



Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, NV 89036-0307

QA: N/A

OCT 01 2001

OVERNIGHT MAIL

N. King Stablein
High Level Waste & Uranium Recovery
Division of Waste Management
Office of Nuclear Material Safety & Safeguards
U.S. Nuclear Regulatory Commission
Two White Flint North
Rockville, MD 20852

SUBMITTAL OF PARTICIPANTS' MONTHLY PROGRESS REPORT

As you have requested, the U.S. Nuclear Regulatory Commission is on distribution to receive a copy of the Yucca Mountain Site Characterization Project participants' monthly status report on a regular basis. Enclosed is the U.S. Geological Survey Progress Report for August 2001.

If you have any questions, please contact Bertha M. Terrell at (702) 794-1348.

A handwritten signature in cursive script that reads "Stephan Brocoum".

Stephan Brocoum
Assistant Manager, Office of
Licensing and Regulatory Compliance

OL&RC:BMT-1819

Enclosure:
Ltr, 9/17/01, Craig to Trebules, w/encl

WMM-11
P115507

cc w/o encl:

J. R. Curtiss, Winston & Strawn, Washington, DC

cc w/encl:

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B. J. Garrick, ACNW, Rockville, MD
W. D. Barnard, NWTRB, Arlington, VA
J. H. Kessler, EPRI, Palo Alto, CA
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R. R. Loux, State of Nevada, Carson City, NV
John Meder, State of Nevada, Carson City, NV
Alan Kalt, Churchill County, Fallon, NV
Irene Navis, Clark County, Las Vegas, NV
Harriet Ealey, Esmeralda County, Goldfield, NV
Leonard Fiorenzi, Eureka County, Eureka, NV
Andrew Remus, Inyo County, Independence, CA
Michael King, Inyo County, Edmonds, WA
Mickey Yarbrow, Lander County, Battle Mountain, NV
Jason Pitts, Lincoln County, Caliente, NV
Judy Shankle, Mineral County, Hawthorne, NV
L. W. Bradshaw, Nye County, Pahrump, NV
Geneva Hollis, Nye County, Tonopah, NV
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United States Department of the Interior

U. S. GEOLOGICAL SURVEY
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IN REPLY REFER TO:

INFORMATION ONLY

September 17, 2001

Victor W. Trebules
Director, Office of Project Control
Yucca Mountain Site Characterization
Project Office
U. S. Department of Energy
P.O. Box 30307
Las Vegas, Nevada 89036-0307

SUBJECT: Yucca Mountain Project Branch - U.S. Geological Survey (YMPB-USGS)
Progress Report, August, 2001

Attached is the USGS progress report in the required format for the month of August, 2001.

If you have any questions or need further information, please call Raye Ritchey Arnold at (303)236-5050, ext 296.

Sincerely,

Raye R. Arnold

For Robert W. Craig
Technical Project Officer
Yucca Mountain Project Branch
U.S. Geological Survey

Enclosure:

cc: J. Bresee, DOE/OCRWM-HQ/Forrestal
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D. Barr, DOE, Las Vegas
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ENCLOSURE

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S. Morris, DOE, Las Vegas
R. Spence, DOE, Las Vegas
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D. Williams, DOE, Las Vegas
C. Glenn, NRC, Las Vegas (2 copies)
G. Bodvarsson, M&O/LBNL
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R. Wemheuer, M&O/Las Vegas
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**U.S. GEOLOGICAL SURVEY
EXECUTIVE SUMMARY**

August 2001

GEOLOGY

In work on the lithostratigraphy of Nye County early-warning drilling-program boreholes, a data package ("Interpretations of Deep Boreholes, Nye County Early Warning Drilling Program, Phase II") reporting information on Phase II boreholes has progressed through technical review. Revisions are being compiled in response to technical review comments and suggestions. The first technical review on the Nye County hydrostratigraphic cross sections has been performed, and review comments have been used to revise those cross sections. Additional revisions will follow receipt of comments from the second review.

The Underground Mapping Team continued a range of efforts, with particular focus on fracture studies. Large efforts were dedicated to development of underground observations of excavation-related fractures, in support of the Excavation-Induced Fracture study. A memo to the TPO presenting results of those observations was prepared. Other underground work involved preparations for photography for study in the ECRB of lithophysae in the Topopah Spring lower-lithophysal unit in support of Engineered Barrier System studies. Another memo to the TPO describing submittal of the 3-D fracture depiction for Alcove #8/Niche #3 was prepared and submitted in completion of Level 5 milestone SPW151M5 [**Memo to TPO: Submittal of 3-D Fracture Depiction**] on August 1. Compilation of geotechnical field data for Waste Handling Building evaluation continued. Field mapping continued as mine-back excavations proceeded at Busted Butte. Other activity involved on-going digitization of field maps. Additional field activity was conducted on the Supplemental Surficial Fracture Study, and several days were spent preparing data presentations for the TPO.

SATURATED-ZONE STUDIES

Development of the hydrogeologic framework model AMR continued with technical review of new geologic cross sections constructed using USGS lithostratigraphic logs of Nye County boreholes. Revision 00/ICN 01 of the existing hydrogeologic model AMR was reviewed with particular emphasis on sections that will require rewriting for the upcoming revision (Rev. 01).

In work on the water-level AMR, initial check of the AMR was completed, and checker comments were resolved. Back-check was initiated, and back-check comments were received. Work began on resolution of those comments, as well as on resolution of data-management and status issues.

