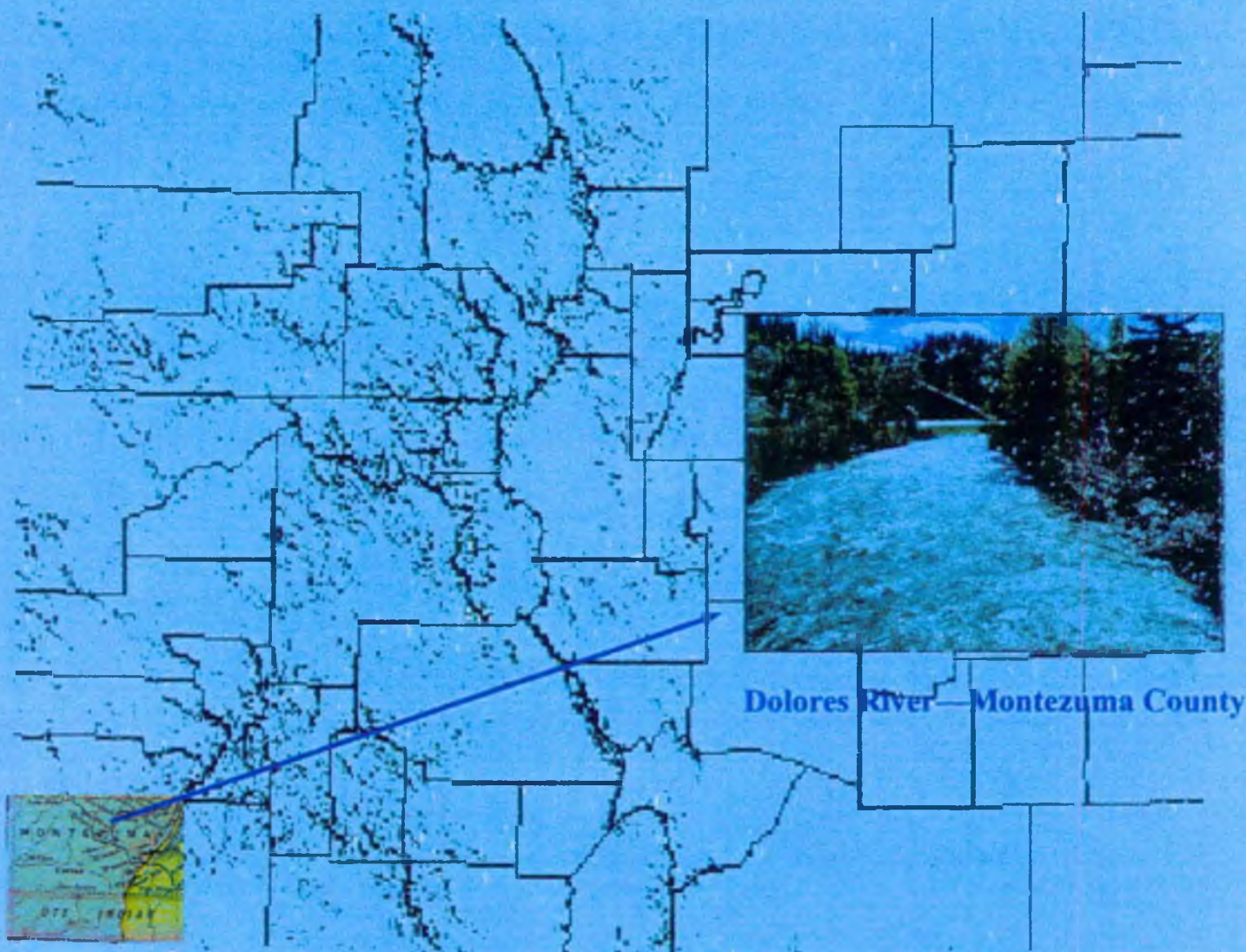




Colorado Department of Natural Resources Colorado Water Conservation Board Flood Protection Section



Field Report—The Dolores River



November 2001

DOLORES RIVER FLOOD HAZARD REVIEW

October 2001

By

Colorado Water Conservation Board

Introduction

The Colorado Water Conservation Board (CWCB) has received requests from a number of entities regarding floodplain activities in the Dolores River valley within Montezuma County, Colorado. The requests generally relate to the CWCB reviewing technical information (floodplain information) and associated flood risks for several gravel mining pits within the river valley. The CWCB is hereby responding to flood related questions such as "What is the Dolores River floodplain for the reach upstream of Dolores?" and "Is the current floodplain information representative of conditions that exist today?" The locations of the gravel pits in question are referred to as Sites 1, 2, and 3, which are shown on Map 1. Site number 2 is also known as the Line Camp Gravel Pit.

To gain background information on the individual sites in question, the CWCB staff held discussions with interested parties. The interested parties are:

- Montezuma County elected officials and staff
- Colorado State Representative Mark Larson
- John Liou, FEMA Region 8
- Pat Kantor, Chairperson CFAR (Citizen for Accountability & Responsibility)
- James Preston, Attorney
- Ron Cattany, Colorado Department of Natural Resources, and
- Four States Aggregates (gravel mine operators)

In addition to the discussions, the Board's staff conducted an on-site field inspection of the gravel operations on September 26, 2001. Individuals participants of the field inspection are listed in Exhibit 1 (see Appendix).

In addition, the CWCB has received a significant number of written correspondence items related to the gravel mining from concern citizens, which are located in the Dolores River Valley. A compilation of the information is presented in Attachment 1.

Technical Review Request

In response to the technical request, CWCB is performing a review of the existing designated and approved floodplain information and making a hydrologic and hydraulic assessment of the existing data as it pertains to the individual gravel sites (1,2&3). The CWCB has not received a detailed boundary survey map for the sites under review, however the site locations have been identified on available mapping provided by Montezuma County and on existing aerial photography.

Related Studies and Information

The technical information that was used during the CWCB review include the following items:

- Flood Hazard Information Study, Dolores River and Tributaries, Dolores, Montezuma County, Colorado. U.S. Corps of Engineers, Sacramento District, September 1978
- Flood Insurance Study, Montezuma County, Colorado (Unincorporated Areas). Federal Emergency Management Agency, May 4, 1989.
- Aerial photographs, Dolores River valley, photo numbers 12-1, 13-2, & 15-2 from project number 77-208, dated 5/31/77.
- Aerial photograph numbers DLR-6-109 through 115 dated 8-5-96.
- Affidavit of Dr. Robert W. Blair, Jr. Ph.D. before the Department of Natural Resources, Colorado Mined Land Reclamation Board.
- November 2001 Discussions with Mr. Dale Hatch, Chief, Floodplain Management Services U.S. Corps of Engineers, Sacramento District regarding the Hydrology and Hydraulics Determinations for the September 1978 Floodplain Report.
- Peak Streamflow for USGS gaging station number 09166500, Dolores River at Dolores, Colorado dated 11-02-2001.
- Floodplain Resolution Number 00-525 dated September 25, 2000 for Flood Insurance Study, Montezuma County, Colorado, dated May 4, 1989.

Technical Review Findings

The CWCB review is based on an evaluation of available information and a field inspection of sites 1, 2, and 3 as shown on the location map (map 1). No new field surveys and mapping were obtained, and no new hydrologic or hydraulic modeling was performed for the CWCB review. It was observed during the field inspection that the basin conditions, topography, and runoff characteristics have not substantially changed since the time when the CWCB and Corps of Engineers originally completed the Flood Hazard Information Study during 1977 and 1978. The engineering information in the Corps report was utilized for the official Montezuma County, Colorado Flood Insurance Study dated May 4, 1989. The 100-year floodplain in the Corps and FEMA studies is in fact the designated floodplain for the Dolores River in Montezuma County, Colorado. The CWCB review focused on the following engineering considerations only:

1. Base topographic mapping and field surveys
2. Hydrologic analysis
3. Hydraulic analysis
4. 100-year floodplain delineation
5. Stream and channel geomorphology
6. Gravel pit operations impact to the designated 100-yr floodplain

Brief descriptions are provided below for each of the review categories listed above.

1. Base Mapping and Surveys: The CWCB, in cooperation with Montezuma County, contracted the professional mapping services of Benchmark Mapping Services of Denver, Colorado to compile detailed large mapping of the Dolores River channel and floodplain in 1977. The mapping and surveys were prepared to "National Map Accuracy Standards" for 2' and 5' contour mapping. The mapping project set control markers and monuments

in the field. These control markers will allow interested parties to recheck the mapping accuracy.

