and CNWRA.



**APPENDIX A  
SCHEDULE AND DELIVERABLES**

The schedule of deliverables for Tasks 1 is outlined below.

TASK	DELIVERABLE	SCHEDULE (business days)
1-A	Finalized FY15 Report: Modeling of the Bentonite HE-E for DECOVALEX	August 29, 2016
1-A	DECOVALEX-2015 Task B1 team journal manuscripts with review comments	TBD
1-B	Journal article manuscript on DECOVALEX-2015 Task B1 column and HE-E tests, independent or in collaboration with DECOVALEX-2015 teams	December 9, 2016
1-C	Updated xFlo model, userguide (if applicable), and verification suite, with FLAC coupling modules	January 14, 2017
1-C	xFlo-FLAC modeling workshop (at NRC or CNWRA)	March 11, 2017
*1-C	xFlo-GBW coupled model with a technical report	TBD
2-A	Finalized Reports: Laboratory Experiments on Waste Package Materials	September 22, 2016
2-A	Finalized Reports: Laboratory Experiments on Waste Form (SIMFUEL)	September 22, 2016
2-A	Summary Paper: Laboratory Experiments on Waste Package Materials	October 23, 2016
2-A	Summary Paper: Laboratory Experiments on Waste Form (SIMFUEL)	October 23, 2016
2-B	Technical report – generation and fate of gaseous species at buffer-waste package interface	February 24, 2017
*2-C	Technical report – short term electrochemical experiments of waste package materials	TBD
*2-C	Technical report – short term immersion experiments of SIMFUEL	TBD
3-A	Technical report – geomechanical modeling of heater tests in a salt rock repository	February 10, 2017
*3-B	<u>Progress report – geomechanical modeling of heater tests in a heterogeneous salt host rock</u>	<u>TBD</u>
4-A	Update SOAR model with a testing summary report	January 20, 2017
4-A	Update SOAR userguide	February 17, 2017
*4-B	Technical report – xFlo-FLAC modeling and SOAR abstraction of buffer long-term performance	TBD

\*Deliverables associated with optional tasks.

### **13.0 TECHNICAL/PROJECT DIRECTION**

Jack Gwo is the NRC TO COR and the focal point for all task order-related activities. Technical direction may be provided by the NRC TO COR to the contractor during the duration of this task order.

### **14.0 STANDARD WORK PRACTICES**

For all draft and final reports under this agreement, the contractor shall assure that an independent review of numerical computations, mathematical equations, and derivations is performed by qualified technical staff other than the original author(s) of the reports and other than the person who performed the original calculation. If the contractor proposes to check less than 100 percent of all computations, mathematical equations, and derivations in the report(s) (such as may be the case when there is a large number of routine, repetitive calculations), the contractor must first obtain approval from the NRC COR and/or NRC TO COR. In addition, all reports, including those which do not contain numerical analyses must be reviewed for consistency and readability in accordance with the procedures outline for the CNWRA's programmatic review. Informal submittals/deliverables must be reviewed and forwarded from at least the Project Manager level.

This section does not intend to create the development of a formal quality assurance program nor does it require formal quality assurance program documentation or review.