Several efforts continued in work on hydraulic and tracer testing at the C-hole complex and at the Alluvial Testing Complex (ATC). The process of obtaining closing calibrations for instruments used in Early Warning Drilling Program (EWDP) testing in Nye County wells continued. Westbay pressure transducers used to monitor wells Washburn 1-x and NC-EWDP-15P, -19P, -4PA, and -4PB were sent to Westbay, Inc., for closing calibrations. Work continued on data spreadsheets, on the data summary sheets, citations of scientific notebook entries for supporting information, and on other components of the data package for the ATC single-hole hydraulic testing. Attempts will be made to incorporate observation-well data (from wells listed above) in the package, along with the main data collected at pumped well NC-EWDP-19D1. The software routine InjPmpBk.vi was used to obtain preliminary base-case analysis of the three single-hole injection/pumpback/tracer tests conducted in well NC-EWDP-19D1. Verification of software routines continued; a software tracking number was obtained for routine rev2amos.exe, a core Fortran program to solve the advection-dispersion equation for a convergent flow field.

Drilling on wells IM1 and IM2 continued in August. Well IM1 was reamed and completed with screens, surrounding sand packs, and screen-isolating bentonite plugs. (Actual cross-hole hydraulic and tracer tests are not scheduled to begin until October 2001.) Design of instrumentation by the USGS is underway for well IM2, and procurement of components likewise is underway.

Abstraction of text from existing in-progress USGS manuscripts was performed in August to provide text for the saturated-zone *in situ* testing AMR in description of hydraulic testing at the C-holes complex. Final review of that abstraction is underway by the principal investigator. Similar abstractions were completed for description of conservative-tracer testing at the C-holes complex, likewise for the SZ testing AMR.

Water-level monitoring activities involved preparation of data packages, with two assemblages of manual water-level measurements (data from the periods July—December 2000 and January—July 2001) and two compilations of continuously recorded data (August 2000 to March 2001 and April—June 2001) submitted for checker review. Those compilations represent several milestones, which will be completed after minor additional processing. Additional work was focused on preparation of illustrations and tabular data for the USGS open-file report on water levels during the period 2000—2001. USGS staff also assisted UNLV with shop maintenance of water-level measuring equipment, as part of on-going transition of water-level monitoring activities.

Multiple efforts continued regarding the Death Valley regional flow-system (DVRFS) modeling. Several facets of work continued on development of the hydrogeologic framework model (HFM). Construction of the new 3-D HFM continued. The draft report describing the HFM used for the steady-state flow model is being sent for report-specialist review and DOE concurrence. Data sets for the transient HFM are being finalized. The hydrostructural map (by C. Potter and others) is being processed by the GD Central Publications Group (CPG). Staff members have responded to editorial comments made by CPG and are submitting the map for Director's Approval for

publication in the USGS MF series. Work also continued on two short summary papers for the facies maps, to be included in the digital-data-series publication of those maps. The following report (intended as a USGS open-file report) has been through USGS technical review and is ready for submittal to the USGS Geologic Division Publications Group:

Sweetkind, D.S., and White, D.K., *Facies analysis of Late Proterozoic through Lower Cambrian clastic rocks of the Death Valley regional ground-water system and surrounding areas, Nevada and California.*

Work continued on additional draft manuscripts describing facies analysis of Tertiary volcanic and basin-filling rocks of the Death Valley regional ground-water system. Several elements of work continued on flow-model construction. Revisions were made in response to reviewers' comments on the draft flow-modeling report. Additional revisions were made, and flags were added, to the DVRFS water-level data base. Coordination continued with the water-use group regarding determination of well depths for TRS (township/range/section) and model-grid coordinate systems.

UNSATURATED-ZONE STUDIES

The USGS continued to monitor pressure, temperature, and water potential at stations located in boreholes UE-25 UZ #5, UE-25 UZ #4, and USW NRG-7a. At the request of the NRC, shutdown of the UZ borehole-monitoring program has been postponed until the NRC has reviewed the data and agrees that the program should be halted. To assist the NRC, USGS scientists gave a preliminary Appendix 7 presentation to the DOE and to project staff; future plans for a presentation to the NRC remain undecided. The USGS continued to compile listing of equipment to be shut down and calibrated, and work to prepare the Area 25 HRF calibration lab to complete close-out calibrations also continued. Preparations to send equipment to vendors for close-out calibrations also was on-going during the period.

Compilation of materials needed to complete data-package submittals for strontium and uranium analyses continued, in support of the Drift-Scale Test in the ESF.

Fluid-inclusion work during the period was focused on preparation and processing of data compilations. A data package containing fluid-inclusion temperature data from calcite/opal inclusions has been prepared. That package has now been through the checking process and has been submitted for records processing. A related data package—compilation of surrogate-record data to support the fluid-inclusion studies—has been prepared and also is in the checking process.

Work continued on the following reports intended for submission to a special issue of the technical journal APPLIED GEOCHEMISTRY on aspects of geochemistry at Yucca Mountain. Final versions are expected to be completed in September.

- 1) *U-Pb dating of secondary silica at Yucca Mountain, Nevada: Implications for paleohydrology of the unsaturated zone*, by L.A. Neymark, Y.V. Amelin, J.B. Paces, and Z.E. Peterman. This paper describes results of U-Pb dating of opal

and chalcedony in Yucca Mountain mineral coatings and demonstrates slow long-term average growth rates over the past 10+ million years. The manuscript has received USGS Director's approval and is ready to be submitted to the journal.