2. Hydrologic Analysis: The Corps of Engineers performed the original hydrologic investigation for the 1978 floodplain study. The Dolores River has reliable stream flow records, which date back to 1896. The Corps performed a statistical analysis of the annual peak flow data for the computation of the 100- year peak discharge values for the floodplain study. The statistical analysis was performed in accordance with standard guidelines found in Bulletin 17B. A review of the available annual peak records for the USGS stream station no. 09166500 (see appendix) was conducted. The flow records indicate that from 1977 to the present time, no large flood events or rare discharges occurred on the river. Therefore, it is not expected that the published 100-year peak flow values for the Dolores River would increase if a re-analysis is performed using the additional 24 years of flow data from the gaging station. The 10- and 100-year discharge flood values are:

Peak Discharges For Dolores River

Reference Point	Gravel Pit Number	10-year flow (cfs)	100-year flow (cfs)
71 in Corps Report	3	6,200	12,800
79 in Corps Report	2	6,100	12,400
89 in Corps Report	1	6,000	12,300

3. Hydraulic Analysis: The Corps of Engineers performed the hydraulic analysis using the standard step-backwater HEC-2 program. The HEC-2 program used in the 1977 study is still acceptable in 2001. The CWCB does acknowledge that there have been a number of updates to the HEC-2 program over the years, however the basic methodologies, routines, and assumptions developed for the HEC-2 program as used in 1977 are still valid. The CWCB would not expect a significant change in the water surface elevations for the floodplain study using the 2001 version of HEC-2 (now HEC-RAS). The flood flow depths in the channel and floodplain areas can be determined from the peak flows and stage table in the Corps report (see examples in the flood elevation table below) or from the profiles in the Corps or FEMA Reports.

Flood Elevations For Dolores River

Reference Point	Gravel Pit Number	10-year wsel (feet, msl)	100-year wsel (feet, msl)
71 in Corps Report	3	7164.4	7168.4
79 in Corps Report	2	7213.7	7215.1
89 in Corps Report	1	7274.9	7276.9

4. 100-year Floodplain Delineation: The 100- year floodplain delineation was presented on the detailed, large scale topography mapping that was prepared for the 1978 Corps' study. Using the ground elevations and contour lines on the mapping along with the hydraulic determinations and flood profiles computed from the engineering analyses, the

100-year floodplain limits were determined using state-of-art practices for the development and presentation of the floodplain map (see maps 2, 3, and 4).

5. Stream and Channel Geomorphology: A comparison was made between the aerial photographs from 1977 and 1996 for the three gravel sites in question (see maps 5,6, and 7. The purpose of the comparison was to determine the degree of stream channel migration over time. Realizing that natural streams are dynamic in nature, one would expect a certain degree of channel migration to occur over time depending on geomorphologic conditions. In analyzing the photographic detail in maps 5,6, & 7, it appears that very little channel migration has taken place over the past twenty years. Consequently, it is the opinion of CWCB staff that the overall flood conveyance of the channel and the floodplain cross sections has not changed significantly since the time of the original floodplain study.

6. Impacts of the Gravel Pit Operations on the Designated 100- year Floodplain

SITE NO. 1 The operation is outside of the limits of the 100-year floodplain delineation. Therefore, no specific comments are provided for this site.

SITE NO. 2 The CWCB has not received any engineering plans regarding the proposed operations for the gravel pit. From preliminary information obtained from others, the CWCB staff finds that the hydraulic control for the backwater computations lies just downstream from the proposed gravel operation. The proposed operation lies partially within the right overbank 100-year floodplain. The impacted floodplain is in a low velocity, low conveyance area; therefore, limited adverse impacts to the water surface elevations are expected. However, a large flood event may inundate the area causing major flood damage to the pit operations or capture of the gravel pits. **Caution** must be used when considering a levee system that may be placed on the river side of the gravel operation because it will transfer the floodwater conveyance area to the left overbank areas. The CWCB appreciates the information provided by Mr. James Preston. Mr. Preston has stated a number of concerns regarding gravel pit operations in the river valley (see Appendix).

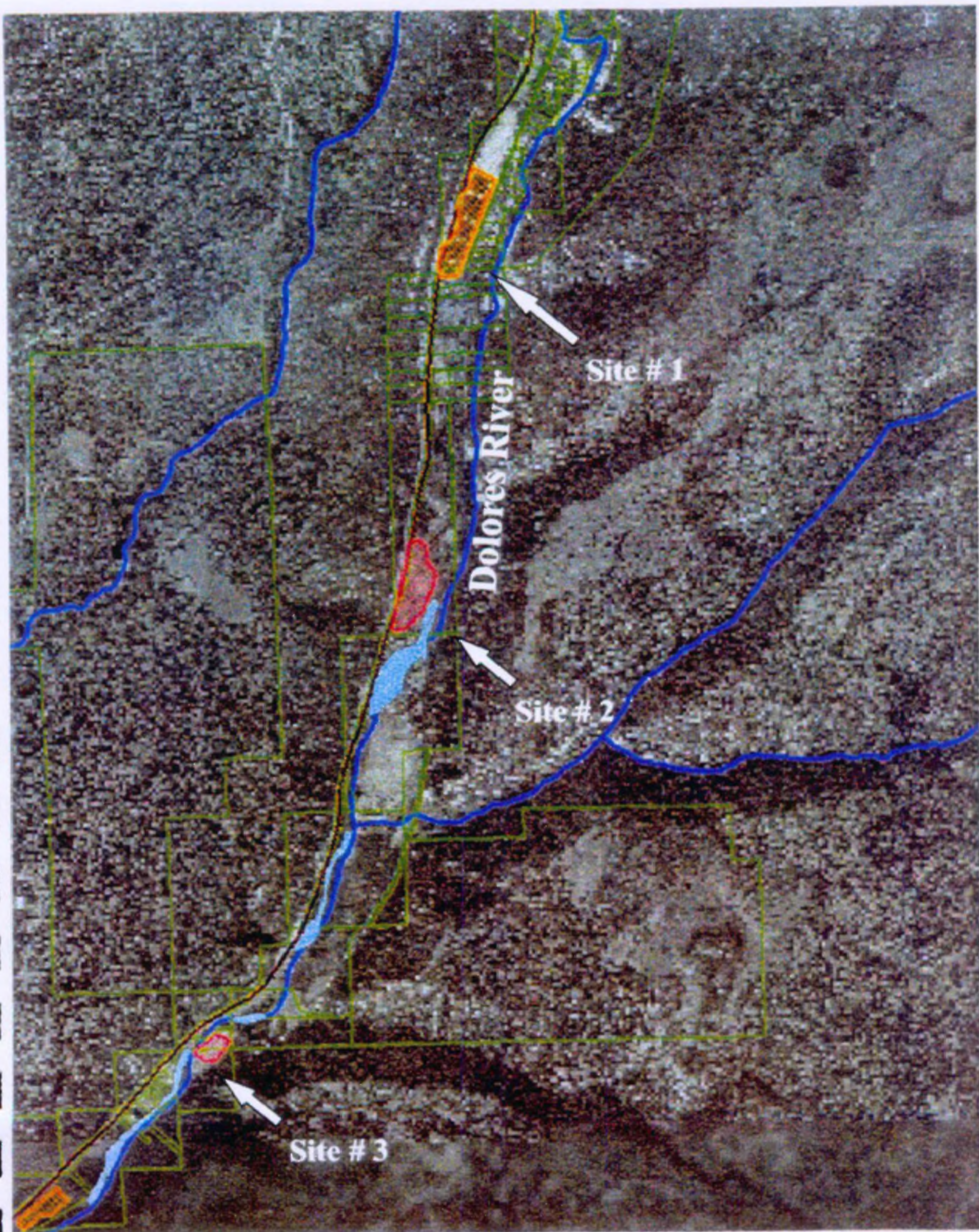
SITE NO. 3 From previous discussions and observations during the September 26, 2001 field inspection, this gravel pit operation is completely within the 100- year floodplain. No flood protection levee system was witnessed at the site. However, a huge pit excavation has taken place within the site. This excavation may provide the river channel an opportunity to relocate during a major flood event. Fortunately, the existing left and right overbank floodplain limits are adjacent to the bluff lines. Therefore, no impacts to the floodplain limits or to the adjacent lands outside of the floodplain would be expected. If the river does relocate during a major flood event, it is possible that downstream lands could be inundated even though they are not presently shown to be in the 100- year floodplain.

Staff Conclusions

The CWCB staff appreciates the concerns that have been expressed by interested parties, residents and county officials regarding the floodplain questions in the Dolores River valley. To address these questions, the CWCB has performed a technical review and offers the following conclusions:

