

«Name»  
«Organization»  
«Address1»  
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March 7, 2003

Dear «Name»:

On behalf of the Utah Geological Survey, I wish to thank you for agreeing to participate as an expert member of the Utah Quaternary Fault Parameter Working Group (UQFPWG). Due to the long delay in approval of the 2002/2003 Federal budget, and the resulting travel problems created for the Federal members of UQFPWG, I have decided for expediency to forego the one-day organizing meeting originally scheduled for earlier this year in Salt Lake City. In the absence of that kick-off meeting, this letter serves to initiate our efforts and states the goals for UQFPWG, outlines a revised work plan to achieve those goals, establishes a schedule for future UQFPWG activities, and presents information regarding Working Group logistics.

## **GOALS**

The Utah Quaternary Fault Parameter Working Group has five principal goals:

1. Critically evaluate and arrive at consensus values with appropriate uncertainty limits for Utah's existing Quaternary fault paleoseismic data.
2. Use the evaluated data to establish consensus slip-rate or recurrence-interval values, also with appropriate uncertainty limits, for the six central sections of the Wasatch fault, and for other Utah Quaternary faults where the data are permissive.

3. Identify critical gaps in the data and recommend where and what kinds of additional paleoseismic information needs to be collected to ensure that Utah's earthquake hazard is adequately documented and understood.
4. Make the consensus database and slip-rate/recurrence-interval information and other UQFPWG results and conclusions available to the earth science and geotechnical communities and to the general public in a timely manner.
5. Complete the process in the 12 months allotted for this effort.

## **WORK PLAN**

There are 212 potentially active faults or fault sections recognized in Utah. Of that number, 33 (attachment 1) have some or all of the following kinds of paleoseismic fault parameter data associated with them: slip rate, mean repeat time, timing of the most recent surface-faulting earthquake, displacement per event, and/or cumulative displacement. Utah's Quaternary fault paleoseismic database presently consists of an aggregation of data contained in nearly 60 separate published papers, state and Federal government studies, geotechnical consultant's reports, and abstracts, which represent the work of more than 40 researchers over the past 25 years (attachment 2).

Although the available paleoseismic database for Utah is small compared to California's, where similar evaluations of paleoseismic data have been conducted in the past, it is neither reasonable nor practical to expect UQFPWG members to review each of the paleoseismic documents available for Utah's Quaternary faults. Therefore, to expedite the review process and to provide the Working Group with critical information pertaining to slip rates and recurrence intervals, I have prepared two forms designed to summarize (a) pertinent information regarding the characteristics of the faults and fault sections for which paleoseismic data are available (attachments 3), and (b) the individual data contained in the paleoseismic source documents (attachment 4). Examples of completed fault/fault section and paleoseismic source document summary forms are enclosed (attachments 5 & 6) to show the kinds of information you can expect to receive for your deliberation.

As Working Group Coordinator, I will make a detailed review of the paleoseismic information available for each fault or fault section, complete the forms, combine them into packets for each fault or fault section, and forward the packets to Working Group members. Whenever possible, I will submit draft copies of the paleoseismic source document summary forms to the individuals who performed the original work for their review to ensure that their data, and the

uncertainties associated with the data, are adequately and fairly presented. It is anticipated that the two summary forms will provide UQFPWG members with all of the information they require to make their expert analysis of the paleoseismic data; however, should a member wish to make his or her own in depth review of a particular study, the UGS will provide the information as requested.

Two two-day working meetings will be held in Salt Lake City to bring the members of the Working Group together, following an adequate opportunity to review the summary form packets, to discuss issues and questions related to the data and to arrive at consensus regarding slip rates and/or recurrence intervals for the faults or fault sections under review. The first meeting will focus on the six active sections of the Wasatch fault; the second meeting will examine Utah's remaining Quaternary faults for which paleoseismic data are available. Because there will be no initial organizing meeting, the possibility exists for a third working meeting, or extending one of the two scheduled meetings, if the Working Group members believe that either option would be beneficial to them.

Following completion of the consensus process, the Working Group will identify any significant gaps in the paleoseismic data and make recommendations regarding future studies needed to fill those gaps. The UGS will use the UQFPWG recommendations to prioritize future paleoseismic work in Utah.