- 2) *²³⁴U/²³⁸U evidence for local recharge and patterns of ground-water flow in the vicinity of Yucca Mountain, Nevada, USA*, by J.B. Paces, K.R. Ludwig, Z.E. Peterman, L.A. Neymark. Although this paper focuses on ground water at Yucca Mountain and nearby areas, it relies on uranium isotopes in secondary minerals to demonstrate that saturated-zone water beneath the site is isolated from flow in adjacent areas and that small volumes of fracture flow through the Yucca Mountain unsaturated zone result in localized recharge. Revisions based on technical reviews are completed, and the manuscript is currently in the final stages of editorial review.
- 3) *Hydrogeochemical processes of secondary mineral formation in the unsaturated zone at Yucca Mountain, Nevada*, by J.F. Whelan, J.B. Paces, and Z.E. Peterman. This paper describes the distribution, mineralogy, textures, parageneses, and stable isotopic compositions for unsaturated-zone mineral coatings and demonstrates that those features indicate mineral deposition in an unsaturated-zone environment. It also counters arguments, based largely on fluid-inclusion studies by contractors to the State of Nevada, that minerals formed from upwelling hydrothermal fluids. The manuscript is currently undergoing revision after technical review.

In additional isotopic and chemical results, a USGS Water Resource Investigations Report, titled *Ages and origins of calcite and opal in the Exploratory Studies Facility tunnel, Yucca Mountain, Nevada*, by J.B. Paces, L.A. Neymark, B.D. Marshall, J.F. Whelan, and Z.E. Peterman, received USGS Director's approval as WRIR 01-4049. The WRIR will supersede a milestone report which has been used widely to describe fundamental physical, isotopic and geochronological aspects of secondary minerals in the Yucca Mountain unsaturated zone.

WATER-RESOURCES MONITORING

Ground-water levels were measured at 33 sites, and ground-water discharge was measured at five springs and at one flowing well. Ground-water data collected during July were checked and filed. Work continued on development of the draft report on trend analysis of historical ground-water levels, spring-flow discharges, precipitation, and water-use data in the study area. Additional efforts were devoted to checking the publication-ready versions of the summary monitoring reports for calendar years 1998 and 1999. Those reports were forwarded to the USGS Nevada District for publication. In unscheduled work, updates were prepared for the web page for USGS/DOE Cooperative Studies in Nevada. (That site is http://nevada.usgs.gov/doe_nv.)

USGS Milestone Report
October 1, 2000 - August 31, 2001
Sorted by Baseline Date

Level: 3

Deliverable	Due Date	Expected Date	Completed Date
SSH014M3 Annual Training Plan	6/29/01	6/12/01	6/12/01
SSH015M3 Occupational Training Needs Assessment	6/29/01	6/12/01	6/12/01

USGS Milestone Report
October 1, 2000 - August 31, 2001
 Sorted by Baseline Date

Level: 5

Deliverable	Due Date	Expected Date	Completed Date
SPH856CM Document Missing Closing Calibrations	3/30/01	9/28/01	
SPI022CM Strat Workbook: 2nd Qtr Data Submittal	3/30/01	9/28/01	
SPH747CM Document Missing Closing Calibrations	3/30/01	9/28/01	
SPH48CM5 Dissolved Ion/Iso Anlys Data Pkg to RPC/TDB	3/30/01	9/28/01	
SPH45BCM Uranium/Strontium Anlys Data Pkg to RPC/TDB	3/30/01	9/28/01	
SPH872CM Alcove 1 DP to RPC/TDB	3/30/01	9/28/01	
SPH876CM Document Missing Closing Calibrations	3/30/01	9/28/01	
SPH291CM Diss Ion & Iso Anlys of Perched Wtr to RPC/TDB	3/30/01	3/30/01	3/30/01
SPH396CM Water-Level Data 3rd Qtr FY00 DP to RPC/TDB	3/30/01	3/9/01	3/9/01
SPH956CM Fluid Inclusion Data to RPC/TDB	3/30/01	9/14/01	
SPI026CM Strat Workbook: 4th Qtr Data Submittal	3/30/01	9/28/01	
SPH490CM Alluvium Tstg Complex Results DP to RPC/TDB	3/30/01	9/28/01	
SPM311M5 ATC Hydraulic Testing Data to TDB/RPC	3/30/01	9/28/01	
SPH737CM Moisture Monitoring DP to RPC/TDB	3/30/01	9/28/01	
SPH394CM Water-Level Data 2nd Qtr FY00 DP to RPC/TDB	3/30/01	3/9/01	3/9/01
SPH477CM Descript & DP: Dissolved Ion & Isotopic Anal	3/30/01	3/30/01	3/30/01
SPH854CM Cross Over Infiltration DP to RPC/TDB	3/30/01	9/28/01	
SPH689M5 Progress HFM Update - Litho/Struct	3/30/01	3/29/01	3/29/01
SPI024CM Strat Workbook: 3rd Qtr Data Submittal	3/30/01	9/28/01	

USGS Milestone Report
October 1, 2000 - August 31, 2001
Sorted by Baseline Date

Level: 5

Deliverable	Due Date	Expected Date	Completed Date
SPH715M5 Steady-State Model Report to Review	3/30/01	4/26/01	4/26/01
SPH398CM Report: WL Data for Calendar Year 1999	3/30/01	8/15/01	8/15/01
SPH459CM Document Missing Closing Calibrations	3/30/01	9/28/01	
SPH457CM EBS DP to TDB/RPC	3/30/01	9/28/01	
SPH3491C RPC/TDB: SD-6 Pumping/Monitoring Data Pkg	4/2/01	3/21/01	3/21/01
SPM403M5 Status of Water-Level AMR, Rev 1	4/11/01	4/2/01	4/2/01
SPM341M5 Phase 2 Borehole Lithologies to TDB/RPC	4/16/01	9/14/01	
SSH617CM Document Missing Closing Calibrations	4/26/01	9/28/01	
SSH615CM Tipping Bucket Monitoring Data to RPC/TDB	4/26/01	9/28/01	
SPM509M5 Status of HFM Update	4/27/01	4/19/01	4/19/01
SPH345CM Closing Calibration Data to TDB/RPC	4/30/01	7/10/01	7/10/01
SPH965CM Submit Borehole Logs	4/30/01	9/28/01	
SSW702M5 Letter Update: 2nd Qtr FY01	4/30/01	4/30/01	4/30/01
SPH970CM Submit Ring Density TDIF	5/30/01	10/12/01	
SPW393AM Manual WL Data Jul-Dec 00 to TDB/RPC	5/31/01	9/7/01	9/7/01
SPH703M5 Transient Target Heads Progress Report	5/31/01	5/23/01	5/23/01
SPW393BM Continuous WL Data Aug 00-Mar 01 to TDB/RPC	5/31/01	9/28/01	
SPW396M5 Status of Transition Memo to TPO	6/29/01	6/27/01	6/27/01
SPH717M5 Steady-State Mdl Rpt for USGS Director's Appr	6/29/01	9/28/01	