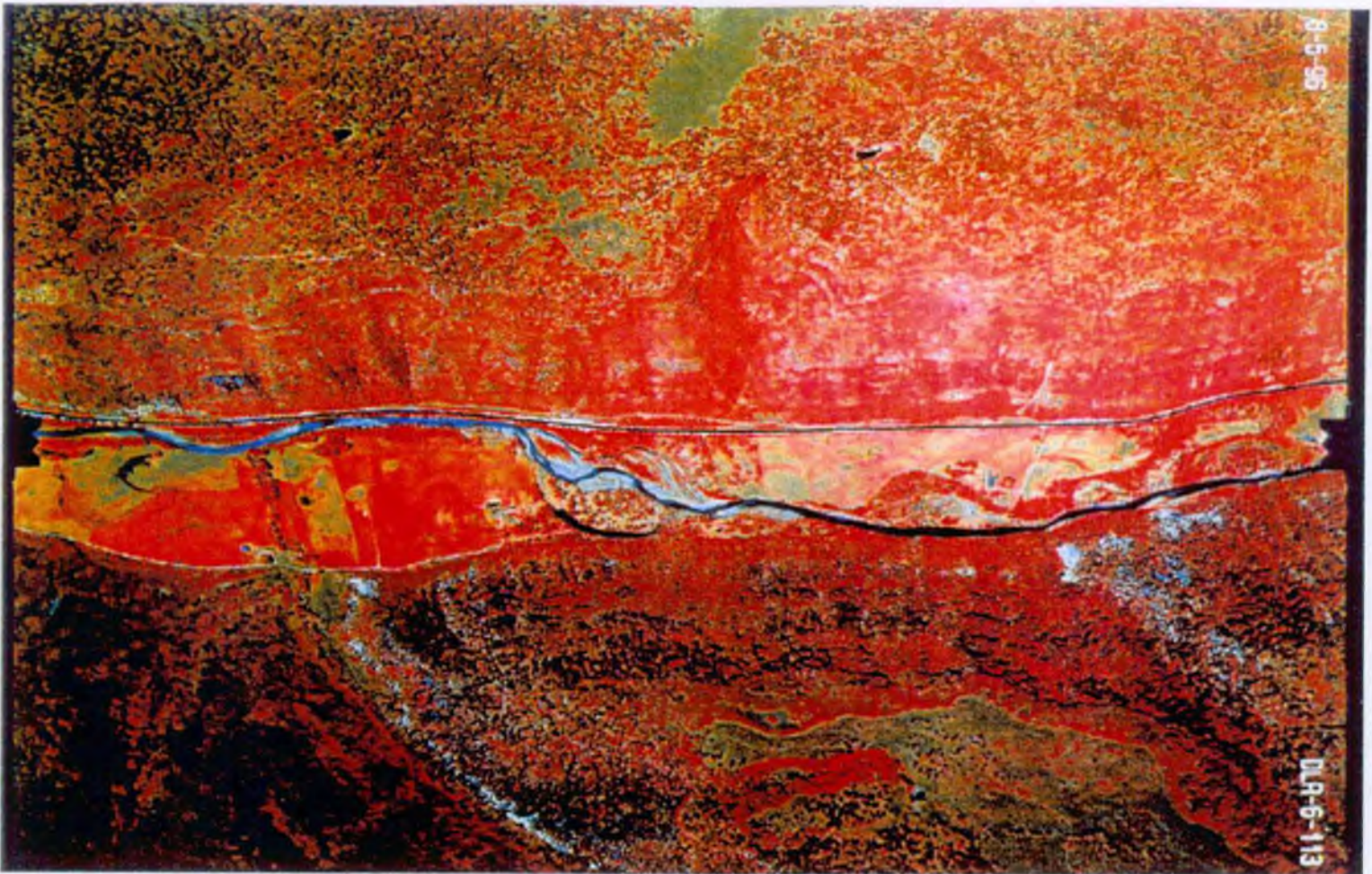
1. The CWCB staff finds that the 100-year floodplain information as presented in the U.S. Army Corps of Engineers (Corps) and Federal Emergency Management Agency (FEMA) reports to be reasonable and representative of the 100-floodplain for the Dolores River. The Colorado Water Conservation Board approved Resolution FPR 00-525 dated September 25, 2000 which designates the information in said reports as the 100- year floodplain for the Dolores River. The CWCB does not recommend that a new floodplain study be conducted for the subject reach of the Dolores River.
2. The CWCB staff recommends that a flood mitigation plan be prepared as part of the reclamation plan for the gravel operations. The flood mitigation plan should address the existing and post-mining areas of the floodplain; the location, type, and size of any temporary or permanent levee systems; the location and quantity of material stockpiles; any temporary or permanent flood protection measures; and the county floodplain regulation requirements.
3. The CWCB was not requested to discuss or review any of the information that may have been presented during the Colorado Mined Land Reclamation Board hearings. Therefore, this technical review only addresses the floodplain issues related to the gravel mining sites in question. The CWCB will not address topics such as water quality, fish and wildlife habitat, sedimentation, and aesthetics.

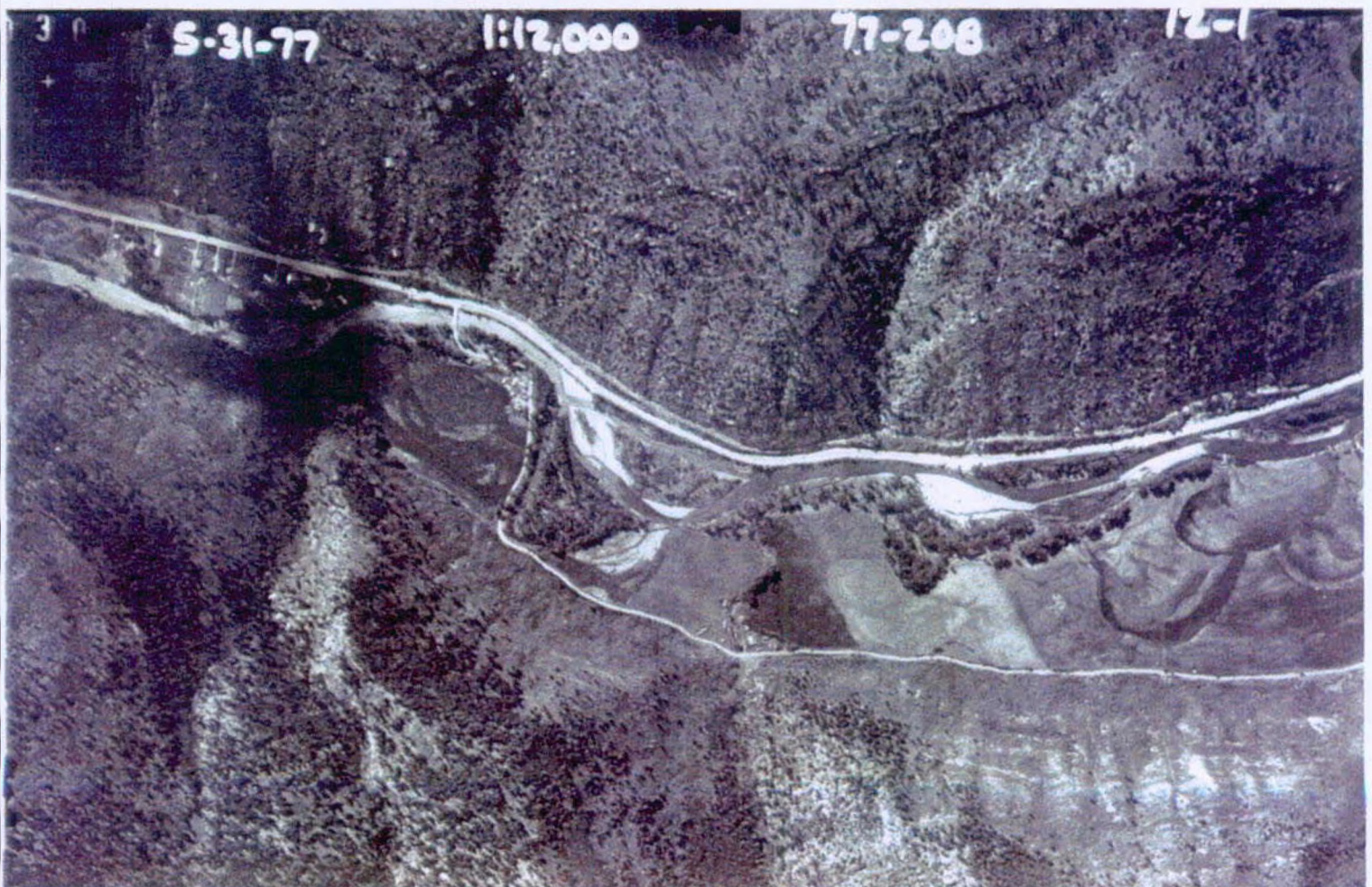
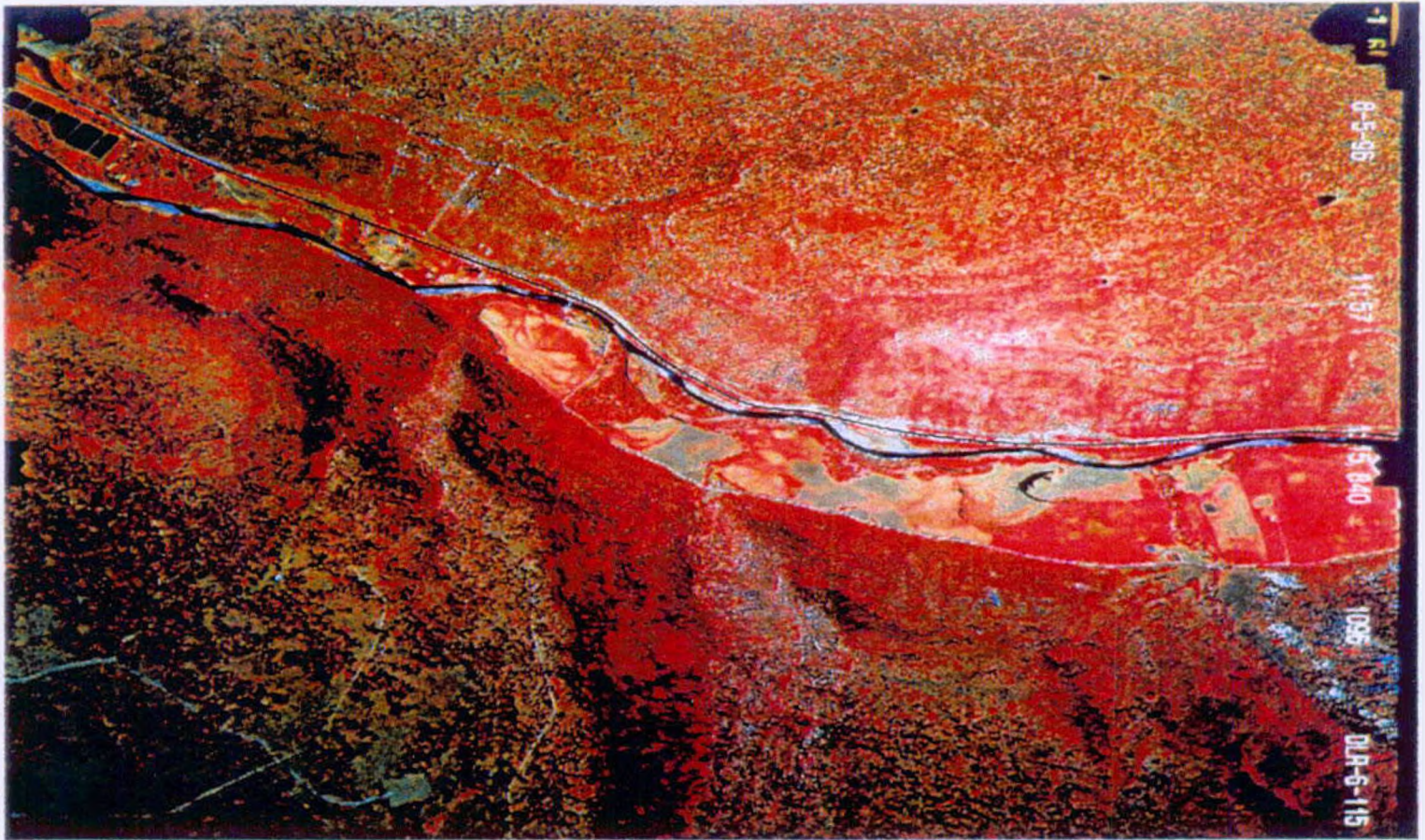
APPENDIX