When the UQFPWG results are in hand; the UGS, U.S. Geological Survey, and the Utah Seismic Safety Commission will cosponsor a workshop to present the UQFPWG's results to the general user community in Utah. The UGS will also prepare and publish a consensus document in the UGS *Paleoseismology of Utah* publication series, and update the Utah Quaternary Fault and Fold Database and Map as necessary.

## **SCHEDULE**

The following table presents a list of tasks and a time line for the UQFPWG's efforts. Please note the dates scheduled for the two working meetings in Salt Lake City. Please contact me as soon as possible if you have a conflict with these dates.

### ***Utah Quaternary Fault Parameter Working Group Task and Time Line***

<b>TASK</b>	<b>TIME FRAME</b>	<b>DESCRIPTION</b>
Working Group Coordinator reviews/summarizes WFZ paleoseismic data	March - April	Coordinator compiles and summarizes paleoseismic information for the WFZ, notes uncertainty issues for WG attention, forwards to WG members.

WG members review WFZ data	May	WG members analyze data, deliberate among themselves, request additional information/clarification as necessary.
First Working Meeting in Salt Lake City	<b>May 29/30, 2003</b>	WG members discuss/debate paleoseismic fault parameter data and uncertainty limits for the WFZ and establish consensus slip-rate/recurrence-interval values for the six central sections of the WFZ.
Working Group Coordinator reviews/summarizes paleoseismic data for other Utah Quaternary faults	June - July	Coordinator compiles and summarizes paleoseismic information for other Utah Quaternary faults, notes uncertainty issues for WG attention, forwards to WG members.
WG members review fault data	August	WG members analyze fault data, deliberate among themselves, request additional information/clarification as necessary.
Second Working Meeting in Salt Lake City	<b>September 4/5, 2003</b>	WG members discuss/debate paleoseismic fault parameter data and uncertainty limits for Utah's other Quaternary faults and establish consensus slip-rate/recurrence-interval values where the data are permissive.
Workshop	November	WG results and recommendations presented to the Utah user community, public, and media.
UGS Publication	November-December	WG Coordinator drafts consensus document, reviewed by WG members, published by UGS.

## LOGISTICS

Time to complete this project is 12 months, beginning January 1, 2003 and ending December 31, 2003. Members of UQFPWG have been asked to serve in a volunteer capacity; however, travel expenses to meetings will be reimbursed for those members of the Working Group who are not employees of the Federal Government. Federal procurement rules prohibit the use of National Earthquake Hazard Reduction Program funds to pay travel expenses for Federal employees. Prior to the two working meetings, the UGS will contact UQFPWG members regarding airline reservations and accommodations in Salt Lake City.

Again, on behalf of the UGS I thank all of you for agreeing to serve on the UQFPWG, and as Working Group Coordinator I personally look forward to working with each of you. I am now reviewing the paleoseismic data available for the six central sections of the Wasatch fault, and preparing summary packets for each of those sections in anticipation of our first working meeting. If you have

questions about the work plan or schedule outlined above, or comments/suggestions regarding the two summary forms please contact me.