USGS Milestone Report
October 1, 2000 - August 31, 2001
 Sorted by Baseline Date

Level: 5

Deliverable	Due Date	Expected Date	Completed Date
SPH684M5 Progress HFM Update - Transient Model	6/29/01	6/28/01	6/28/01
SPH676M5 Year End Update on Reg Spatial Data Merge	7/13/01	7/2/01	7/2/01
SPH672M5 Year End Update Reg DB Integ and Anlys	7/13/01	7/2/01	7/2/01
SPZ524M5 C-, O-, Sr- Isotopic Data to TDB/RPC	7/16/01	12/28/01	
SPH493CM Busted Butte Hydro Data to RPC/TDB	7/25/01	8/15/01	8/15/01
SPH494CM Document Missing Closing Calibrations	7/25/01	4/18/01	4/18/01
SPM510M5 HFM Revision to F&T Model	7/30/01	7/30/01	7/30/01
SPM505M5 Status of Geologic X-Sections Memorandum	7/31/01	8/16/01	8/16/01
SSW703M5 Letter Update: 3rd Qtr FY01	7/31/01	7/25/01	7/25/01
SPZ555M5 Tritium, U-Series, Sr Isotope Data to TDB/RPC	8/23/01	2/28/02	
SPW153M5 3-D Fracture Depiction to TDB/RPC	8/28/01	11/15/01	
SPW393CM Manual WL Data Jan-Jun 01 to TDB/RPC	8/31/01	9/14/01	
SPZ617M5 Chem & Isotopic Anlys of Pore Water - TDB/RPC	8/31/01	12/5/01	
SPW393DM Continuous WL Data Apr-Jun 01 to TDB/RPC	8/31/01	9/28/01	
SPM331M5 Memo: Input - Hydr/Conserv Tracer Test to LANL	8/31/01	9/12/01	

YMP PLANNING AND CONTROL SYSTEM (PACS)

MONTHLY COST/FTE REPORT

Participant U.S. Geological Survey

Date Prepared: 9/18/01 12:11 PM

Fiscal Month/Year August 31, 2001

Page 1 of 1

CURRENT MONTH END

FISCAL YEAR

WBS ELEMENT	ACTUAL COSTS	PARTICIPANT HOURS	SUBCONTRACT HOURS	PURCHASE COMMITMENTS	SUBCONTRACT COMMITMENTS	ACCRUED COSTS	APPROVED BUDGET	APPROVED FUNDS	CUMMULATIVE COSTS
1.2.21.1.0	0	0	0	0	0	0	40	0	0
1.2.21.2.1	0	0	0	0	0	0	25	0	13
1.2.21.2.2	38	456	0	0	0	0	74	0	59
1.2.21.3.2	118	1949	0	0	0	0	155	0	118
1.2.21.3.D	-2	-48	0	0	0	0	77	0	8
1.2.21.3.S	62	820	0	0	0	0	75	0	63
1.2.21.3.U	60	948	0	0	157	0	578	0	64
1.2.21.5.2	10	187	0	0	0	0	598	0	497
1.2.21.5.3	113	674	1932	0	104	0	1480	0	1846
1.2.21.5.4	-99	-1287	394	0	15	0	1600	0	1588
1.2.21.5.T	72	439	465	0	26	0	634	0	494
1.2.21.6.1	319	2041	1211	0	35	0	2068	0	1705
1.2.22.4.6	56	306	184	0	41	0	533	0	520
1.2.22.4.E	10	87	73	0	27	0	212	0	99
1.2.22.4.S	42	2441	107	0	132	0	2261	0	1437
1.2.22.4.U	148	1302	1224	0	0	0	2454	0	1890
1.2.22.6.T	0	0	0	0	0	0	350	0	333
1.2.22.8.0	6	97	0	0	0	0	50	0	40
	953	10412	5590	0	537	0	13264	0	10774