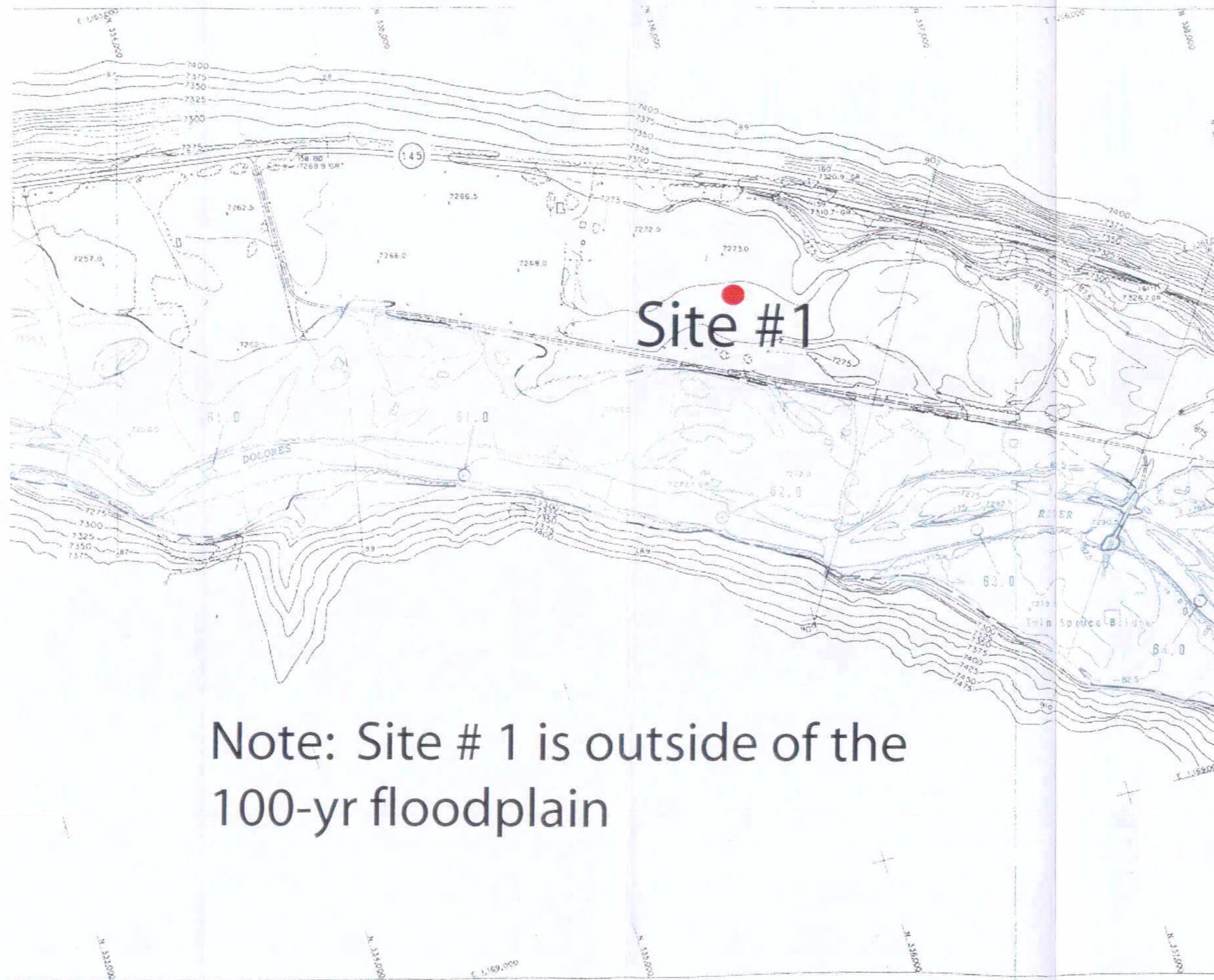




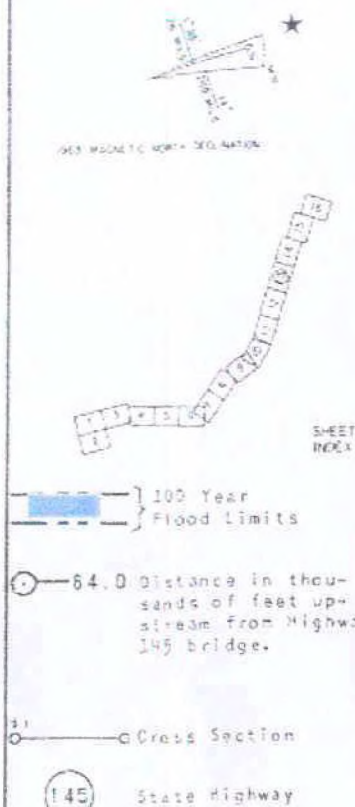
Note: The scales of the next three maps are different







LEGEND



NOTES

Map based on 1" = 200' topographic mapping prepared by Benchmark Mapping Services, Denver, Colorado, in August 1977. Minor additions and adjustments made by the Corps of Engineers.

Elevations based on National Geodetic Vertical Datum of 1929.

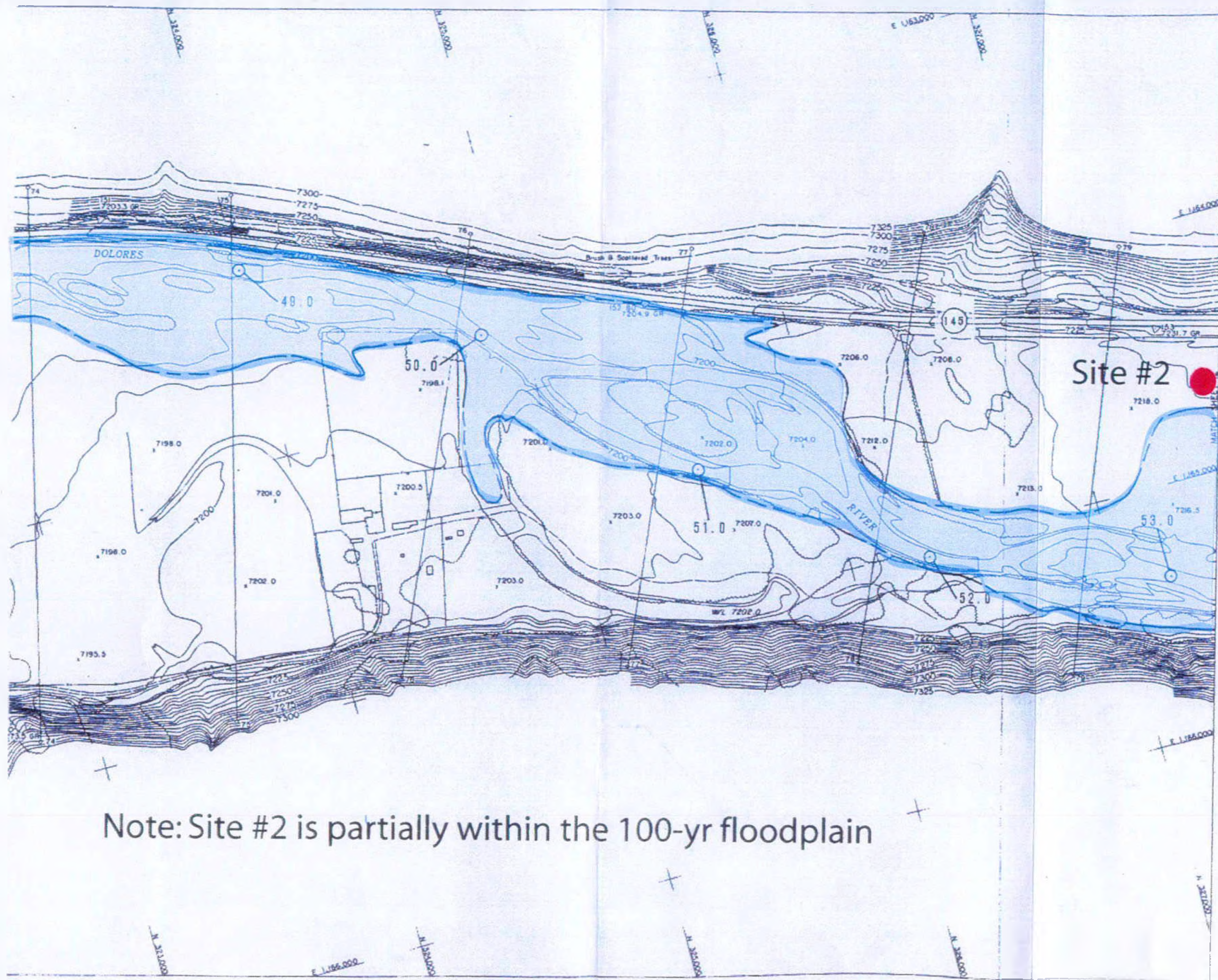
Due to small scale of map, or natural or manmade change affecting topography since August 1977, actual limits of flooding may vary from limits shown. Areas outside limits shown may be subject to flooding from local runoff.