Sincerely,

William R. Lund  
UQFPWG Coordinator

**Attachment 1. Quaternary faults and fault sections in Utah for which there is paleoseismic data.**

<b>Name of Fault/Section</b>	<b>No. of Trenches</b>	<b>References</b>
Bear River fault zone	3 in Utah 5 in Wyoming	West (1994)
Hansel Valley fault	NA (1 gully exposure)	McCalpin (1985) McCalpin and others (1992)
North Promontory fault	NA (1 road cut)	McCalpin (1985)
James Peak fault	1	Sullivan and others (1988)
Skull Valley (mid-valley) faults	NA (geotech study)	Geomatrix Consultants (1999)
Bald Mountain fault	3	Sullivan and others (1988)
Oquirrh fault zone	4	Olig and others (1996)
Southern Oquirrh Mountains fault zone	3	Everitt and Kaliser (1980) Barnhard and Dodge (1988) Olig and others (2000, 2001)
Strawberry fault	2	Nelson and Martin (1982) Nelson and VanArsdale (1986)
Fish Springs fault	3	Bucknam and others (1989) USGS unpublished data
Sugarville area faults	8	Dames and Moore (1978)
Joes Valley fault zone west fault	1	Foley and others (1986)
Joes Valley fault zone intragraben faults	4	Foley and others (1986)
Joes Valley fault zone east fault	1	Foley and others (1986)
Towanta Flat graben	3	Martin and others (1985) Nelson and Weisser (1985)
Bear Lake (west side) fault	2 (in Idaho)	McCalpin (1990)
Hogsback fault, unnamed (south) section	1	West (1989)
Hurricane fault zone, Anderson Junction section	2 (in Arizona)	Stenner and others (1999)
Washington fault zone, northern Washington section	9	Earth Sciences Associates (1982)
Wasatch fault zone, Brigham City section	16	Personius (1991) McCalpin and Forman (1994, in press) Machette and others (1992)
Wasatch fault zone, Weber section	13 (also artificial cut)	Swan and others (1980) Swan, Schwartz, and others (1981) Nelson and others (1987) Nelson (1988) Forman and others (1991) Machette and others (1992) Nelson and Personius (1993) McCalpin and others (1994)
Wasatch fault zone, Salt Lake City section	17	Swan, Hanson, and others (1981)

		Schwartz and Lund (1988) Robison and Burr (1991) Lund (1992) Machette and others (1992) Black and others (1996) Korbay and McCormick (1999) Simon and Shlemon (1999) McCalpin and Nelson (2000) McCalpin, in press
Wasatch fault zone, Provo section	16 (also natural exposure)	Swan and others (1980) Machette and Lund (1987) Machette (1988, 1992) Lund and others (1990, 1991) Ostenaar (1990) Machette and others (1992) Lund and Black (1998)
Wasatch fault zone, Nephi section	4	Hanson and others (1981) Schwartz and others (1983) Schwartz and Coppersmith (1984) Jackson (1991) Machette and others (1992)
Wasatch fault zone, Levan section	1 (also natural exposures)	Schwartz and Coppersmith (1984) Jackson (1991) Machette and others (1992)
East Cache fault zone, central East Cache section	2	McCalpin and Forman (1991) McCalpin (1994)
Morgan fault, central Morgan section	5	Sullivan and others (1988) Sullivan and Nelson (1992)
Eastern Bear Lake fault, southern Eastern Bear Lake section	2	McCalpin (1990, 1993)
West Valley fault zone, Taylorsville fault	12	Keaton and others (1987) Keaton and Currey (1989) Solomon (1998)
West Valley fault zone, Granger fault	3 (also 32 boreholes)	Keaton and others (1987) Keaton and Currey (1989) UGS unpublished data
West Cache fault zone, Clarkston fault	1	Black and others (2000)
West Cache fault zone, Junction Hills fault	NA (1 stream cut)	Black and others (2000)
West Cache fault zone, Wellsville fault	1	Black and others (2000)

## Attachment 2. Utah paleoseismology data source documents.

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- Jackson, M.E., 1991, Paleoseismology of Utah, Volume 3 - The number and timing of Holocene paleoseismic events on the Nephi and Levan segments, Wasatch fault zone, Utah: Utah Geological Survey Special Studies 78, 23 p.
- Keaton, J.R., and Currey, D.R., 1989, Earthquake hazard evaluation of the West Valley fault zone in the Salt Lake City urban area, Utah: Salt Lake City, Dames and Moore, Final Technical Report for U.S. Geological Survey, Contract No. 14-08-001-G1397, 69 p.; published as Utah Geological Survey Contract Report 93-7, 1993.
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- 1990, Latest Quaternary faulting in the northern Wasatch to Teton corridor (NWTC): Final Technical Report for U.S. Geological Survey, Contract No. 14-08-001-G1395, 42 p. McCalpin, J.P., 1990, Latest Quaternary faulting in the northern Wasatch to Teton corridor (NWTC): Final Technical Report for U.S. Geological Survey, Contract No. 14-08-001-G1395, 42 p.

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