U.S. GEOLOGICAL SURVEY

ESTIMATED COSTS FOR October 1, 1999 - August 31, 2001

7/01 11:56:15 AM

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST	
89-10716 Support to Chief Science Organization	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
81912110U1 Support to Chief Science Organizatio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2018 Basis for Recommendation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.21.1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.21.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
89-21211 Science Support to Vol. 1 SR (LOE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.0	1.8	0.0	0.0	12.96
81912121U1 Science Support to Volume 1 - SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.0	1.8	0.0	0.0	12.96
2016 Site Recommendation Rprt Vol. 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.0	1.8	0.0	0.0	12.96
1.2.21.2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.0	1.8	0.0	0.0	12.96
89-21225 Qualitative Natural Analog Study UZ Move	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	19.1	37.8	0.0	58.80
81912122U1 Geology and Natural Analogs Liaison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	19.1	37.8	0.0	58.80
GS6105 USGS YMSD-Science Support to SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	19.1	37.8	0.0	58.80
1.2.21.2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	19.1	37.8	0.0	58.80
1.2.21.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	1.9	20.9	37.8	0.0	71.76
89-21318 International TSPA-SR Peer Review	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.9	0.0	23.93
89-21319 Science Support to TSPA-SR (LOE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	94.5	0.0	94.50
89-21320 TSPA Checker Support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
81912132U2 Science Support to TSPA - SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.4	0.0	118.42
GS2397 USGS TSPA for SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.4	0.0	118.42
1.2.21.3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.4	0.0	118.42
89-22209 Support to Disruptive Events	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	-2.5	0.0	8.12
8191213DU1 Disruptive Events Process Model Rep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	-2.5	0.0	8.12
GS9093 USGS - Tectonic Hazards PMR - SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	-2.5	0.0	8.12
1.2.21.3.D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	-2.5	0.0	8.12
89-21350 Saturated Zone PMR Finalize Field Data	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.7	0.0	23.71
89-21351 Saturated Zone PMR Comment Resolutio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.4	0.0	24.43
89-21355 Saturated Zone PMR rev. 1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	14.39

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8191213SU7 Science Support to SZ PMR for SR	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.4	0.0	62.52
2031 SZ Flow and Transport PMR-SR	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.4	0.0	62.52
1.2.21.3.S	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.4	0.0	62.52
89-21360 Unsaturated Zone PMR Finalize Field Dat	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	23.9	0.0	24.01
89-21361 Unsaturated Zone PMR Comment Resolut	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.3	0.0	24.34
89-21365 Unsaturated Zone PMR rev. 1	0.0	2.1	1.0	0.8	-3.8	3.3	0.0	0.0	0.0	0.0	12.2	0.0	15.48
8191213UU7 Science Support to UZ PMR for SR	0.0	2.1	1.0	0.8	-3.8	3.3	0.0	0.0	0.0	0.0	60.4	0.0	63.83
89-21372 Infiltration Footprint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191213UU8 UZ F&T Analysis and Documentation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
89-10717 USGS Liaison Support to UZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191213UU9 USGS Liaison Support to Unsaturate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
89-21399 DEFERRED - Alcove Moisture Monitoring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191213UUM DEFERRED - Alcove Moisture Monito	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2027 UZ Flow and Transport PMR-SR	0.0	2.1	1.0	0.8	-3.8	3.3	0.0	0.0	0.0	0.0	60.4	0.0	63.83
1.2.21.3.U	0.0	2.1	1.0	0.8	-3.8	3.3	0.0	0.0	0.0	0.0	60.4	0.0	63.83
1.2.21.3	0.0	2.2	1.0	0.8	-3.8	3.3	0.0	0.0	0.0	10.6	238.7	0.0	252.90
82-16300 Water Resources	35.8	35.8	35.8	2.8	45.1	26.7	18.5	46.0	32.7	63.3	1.7	0.0	344.26
81912152U5 Water Resources	35.8	35.8	35.8	2.8	45.1	26.7	18.5	46.0	32.7	63.3	1.7	0.0	344.26
89-10715 Federal Occupational Safety & Health	8.4	10.8	7.6	8.5	7.8	10.6	6.9	9.7	7.6	8.4	8.3	0.0	94.66
81912152U6 Federal Occupational Safety and Hea	8.4	10.8	7.6	8.5	7.8	10.6	6.9	9.7	7.6	8.4	8.3	0.0	94.66
89-84099 DEFERRED - Precipitation Gage Monitori	4.3	16.3	15.1	8.3	9.8	3.0	1.3	0.8	-0.4	0.0	0.0	0.0	58.51
81912152UM DEFERRED - Precipitation Gage Mon	4.3	16.3	15.1	8.3	9.8	3.0	1.3	0.8	-0.4	0.0	0.0	0.0	58.51
GS9121 USGS ES & H Core Program - SR	48.5	62.9	58.5	19.7	62.7	40.3	26.7	56.5	40.0	71.7	10.0	0.0	497.43
1.2.21.5.2	48.5	62.9	58.5	19.7	62.7	40.3	26.7	56.5	40.0	71.7	10.0	0.0	497.43
89-10535 Technical Data Management	36.3	35.5	48.3	36.6	35.7	38.3	36.0	68.1	7.8	38.4	39.7	0.0	420.81
81912153U3 Technical Data Management	36.3	35.5	48.3	36.6	35.7	38.3	36.0	68.1	7.8	38.4	39.7	0.0	420.81