SCALE 0 200 400 FEET
 CONTOUR INTERVAL 2.5 FEET, 5 FEET AND 25 FEET

DEPARTMENT OF THE ARMY
 SACRAMENTO DISTRICT
 CORPS OF ENGINEERS
 SACRAMENTO, CALIFORNIA

FLOOD HAZARD
 INFORMATION

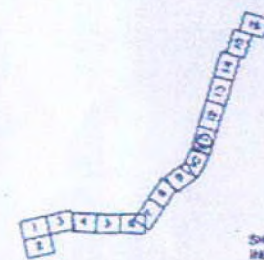
DOLORES RIVER AND TRIBUTARIES
 DOLORES, COLORADO
 FLOODED AREAS



LEGEND



1963 MAGNETIC NORTH DECLINATION



100 Year Flood Limits

53.0 Distance in thousands of feet upstream from Highway 145 bridge.

○ Cross Section

145 State Highway

NOTES

Map based on 1" = 200' topographic mapping prepared by Benchmark Mapping Services, Denver, Colorado, in August 1977. Minor additions and adjustments made by the Corps of Engineers.

Elevations based on National Geodetic Vertical Datum of 1929.

Due to small scale of map, or natural or manmade changes affecting topography since August 1977, actual limits of flooding may vary from limits shown. Areas outside limits shown may be subject to flooding from local runoff.

SCALE
200 0 200 400
FEET
CONTOUR INTERVAL
5 FEET AND 25 FEET

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT
CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

