GEOSCIENCES AND ENGINEERING DIVISION
QUALITY ASSURANCE
SURVEILLANCE REPORT

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SURVEILLANCE SCOPE: Hydrology Activities

REFERENCE DOCUMENTS: AP-001, Evaluation of Potential for Conflict of Interest; QAP-001, Scientific Notebook Control; QAP-002, Review of Documents, Reports, and Papers; QAP-004, Surveillance Control; QAP-005, Quality Indoctrination and Training; QAP-007, Professional Personnel Qualification; QAP-013, Quality Planning; QAP-014, Documentation and Verification of Scientific and Engineering Calculations; and QAP-019, Control of Measuring and Test Equipment

START DATE: 7/25/2005	END DATE 8/29/2005	QA REPRESENTATIVE: Mark R. Ehnstrom MRE

PERSONS CONDUCTING ACTIVITY: G. Wittmeyer, G. Walter, C. Dinwiddie, J. Winterle, D. Farrell, C. Manepally, S. Painter, D. Bannon, S. Svedeman, R. McGinnis, S. Colton, R. Green

SATISFACTORY FINDINGS: The Hydrology organization is responsible for four Integrated Subissues: Climate and Infiltration, Flowpaths in the Unsaturated Zone, Flowpaths in the Saturated Zone, and Concentration of Radionuclides in Groundwater. QRAMs for these activities were reviewed at the start of the surveillance. Surveillance confirmed that activities referenced on the QRAMs are still applicable and accurate.

Qualification and training records for personnel contacted during this surveillance and consultants /subcontractors S. Green, F. Viania, and A. Woodbury were reviewed and found acceptable.

Entries for Scientific Notebooks 340, 480E, 616, 639 and 699 were reviewed and were satisfactory.

Climate and Infiltration: Currently there is limited activity in this subissue. Work has not yet started on models which would evaluate net infiltration of water at Yucca Mountain.

Flowpaths in the Unsaturated Zone: Current project activity has diminished recently with some laboratory work being performed in Bldg. 51. Calibration labels were checked and documentation for equipment used during the scale drift test was searched and found in the Electronic Library Facility. The attachment identifies equipment reviewed.

Flowpaths in the Saturated Zone: Current activity provides technical assistance to NRC, including developing a model and writing scripts for MATLAB which would automate parameter estimates to match observations. MATLAB is a commercially available engineering tool exempt from TOP-018 because it implements user-defined functions. Another activity uses EarthVision V7.5 to explore fault relationships. EarthVision 7.5 is under TOP-018 control and was validated in August 2004.

Concentration of Radionuclides in Groundwater: Work activities concentrated on validating GMS 5.1 and MT3DMS 4.5. Validation tests are complete for GMS 5.1 and the report is

currently in the review process. The validation test plan for MT3DMS V 4.5 is currently being developed. These codes will be used to develop models which simulate transport of radionuclides in groundwater. MT3DMS V 4.5 was used as the graphical interface for GMS 5.1. The analytical solutions for validation were performed using MATLAB. The Humboldt Bay Safety Evaluation Report (performed for the MGFE organization) was reviewed and documentation showed that scientific and engineering calculations had been verified and that the report had been through a significant review process. Comments generated during the review had been properly addressed.	
UNSATISFACTORY FINDINGS: None	
NCR NO.: N/A	CAR NO.: N/A
ATTACHMENTS: Equipment reviewed during the surveillance.	
RECOMMENDATIONS/ACTIONS: None	
APPROVED: _____ DATE: 8/30/2005	DISTRIBUTION: ORIGINAL—QA RECORDS DIRECTOR, QA GED VP, CNWRA Pres., DIRECTOR, DEMPS ASSISTANT DIRECTOR: G. Wittmeyer PRINCIPAL INVESTIGATOR: G. Walter, C. Dinwiddie, J. Winterle, D. Farrell