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89-21111 Data Q/V & Software V for SR Products	149.1	163.0	122.0	166.7	168.0	143.0	112.3	96.8	33.8	102.7	94.8	0.0	1,352.06
81912153U5 Data Q/V & Software V for SR Produc	149.1	163.0	122.0	166.7	168.0	143.0	112.3	96.8	33.8	102.7	94.8	0.0	1,352.06
GS2470 USGS Tech. Data Mngmnt - SR	185.5	198.4	170.3	203.3	203.7	181.3	148.3	164.9	41.6	141.1	134.5	0.0	1,772.87
89-10714 Records	6.0	5.9	9.8	10.9	11.5	11.2	12.4	23.9	-6.6	9.3	-21.4	0.0	72.85
81912153U4 Records	6.0	5.9	9.8	10.9	11.5	11.2	12.4	23.9	-6.6	9.3	-21.4	0.0	72.85
GS9197 USGS Dcmnt Cntrl, Rcrds & Mngmnt	6.0	5.9	9.8	10.9	11.5	11.2	12.4	23.9	-6.6	9.3	-21.4	0.0	72.85
1.2.21.5.3	191.4	204.3	180.1	214.1	215.2	192.5	160.7	188.8	35.0	150.5	113.1	0.0	1,845.72
89-10710 TPO	99.6	106.3	90.9	104.9	84.7	154.5	61.1	132.4	87.0	89.3	-95.8	0.0	914.90
81912154U4 USGS TPO	99.6	106.3	90.9	104.9	84.7	154.5	61.1	132.4	87.0	89.3	-95.8	0.0	914.90
89-10713 Project Control	55.7	21.4	28.1	30.2	27.9	33.1	26.8	44.1	17.5	40.5	-48.9	0.0	276.20
81912154U5 Project Control	55.7	21.4	28.1	30.2	27.9	33.1	26.8	44.1	17.5	40.5	-48.9	0.0	276.20
89-11201 Regulatory Product Integrity	35.8	34.0	33.1	34.8	33.8	39.6	31.8	46.4	25.2	37.0	45.8	0.0	397.20
81912154U6 Regulatory Product Integrity	35.8	34.0	33.1	34.8	33.8	39.6	31.8	46.4	25.2	37.0	45.8	0.0	397.20
GS9135 USGS Project Planning & Control	191.0	161.7	152.0	169.9	146.4	227.2	119.7	222.8	129.7	166.7	-98.8	0.0	1,588.30
1.2.21.5.4	191.0	161.7	152.0	169.9	146.4	227.2	119.7	222.8	129.7	166.7	-98.8	0.0	1,588.30
89-21599 DEFERRED - Water Level Monitoring Clo	19.3	13.9	17.2	16.5	37.0	21.2	19.9	37.6	6.7	22.1	34.9	0.0	246.25
89-23099 DEFERRED - Surface Base Boreholes Cl	18.4	17.7	21.2	21.2	23.4	25.0	12.2	35.5	14.0	22.2	37.0	0.0	247.89
8191215TUM DEFERRED - Testing and Analysis C	37.7	31.7	38.4	37.7	60.4	46.2	32.1	73.1	20.7	44.2	71.9	0.0	494.14
8621 USGS Tst Coord/Sup for Site Activitie	37.7	31.7	38.4	37.7	60.4	46.2	32.1	73.1	20.7	44.2	71.9	0.0	494.14
1.2.21.5.T	37.7	31.7	38.4	37.7	60.4	46.2	32.1	73.1	20.7	44.2	71.9	0.0	494.14
1.2.21.5	468.7	460.6	429.0	441.4	484.6	506.1	339.2	541.3	225.4	433.1	96.2	0.0	4,425.58
89-10401 Support & Personnel Services	19.3	36.3	22.0	30.3	22.6	29.2	22.4	26.3	27.3	27.3	29.0	0.0	292.02
89-10402 Procurement & Property Mgt.	14.6	15.1	13.7	13.7	13.6	11.6	8.1	19.7	8.6	16.7	16.0	0.0	151.47
89-10403 Facilities Management - Space	74.7	-44.7	149.7	-11.4	-40.6	26.0	126.8	0.0	0.0	120.5	70.1	0.0	471.01
89-10404 Facilities Management - Computers/Phon	0.0	2.4	0.9	7.9	0.4	2.7	0.4	22.5	5.9	5.3	97.5	0.0	146.03
89-10405 Facilities Management - Other	20.7	31.1	-19.1	0.0	0.8	0.7	1.5	34.6	-2.5	0.0	-21.1	0.0	46.72
89-10406 Computer Support	20.7	20.2	16.7	14.2	17.2	15.6	13.6	24.0	20.1	24.9	19.0	0.0	206.22