FLOOD HAZARD
INFORMATION

DOLORES RIVER AND TRIBUTARIES

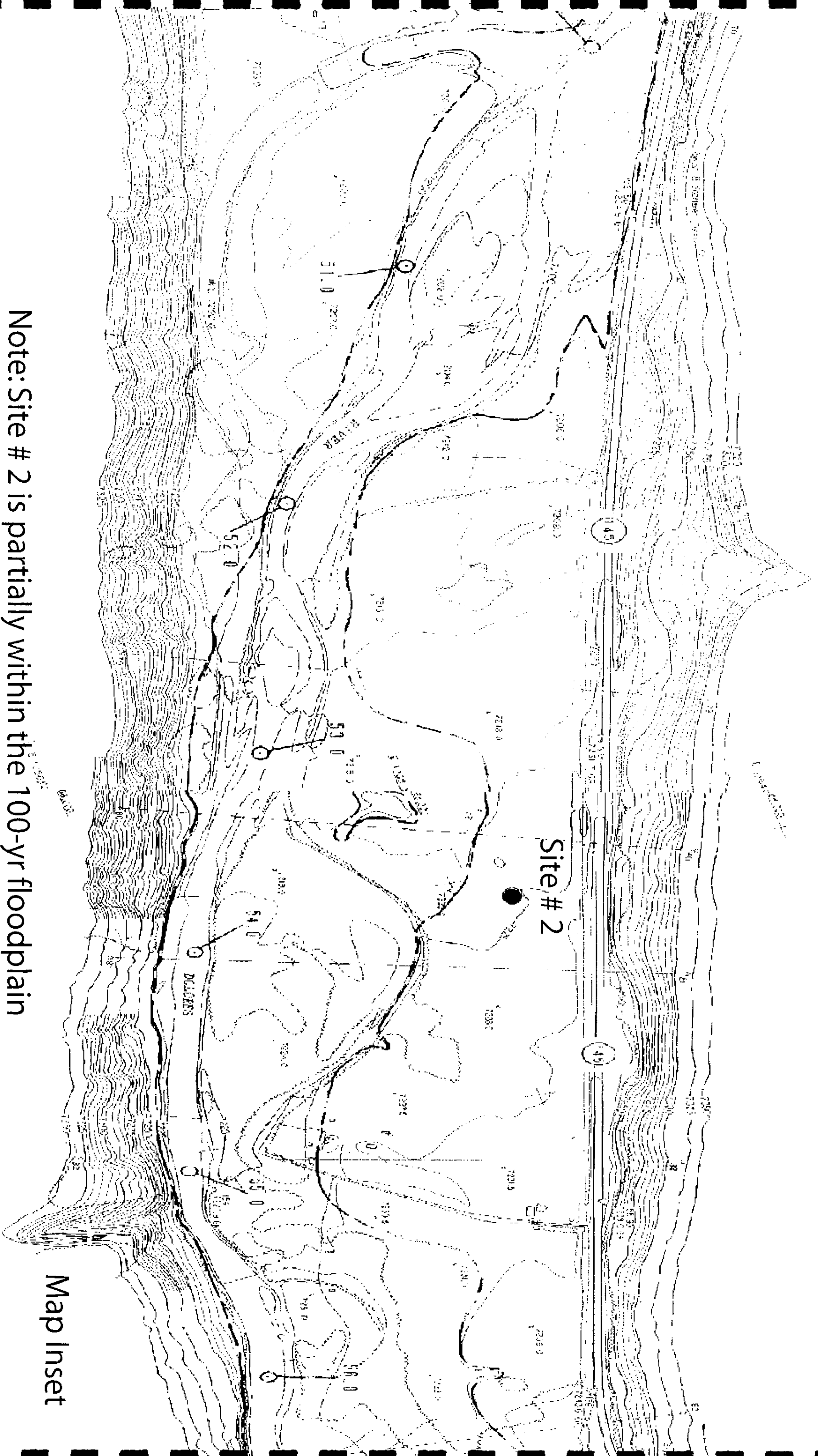
DOLORES, COLORADO

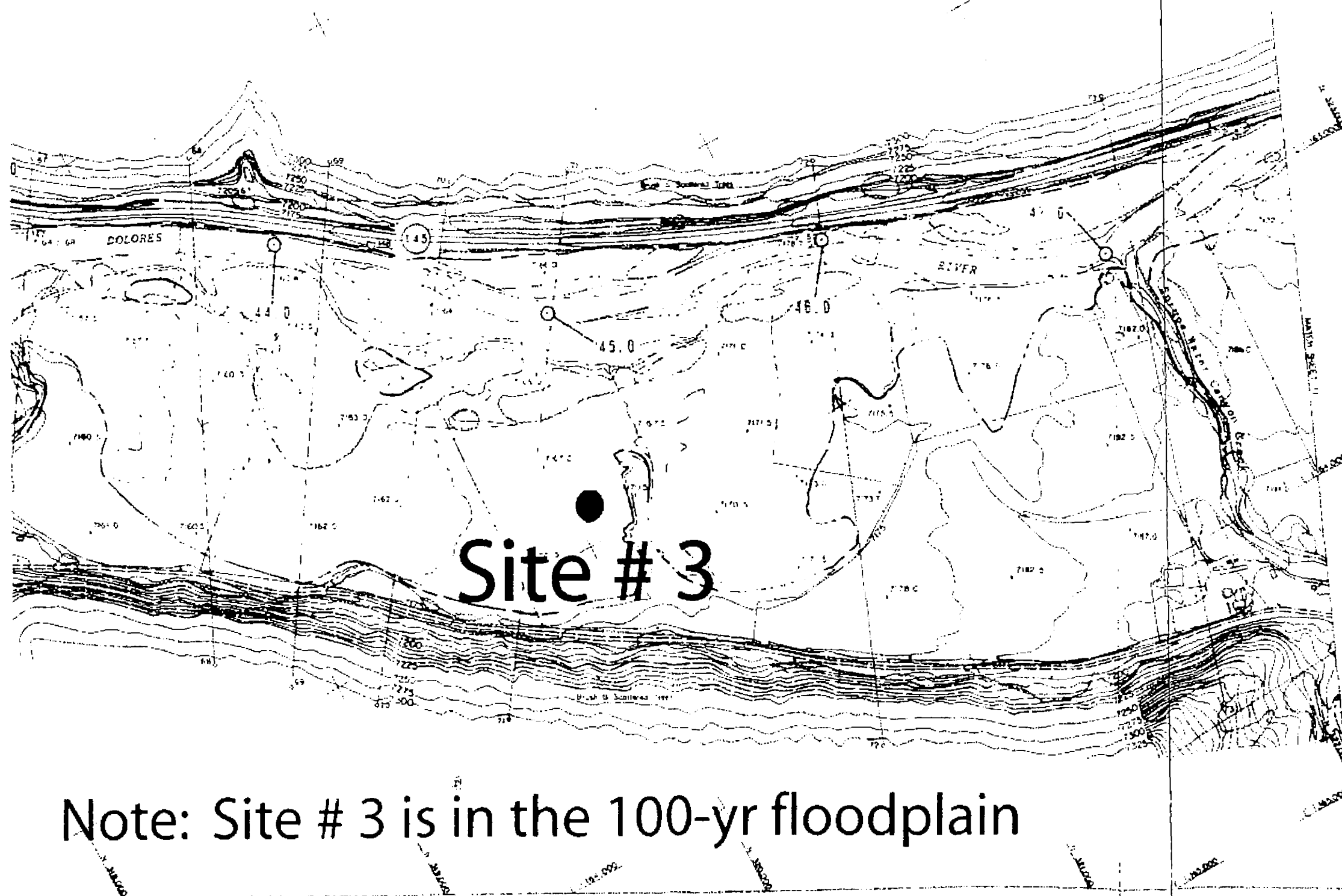
FLOODED AREAS

Map # 3

Note: Site # 2 is partially within the 100-yr floodplain

Map Inset





Note: Site # 3 is in the 100-yr floodplain

LEGEND

- NORTH
- 100-year flood limits
- 47.0 Distance in thousands of feet upstream from Highway 145 bridge.
- Cross section
- State Highway

NOTES

Map based on 1:25,000 topographic map prepared by Benchmark Mapping Service, Reno, Colorado, in August, 1977. Minor additions and adjustments made up the Corps of Engineers.

Elevations based on National Geodetic Vertical Datum of 1929.

Due to small scale of map, or natural or manmade changes affecting topography since August 1977, actual limits of flooding may vary from limits shown. Areas outside limits shown may be subject to flooding from total runoff.

SCALE: 1" = 1000' (Horizontal)

VERTICAL: 1" = 100'

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT
CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

FLOOD HAZARD
INFORMATION

DOLORES RIVER AND TRIBUTARIES
DOLORES, COLORADO
FLOODED AREAS
Map # 4

Petro-Nuclear, Assistant Geologist 7/68 to 3/69.
U.S. Navy, Lt/jg., Instructor, 6/66 to 7/68.

TRAVEL-STUDY PROGRAMS:

Director: Study of the origin of Natural Arches in Canyonland and Arches, N.P., 1975
Director: Geology of Hawaiian Islands, 1976 and 1978
Director: Geology of New Zealand, 1982, 1986, 1988, 1993, and 2000
Director: Elder-Folk program, Sherpa Cultural Tour Everest Region, 1990
Co-Director: Geology and Anthropology of Mexico, 1990
Director: Elder-Folk program, retracing the path of Marco Polo, China - Pakistan, 1997
Participant: Geology and Geography of Iceland, 1995
In addition, I have participated on geology field trips in England, the Swiss and Austrian Alps, Australia, Germany and extensively across the United States.

RESEARCH IN PROGRESS:

Quantitative investigation of rock glacier movement in the San Juan Mountains, Colorado.
Quaternary history of the San Juan Mountains, CO, particularly the glacial and fluvial Evolution of the Animas River Drainage Basin.
Repeat photography of historic photographs.

PROFESSIONAL AFFILIATIONS, OFFICES, AWARDS:

NSF Research Experiences for Undergraduate Grant, 1998-99
NSF Research Experiences for Undergraduate Grant, 1997
Connect grant, 1995
Fort Lewis College Mini-grant, 1993
Fort Lewis College Fitness for Life award, 1989
NASA-ASEE Summer Faculty Fellowship, Goddard Space Center, 1982 and 1983
National Association of Geology Teachers, V. Pres. SW Sec., 1979
Co-author of NSF ISEP grant, 1977
Four Corners Geological Society, Sec., 1976, Treas., 1977
Geological Soc. of America, member. (Best Student Paper award, 1975)
Awarded G.S.A. Penrose grant, 1972

PERSONAL NOTES:

Interests: mountaineering, nordic skiing, photography, chess.
Birthdate: 11/28/43, Weight: 170 lbs., Height: 6'1" Health: excellent
Marital Status: Married - wife Pat, children Kurt and Katrina.

PUBLICATIONS:

33 [12 abstracts, 18 articles, 2 books(ed), 1 CD ROM]. Selected listing below.

Blair, Rob, (ed.), 1996, The Western San Juan Mountains, Colorado: a guide to the geology, ecology and human history along the skyway: Niwot, CO, University Press of Colorado, 406p.
Blair, R. W., Jr., 1994, Moraine and valley wall collapse due to rapid deglaciation in Mount Cook National Park, New Zealand: Mountain Research and Development, Vol. 14, No. 4, p. 347-358.

Blair, Robert W., Jr., 1987, Development of natural sandstone arches in south-eastern Utah, in Gardiner, V., (ed), Proceedings of the first international conference on geomorphology: NY, John Wiley & Sons Ltd., p. 597-604.

Short, Nicholas M. and Blair, Robert W., Jr., (eds), 1986, Geomorphology from space: a global overview of regional landforms: Washington, DC, NASA, Special Publication 486, 717 p.

Expert Witness Testimonial Experience

Robert W. Blair, Jr.

1. November 1998. Federal Court, County of La Plata, State of Colorado Case No. 97 CV 149, E. T. Barker vs. Board of County Commissioners, et al.

I was an expert witness for the Board of County Commissioners, et al. The case involved a dispute over ownership and use of an old trail and mining road to the top of Eagle Pass in the La Plata Mountains. This road at the turn of the century was deemed a public access, but Barker claims that his family later purchased the surrounding land, and thus, the road became private, subject to no trespass. The U.S. Forest Service and county claim the road is public domain. I presented a deposition and was an expert witness during court proceedings. I was able to show using old maps and aerial photographs that 40% of the mining road followed the old trail. This was used to uphold the public domain argument. Judge Lewis Babcock later issued a decision that indicated the lower 90% of the road was indeed public domain and only the upper 10% could be deemed private.

2. May and June 1989. District Court, County of La Plata, State of Colorado Case No. 88CV312, Larry White and Jennifer White, Plaintiffs, vs. Mark Buono, Joe Bob McGuire, John Wells, and the Wells Group, a Partnership, Defendants.

I was engaged as an expert witness for the Plaintiffs. As I recall the case, Larry and Jennifer White purchased land upon which to build their future home at Sailing Hawks. The Whites were unaware at the time of purchase that the lot was part of a prehistoric landslide and that part of this landslide moved within the past five years. I don't recall how they found out about the landslide, but I believe it was from either neighbors or the architect. The Whites wanted their money back from the sale, claiming that they paid premium dollar for land on stable ground and that trying to sell this same land now on known landslide would result in a large depreciation in value. Wells Group claimed that the land was stable because the landslide was prehistoric, thus should have no effect upon their future home. I was called in to examine the stability of the purchased lot (Sailing Hawks site # 5). I was able to show from field evidence and photo documentation, that the ground surface showed signs of instability because of its proximity to the recently active adjacent secondary landslide. I gave a deposition that laid out the evidence and my opinion. The case was settled out of court.

3. August 1987. State of New Mexico County of San Juan in the District Court case # CV 86-00154-4, Flora Vista Water Users association Plaintiff, vs. Manana Gas, Inc., Defendant/Third Party Plaintiff, vs. El Paso Natural Gas Co, Third Party Defendant.

I was contacted by a Mr. Richard Cheney, President Brewer Associated of Farmington, NM to represent The Flora Vista Water Users Association and to observe on their behalf fieldwork being conducted with the expressed purpose of determining the source and responsible party for the hydrocarbon contamination of domestic water wells used by Flora Vista Estates. Thirteen trenches were excavated at strategic places across

the groundwater path on 8/17 and 8/18/87 to ascertain the source of hydrocarbon pollutants. I was involved in the selection of trench location and in the sampling of groundwater from the trenches. The investigation concluded that the source of hydrocarbons came from a leak associated with a dehydrator owned by El Paso Natural Gas. I gave a deposition that presented the evidence noted above. The case was settled out of court.