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81912161U3 Support and Personnel Services	150.0	60.4	184.0	54.8	14.0	85.8	172.8	127.1	59.4	194.7	210.6	0.0	1,313.47
89-10409 DEFERRED - Space and Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.0	0.0	32.00
81912161UM DEFERRED - Space and Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.0	0.0	32.00
GS533 USGS Administrative Support - SR	150.0	60.4	184.0	54.8	14.0	85.8	172.8	127.1	59.4	194.7	242.6	0.0	1,345.47
89-10711 Training Support	7.5	60.6	25.7	23.6	22.4	20.7	18.6	80.3	7.6	16.1	76.0	0.0	359.07
81912161U4 Training Support	7.5	60.6	25.7	23.6	22.4	20.7	18.6	80.3	7.6	16.1	76.0	0.0	359.07
GS9111 USGS Training Program - SR	7.5	60.6	25.7	23.6	22.4	20.7	18.6	80.3	7.6	16.1	76.0	0.0	359.07
1.2.21.6.1	157.5	121.0	209.6	78.4	36.5	106.4	191.4	207.5	66.9	210.8	318.6	0.0	1,704.54
1.2.21.6	157.5	121.0	209.6	78.4	36.5	106.4	191.4	207.5	66.9	210.8	318.6	0.0	1,704.54
1.2.21	626.2	583.8	639.6	520.6	517.3	615.9	530.5	759.9	294.2	675.3	691.4	0.0	6,454.78
89-21501 Lithostratigraphic Support to Nye Co.	18.8	11.1	13.5	18.5	15.7	9.2	7.0	8.5	7.1	7.5	7.6	0.0	124.61
89-21511 Hydrostratigraphic Cross-Sections of Nye	0.0	0.0	17.6	6.3	12.0	24.5	15.5	28.6	13.5	36.8	10.2	0.0	165.06
81912246U1 Lithostratigraphic Support to Nye Cou	18.8	11.1	31.1	24.8	27.7	33.7	22.5	37.1	20.7	44.3	17.8	0.0	289.67
89-21502 Isotope/Hydrochemical Support to Nye Co	23.4	17.0	20.8	17.7	37.5	29.2	12.7	16.7	6.3	11.2	37.7	0.0	230.05
81912246U2 Isotope/Hydrochemical Support to Ny	23.4	17.0	20.8	17.7	37.5	29.2	12.7	16.7	6.3	11.2	37.7	0.0	230.05
RMX25LA Nye County Drilling	42.2	28.2	51.8	42.5	65.2	62.9	35.2	53.8	26.9	55.5	55.5	0.0	519.72
1.2.22.4.6	42.2	28.2	51.8	42.5	65.2	62.9	35.2	53.8	26.9	55.5	55.5	0.0	519.72
89-21322 Effects of Water-Rock Interaction on EBS	0.0	3.0	5.3	0.0	17.3	0.6	19.3	-0.3	12.0	19.8	10.1	0.0	87.10
8191224EU2 Effects of Water-Rock Interaction on	0.0	3.0	5.3	0.0	17.3	0.6	19.3	-0.3	12.0	19.8	10.1	0.0	87.10
89-21321 Laboratory Support for EBS Thermal Testi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	1.4	-0.5	0.0	11.82
8191224EU3 Thermal Conductivity (EBS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	1.4	-0.5	0.0	11.82
GS532 USGS-EBS Dgrdtn Flow & Trnsprt P	0.0	3.0	5.3	0.0	17.3	0.6	19.3	-0.3	22.9	21.1	9.6	0.0	98.92
1.2.22.4.E	0.0	3.0	5.3	0.0	17.3	0.6	19.3	-0.3	22.9	21.1	9.6	0.0	98.92
89-21357 Hydrogeologic Framework AMR	0.0	0.4	0.0	0.0	11.5	12.0	18.3	-1.3	3.2	2.8	2.6	0.0	49.42
89-21358 Water Level AMR	7.9	3.8	4.1	3.6	4.4	6.3	2.9	5.4	3.9	5.0	-1.3	0.0	45.89
89-22451 SZ AMRs/PMRs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191224SU1 Science Support to SZ AMRs/PMR fo	7.9	4.2	4.1	3.6	15.9	18.4	21.2	4.0	7.1	7.7	1.2	0.0	95.31

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889-12013 Alluvial Testing Complex	60.9	33.1	45.5	27.1	24.5	43.6	25.7	36.7	26.5	22.4	28.9	0.0	374.84
889-12014 Support to In-Situ AMR, Rev.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	46.1	0.0	54.99
8191224SU3 SZ Investigations	60.9	33.1	45.5	27.1	24.5	43.6	25.7	36.7	26.5	31.3	75.0	0.0	429.83
889-12015 Monitor Isotope/Hydrochemical Conditions	1.2	5.9	2.6	6.3	5.6	1.9	4.3	5.3	2.9	3.8	13.7	0.0	53.54
889-12017 Isotopic Dating of Groundwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.5	3.3	3.4	0.0	10.13
8191224SU4 SZ Isotope Hydrology	1.2	5.9	2.6	6.3	5.6	1.9	4.3	6.2	5.4	7.1	17.1	0.0	63.67
889-11012 Regional Modeling Data Base	5.5	6.4	7.3	38.8	21.6	46.2	60.7	35.7	31.7	88.6	-59.6	0.0	282.90
889-11017 Hydrogeologic Framework Model - Refine/	8.8	6.5	-2.0	51.0	13.6	18.2	-3.9	40.6	24.9	100.3	-51.0	0.0	206.96
889-11020 Groundwater Flow Modeling	13.0	27.8	12.3	47.1	13.8	7.5	2.0	21.1	18.1	108.2	26.8	0.0	297.60
889-11021 Technical Interactions - Regional Model	1.8	-1.8	0.0	0.0	10.6	5.7	0.1	1.4	4.2	6.6	32.4	0.0	61.06
8191224SU5 Regional Model	29.1	38.9	17.6	136.9	59.6	77.7	58.8	98.8	78.8	303.7	-51.4	0.0	848.53
GS522 USGS - SZ Flow & Trnsprt PMR - LA	99.2	82.1	69.7	174.0	105.6	141.5	110.1	145.6	117.8	349.8	41.9	0.0	1,437.34
1.2.22.4.S	99.2	82.1	69.7	174.0	105.6	141.5	110.1	145.6	117.8	349.8	41.9	0.0	1,437.34
889-21345 Drift-Scale Test ESF	11.8	-2.5	7.5	4.7	-2.7	21.5	8.0	-0.9	21.2	7.3	9.2	0.0	85.08
8191224UU7 Drift-Scale Test ESF	11.8	-2.5	7.5	4.7	-2.7	21.5	8.0	-0.9	21.2	7.3	9.2	0.0	85.08
GS502 USGS - Near Field Envrn. PMR - LA	11.8	-2.5	7.5	4.7	-2.7	21.5	8.0	-0.9	21.2	7.3	9.2	0.0	85.08
889-21303 Crossover Alcove (Alcove 8)	29.2	28.3	31.6	12.5	22.1	24.1	29.8	44.8	100.7	19.9	-19.2	0.0	323.84
889-21384 ESF/Cross Drift Moisture Monitoring	12.0	9.8	16.2	13.7	16.5	19.6	18.2	0.2	10.7	7.8	13.5	0.0	138.11
889-21385 ECRB (Bulkhead) Moisture Monitoring	10.4	-3.0	3.4	15.3	6.5	8.2	8.0	31.6	62.1	21.2	22.9	0.0	186.69
889-66666 Monitor for Liquid Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191224UU3 UZ Moisture Studies	51.5	35.1	51.2	41.5	45.1	51.9	56.1	76.6	173.5	48.8	17.3	0.0	648.63
889-22424 Surficial Carbonate Source Validation - Cr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.83
889-22425 Pore Water Geochemistry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	1.2	5.9	24.6	0.0	37.95
889-27009 Cl-36 Validation in the ESF	10.7	11.9	9.3	9.6	18.7	15.2	8.7	31.8	7.0	24.1	24.3	0.0	171.37
889-62213 Ages of Calcite/Opal Fracture/Cavity Coat	38.7	33.0	24.7	60.0	11.3	32.3	25.3	65.0	27.2	46.0	20.2	0.0	383.72
889-62219 Fluid Inclusions in Calcite/Opal	20.8	25.9	26.6	28.7	55.8	43.7	25.3	73.1	15.0	39.5	18.6	0.0	372.99
8191224UU4 UZ Isotope Hydrology	70.3	70.8	60.6	98.3	85.8	91.2	59.3	176.1	50.5	115.8	88.2	0.0	966.87
889-21368 Busted Butte Mapping (Mineback)	0.0	5.9	16.5	7.3	2.8	0.4	5.0	21.3	55.0	3.8	0.0	0.0	117.96

U.S. GEOLOGICAL SURVEY

ESTIMATED COSTS FOR October 1, 1999 - August 31, 2001

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	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST	EST	
89-22401 Excavation-induced Fracture Study	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	12.1	0.0	18.05
89-22402 Supplemental Surface Fracture Study	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.7	-39.5	0.0	-19.77
89-22403 Lithophysal Study in the ECRB Tptpl for E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.3	0.0	7.32
89-22404 3-D Fracture Network Depiction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	56.1	0.0	65.53
8191224UU5 Mapping (USBR)	0.0	5.9	16.5	7.3	2.8	0.4	5.0	21.3	55.0	42.0	33.0	0.0	189.09
GS520 USGS - UZ Flow & Trnsprt PMR - LA	121.8	111.8	128.3	147.1	133.7	143.5	120.4	274.0	279.0	206.6	138.4	0.0	1,804.59
1.2.22.4.U	133.6	109.3	135.8	151.8	131.0	165.0	128.4	273.1	300.2	213.9	147.6	0.0	1,889.68
1.2.22.4	274.9	222.5	262.7	368.2	319.1	370.0	293.0	472.3	467.9	640.3	254.7	0.0	3,945.66
89-22607 Interpret WHB Geotechnical Data	1.8	4.0	0.0	-4.0	39.0	2.7	58.1	26.1	0.0	0.0	0.0	0.0	127.64
8191226TU4 Interpret WHB Geotechnical Data	1.8	4.0	0.0	-4.0	39.0	2.7	58.1	26.1	0.0	0.0	0.0	0.0	127.64
89-22602 Deferred - Field Effort for WHB Geotechni	12.5	28.1	27.8	34.6	27.0	44.3	32.9	0.0	-1.8	0.2	-0.1	0.0	205.50
8191226TUM DEFERRED - Field Effort for WHB G	12.5	28.1	27.8	34.6	27.0	44.3	32.9	0.0	-1.8	0.2	-0.1	0.0	205.50
GS8622 USGS Tst Coord/Sup for Site Activitie	14.3	32.1	27.9	30.6	66.0	46.9	91.0	26.1	-1.8	0.2	-0.1	0.0	333.14
1.2.22.6.T	14.3	32.1	27.9	30.6	66.0	46.9	91.0	26.1	-1.8	0.2	-0.1	0.0	333.14
1.2.22.6	14.3	32.1	27.9	30.6	66.0	46.9	91.0	26.1	-1.8	0.2	-0.1	0.0	333.14
89-10712 KTI Meeting Support	0.0	0.4	4.4	13.2	8.6	0.1	0.0	0.1	1.1	6.2	5.6	0.0	39.69
81912280U1 KTI Meeting Support	0.0	0.4	4.4	13.2	8.6	0.1	0.0	0.1	1.1	6.2	5.6	0.0	39.69
GS503 Support Closure of NRC Key Technic	0.0	0.4	4.4	13.2	8.6	0.1	0.0	0.1	1.1	6.2	5.6	0.0	39.69
1.2.22.8.0	0.0	0.4	4.4	13.2	8.6	0.1	0.0	0.1	1.1	6.2	5.6	0.0	39.69
1.2.22.8	0.0	0.4	4.4	13.2	8.6	0.1	0.0	0.1	1.1	6.2	5.6	0.0	39.69
1.2.22	289.2	255.1	295.0	412.0	393.6	417.0	384.0	498.5	467.2	646.7	260.2	0.0	4,318.50

U.S. GEOLOGICAL SURVEY

ESTIMATED COSTS FOR October 1, 1999 - August 31, 2001

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	OCT EST	NOV EST	DEC EST	JAN EST	FEB EST	MAR EST	APR EST	MAY EST	JUN EST	JUL EST	AUG EST	SEP EST	TOTAL
2 OPERATING	915.4	838.9	934.5	932.6	911.0	1,032.9	914.6	1,258.4	761.4	1,322.1	951.6	0.0	10,773.28
CAPITAL EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRAND TOTAL	915.4	838.9	934.5	932.6	911.0	1,032.9	914.6	1,258.4	761.4	1,322.1	951.6	0.0	10,773.28
TEs													
FEDERAL	57.8	61.5	58.2	65.4	85.9	73.9	56.8	65.8	62.3	61.0	59.9	0.0	
CONTRACT	42.0	37.3	35.1	39.7	34.3	36.8	34.5	34.6	31.7	33.3	35.8	0.0	
TOTAL	99.8	98.7	93.3	105.1	120.2	110.7	91.3	100.5	94.0	94.2	93.6	0.0	