Exhibit 1

Dolores River Field Inspection September 26, 2001 List of Participants

Colorado Water Conservation Board

- Rod Kuharich, Director
- Dan McAuliffe, Deputy Director
- Larry Lang, Chief, Flood Protection Program

Montezuma County

- Tom Weaver, County Administrator
- Mike Preston, Federal Lands Coordinator
- Rob Peterka, GIS Coordinator

CFAR

- Leslie Sisler

Gravel Operator

- Richard Tibbits, MTW Gravel
- Aryol Brumley, Triad
- Dick Tibbits, MTW Gravel
- Other Pit Operator (last stop)

**MONTEZUMA COUNTY
BOARD OF COUNTY COMMISSIONERS**

Commissioners:
G. Eugene Story
J. Kent Lindsay
Glenn E. Wilson, Jr.

Administrator:
Thomas J. Weaver

109 West Main, Room 302
Cortez, Colorado 81321
(970) 565-8317

Planning/Mapping 565-2801
Mike Preston 565-8525
Carla Harper 565-6061

FAX COVER LETTER

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DOLORES RIVER GRAVEL PIT TOUR
9/26/01

CWCB:

ROD KUHNARICH - DIR.

DAW MAULIFFE - ASSIS. DIR.

LARRY LANG - FLOOD PROTECTION

MONTREUMA COUNTY:

TOM WEAVER - COUNTY ADMINISTRATION

MIKE PROSTON - FEDERAL LANDS
COORDINATION

ROB PIETERKA - GIS COORD

CPAR:

LESLIE SISKER

GRAVEL PRODUCERS:

RICHARD TIBBATS - MTW GRAVEL

ARYOL BRUMLEY - TRIAD

DICK TIBBATS - MTW GRAVEL

OTHER PIT OPERATOR (LAST STOP)

Water Resources skip navigation

Data Category:

Surface Water

Geographic Area:

United States



Peak Streamflow for USA

USGS 09166500 DOLORES RIVER AT DOLORES, CO.

Available data for this site

[Station home page](#)


Montezuma County, Colorado
 Hydrologic Unit Code 14030002
 Latitude 37°28'21", Longitude 108°29'49" NAD27
 Drainage area 504.00 square miles
 Gage datum 6,918.74 feet above sea level NGVD29

Output formats

[Table](#)[Graph](#)[Tab-separated file](#)[WATSTORE formatted file](#)[Reselect output format](#)

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1896	Sep. 23, 1896	4.50	1,560
1897	May 8, 1897	6.50	3,600
1898	Apr. 27, 1898	5.30	2,100
1901	May 20, 1901	6.40	3,200
1902	May 1, 1902	4.70	1,420
1903	May 14, 1903	5.70	2,890
1912	Oct. 5, 1911	10.20	10,000
1922	May 4, 1922	6.98	7,340
1923	May 26, 1923	6.20	4,850
1924	May 16, 1924	6.30	4,360
1925	Sep. 19, 1925	6.40	5,600
1926	May 25, 1926	7.15	5,220
1927	Jun. 28, 1927	6.10	7,030
1928	Jun. 1, 1928	4.45	3,480
1929	May 10, 1929	4.55	4,250
1930	May 31, 1930	4.00	3,100
1931	May 18, 1931	2.95	1,540
1932	May 18, 1932	4.90	4,800
1933	Jun. 2, 1933	4.52	3,900

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1958	May 28, 1958	9.50	4,490
1959	May 15, 1959	6.43	1,670
1960	May 13, 1960	8.42	3,350
1961	May 22, 1961	7.90	2,520
1962	May 10, 1962	8.80	3,210
1963	May 9, 1963	7.27	1,980
1964	May 27, 1964	8.91	3,380
1965	May 22, 1965	9.26	3,900
1966	May 10, 1966	7.90	2,560
1967	May 26, 1967	7.09	1,860
1968	May 29, 1968	8.79	3,590
1969	May 23, 1969	7.69	2,820
1970	Sep. 6, 1970	9.04	5,190
1971	Jun. 18, 1971	6.64	1,900
1972	Jun. 8, 1972	6.27	1,660
1973	May 20, 1973	9.50	5,750
1974	May 11, 1974	6.75	2,070
1975	Jun. 6, 1975	8.66	4,600
1976	May 18, 1976	7.35	2,640

1934	May 10, 1934	4.30	1,060	1977	Apr. 18, 1977	4.95	585
1935	Jun. 15, 1935	6.15	3,650	1978	May 17, 1978	8.07	3,440
1936	May 6, 1936	6.05	2,880	1979	May 30, 1979	8.64	4,580
1937	May 11, 1937	6.43	4,000	1980	Jun. 11, 1980	8.94	4,900
1938	Apr. 25, 1938	6.85	5,090	1981	May 3, 1981	6.88	1,900
1939	May 6, 1939	4.95	1,810	1982	May 5, 1982	7.75	2,960
1940	May 14, 1940	5.27	2,130	1983	May 31, 1983	9.49	6,070
1941	May 14, 1941	7.72	8,070	1984	May 25, 1984	7.84	6,450
1942	May 27, 1942	6.39	4,780	1985	Jun. 9, 1985	6.58	4,330
1943	May 4, 1943	5.84	3,980	1986	May 4, 1986	6.93	4,820
1944	May 16, 1944	6.90	5,670	1987	May 18, 1987	6.12	3,880
1945	May 3, 1945	6.03	3,770	1988	May 18, 1988	5.06	2,410
1946	Jun. 7, 1946	5.27	2,720	1989	May 9, 1989	4.62	1,810
1947	May 10, 1947	5.44	3,160	1990	May 25, 1990	4.42	1,700
1948	May 20, 1948	6.72	5,040	1991	May 14, 1991	5.04	2,260
1949	Jun. 19, 1949	7.04	8,140	1992	May 27, 1992	5.25	2,710
1950	Apr. 23, 1950	4.69	2,040	1993	May 28, 1993	6.84	5,500
1951	May 28, 1951	5.04	2,520	1994	May 18, 1994	5.03	2,650
1952	May 4, 1952	6.24	5,440	1995	Jun. 17, 1995	6.67	5,340
1953	May 28, 1953	8.00	2,900	1996	May 17, 1996	4.88	2,310
1954	May 22, 1954	6.49	1,560	1997	Jun. 2, 1997	5.96	4,840
1955	Jun. 9, 1955	7.66	2,300	1998	May 22, 1998	5.39	3,610
1956	Jun. 1, 1956	7.50	2,100	1999	May 24, 1999	5.52	3,500
1957	Jun. 6, 1957	10.68	6,690	2000	May 5, 2000	5.14	2,810

Questions about data h2oteam@usgs.gov
 Feedback on this website usgs-w_support_nwisweb@usgs.gov
 Surface Water for USA: Peak Streamflow
<http://water.usgs.gov/nwis/peak?>

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Water Resources skip navigation

Data Category:

Surface Water

Geographic Area:

United States



Peak Streamflow for USA

USGS 09166500 DOLORES RIVER AT DOLORES, CO.

Available data for this site

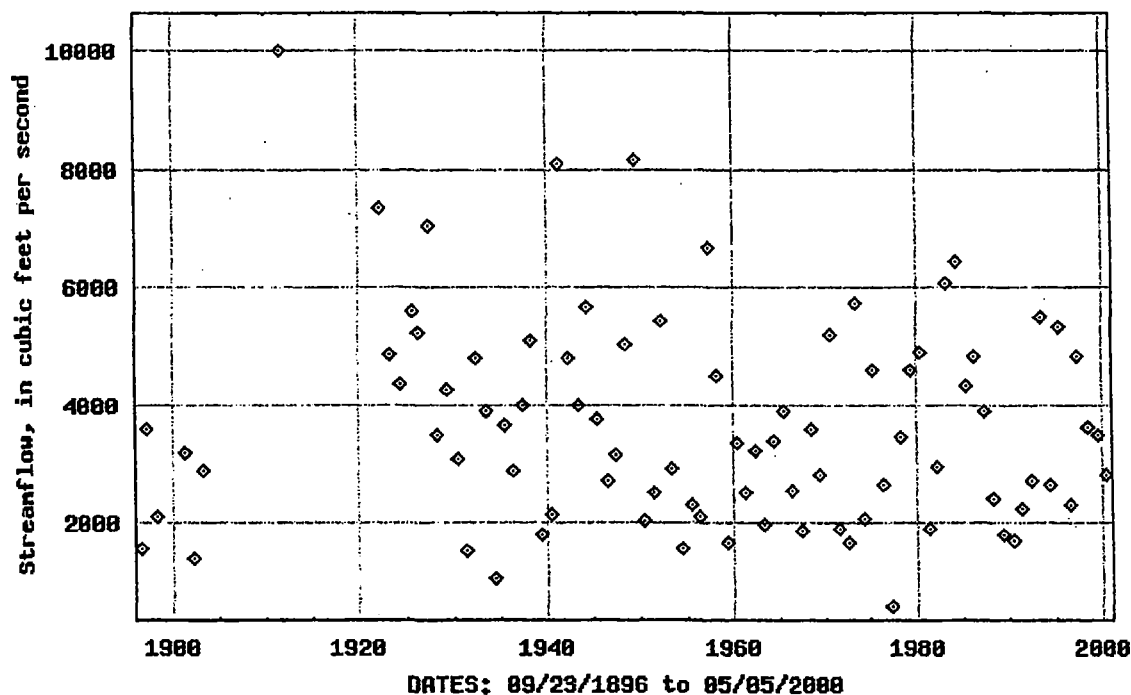
[Station home page](#)

Montezuma County, Colorado
Hydrologic Unit Code 14030002
Latitude 37°28'21", Longitude 108°29'49" NAD27
Drainage area 504.00 square miles
Gage datum 6,918.74 feet above sea level NGVD29

Output formats

[Table](#)[Graph](#)[Tab-separated file](#)[WATSTORE formatted file](#)[Reselect output format](#)

USGS 09166500 DOLORES RIVER AT DOLORES, CO.

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Surface Water for USA: Peak Streamflow

<http://water.usgs.gov/nwis/peak?>[Return to top of page](#)

Law Offices of
Preston & Associates,
Lawyers - Attorneys at Law
A Professional Service Corporation
P. O. Box 1416
Dolores, Colorado 81323-1416 USA
(970) - 882-4245 (Voice)

Internet Address: jpreston@fone.net

DOCUMENT TRANSMITTAL

Date: October 17, 2001

From: Jim Preston

Regarding: Dolores River gravel pits

To:

Mr. Larry Lang

Chief - Flood Control Section
Colorado Water Conservation Board FAX 303-866-4474
1313 Sherman Stree, Room 721
Denver, Colorado 80203

- ☒ Please Read
- ☐ Please Handle
- ☐ Please Approve
- ☐ Please File
- ☐ Please Review with me
- ☒ Copy for you
- ☐

17 PAGES

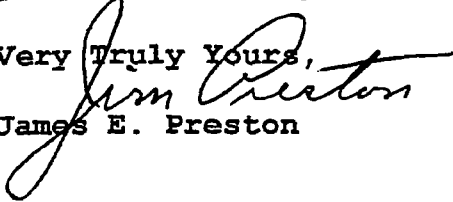
Dear Mr. Lang:

Attached, please find a 16 page Affidavit of Dr. Robert W. Blair. I will be sending you a hard copy by mail. This has detailed maps, aerial photos and USGS data.

The Affidavit supports your conclusions regarding the Line Camp Gravel Pit 100% as far as the berms being an obstruction in the flood plain. The MLRB absolutely refused to consider the flooding issue and did not consult your office.

I will also send you a copy of the Flood Plain regulations the County has adopted but did not show you. Please call if you have any questions. You have our permission to use it your report. May I receive a copy of your finished report?

Very Truly Yours,


James E. Preston

**Before the Department of Natural Resources
Colorado Mined Land Reclamation Board
Colorado Division of Minerals and Geology**

**May 23, 24 2001
1313 Sherman Street, Room 215
Denver, Colorado 80203**

Affidavit of Dr. Robert W. Blair, Jr., Ph.D.

**In the Matter of:
The "Line Camp Gravel Pit" Application
Application #: M-2001-001**

County of La Plata)
)
STATE OF COLORADO) ss:

Re: Line Camp Gravel Pit - Dolores, Colorado

In my opinion, the proposed design of the Line Camp gravel pit increases the risk of flooding from a Dolores River high discharge event on the land of Jack Akin and Carol Stepe on the east side of the valley. This type flood event could threaten human lives and buildings on the Akin property. This opinion was arrived at after I reviewed existing documents, aerial photographs and personally visited the site in question.

My Curriculum Vitae and supporting documentation are attached and incorporated in this Affidavit by reference.

My findings and conclusions are based on the following Sources of Data which I include in this Affidavit by reference:

1. USGS Boggy Draw Quadrangle 7.5 Min. Series Map, 1993.
2. USGS Montezuma County, Colorado, County Map Series, sheet 2, 1975.

3. State of Colorado Construction Materials Regular (112) Operation Reclamation Permit Applications Form filled out by Four States Aggregates, LLC, File No. M-2001-001.
4. State of Colorado Division of Minerals and Geology response to objections received to the Four States Aggregates, LLC, Line Camp Pit, File No. M-2001-001.
5. USDA-F color stereo aerial photos 24-612130-198-56 and 198-57, 1998.
6. SCS b&w stereo aerial photos DKQ-4-147 and 4-148, 1950.
7. Website USGS Hydrograph and station description for 09166500 (<http://water.usgs.gov/peak.cgi?statnum=09166500...>), 2001.

Findings

1. Four States Aggregates's final reclamation design (Exhibit Page 23, File No. M-200-001) indicates a berm 350 ft long will occupy the southeastern edge parallel to the river and a 700 ft berm perpendicular to the valley slope at the extreme southern edge of the gravel pit area.
2. As can be seen from aerial photo 198-57, the Dolores river is presently a single thread channel confined to the eastern valley wall north of the Akin property and then shifts to a single thread channel on the western valley wall south of the Akin property. The shift of the river from one side of the valley to the other is indicated by a braided channel network. Braided channel patterns are indicative of steeper gradients, unstable bedloads (gravel and sand that makes up the stream bed) that result in shifting channels especially during flooding. Braided channels are associated with greater bedload than what the river discharge can handle and, thus, the channel splits into multiple threads.
3. The Akin property is situated at the northeastern edge of the braided section. The proposed Line Camp gravel pit is located on the west side of the valley just north of the braided section (see photo 198-57). The Akin property is thus susceptible to the effects of braiding and erosion of high banks during high discharge events.
4. High discharge events are considered here as volumes greater than 6,000 cubic feet per second (cfs). There have been eight such events in the last 90 years (see Peak Streamflow for Colorado, Dolores River). Volumes between 6,000 cfs and 8,000 cfs would most likely involve the reoccupation of existing braided channels and if the flood had a duration of several days could form new channels.
5. Very high discharge events or catastrophic flood events would be volumes greater than 8,000 cfs. There have been three of these events in the past 90 years. During such events the channel configuration could be completely redesigned. It is likely that with the presences of gravel pits that pit capture would take place. This is where the floodwaters will take the path of least resistance. Thus, human alteration of the natural floodplain would aid in the relocation of the channel. To prevent this, berms are often constructed.

6. Of most concern is the construction of the 300 ft berm by Four States Aggregates that is designed to have heights of several feet to possibly six feet or more. When there are volumes of water in excess of 6,000 cfs, the river channel will be artificially confined just north of the Akin property. This impedes the natural tendency for the river floodwaters to spread out and dissipate.
7. The Four States Aggregates recognizes this problem. To quote from pages 27D and 27E:

"The construction of vegetated stockpile berms along the pit side closest to the river will also further reduce the ability of the river to change its current channel, which at this point is relatively straight and along the east side of the valley. Because of the current channel configuration, there is a greater chance of stream course changes further downstream (such as on the Robinson and Akin properties and beyond) regardless of the Line Camp Pit presence."

8. By confining the channel and preventing floodwaters from spread out in the normal floodplain, greater erosion of the streambed occurs which in this case is just north of the Akin property. These eroded stream gravels will be dumped in an area where the channel naturally spreads out. That would be in the braided section on the Akin and Robinson property. Thus, there is greater flooding and lateral migration of the braided stream channels. Where these new channels would occur is unpredictable, but almost assuredly they would negatively impact the Akin and Robinson property.

Conclusion

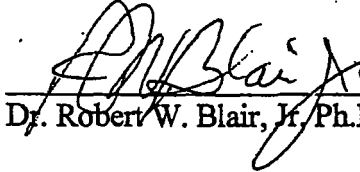
The proposed berm design of the Line Camp gravel pit increases the risk of flooding from a high discharge event on the land of Jack Akin and Carol Stepe. This type flood event could threaten human lives and buildings on this property.

Additional Comments

Obstructing the natural course or channel of waters in the U.S. is contrary to the provisions of federal law (33 U.S.C. Sec. 403). The south berm that Four States Aggregates plans to build spans 50 to 60 percent of the width of the Dolores River Valley. During a major discharge event that breaches the gravel pits through pit capture, this south berm would impede water flow. The two gaps in the south berm that are designed to drain backup waters in such an event could easily be overwhelmed. Because the berms are composed of soil and gravel fines, the berm could easily be eroded and increase suspended sediment load. This load would ultimately be discharged and deposited in the McPhee Reservoir. In addition, the water flow through the gaps would

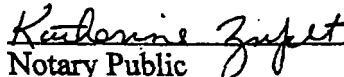
cause accelerated erosion below the berm base by funneling the flow through the gaps. Much of this material would likely be deposited in the braided section and increase the flooding potential on both the Robinson and Akin property, further jeopardizing lives and property.

I, Dr. Robert W. Blair, Jr., Ph.D., the Affiant, have read the foregoing and swear that it is true and correct to the best of my knowledge, information, and belief.


Dr. Robert W. Blair, Jr. Ph.D.

The foregoing instrument was signed and sworn before me this 19th day of May, 2001, by Dr. Robert W. Blair, Jr. Ph.D..

Witness my hand and official seal.
My commission expires: 11-05-02


Notary Public
Address:
Durango, Colorado

Water Resources

Data Category:

Surface Water

Geographic Area:

Colorado

GO

Peak Streamflow for Colorado

WARNING!!

Several tables containing Colorado District Water Quality data have been found to be corrupted. Water Quality data retrieved from this site prior to April 2, 2001 should be regarded as suspect.

USGS 09166500 DOLORES RIVER AT DOLORES, CO.

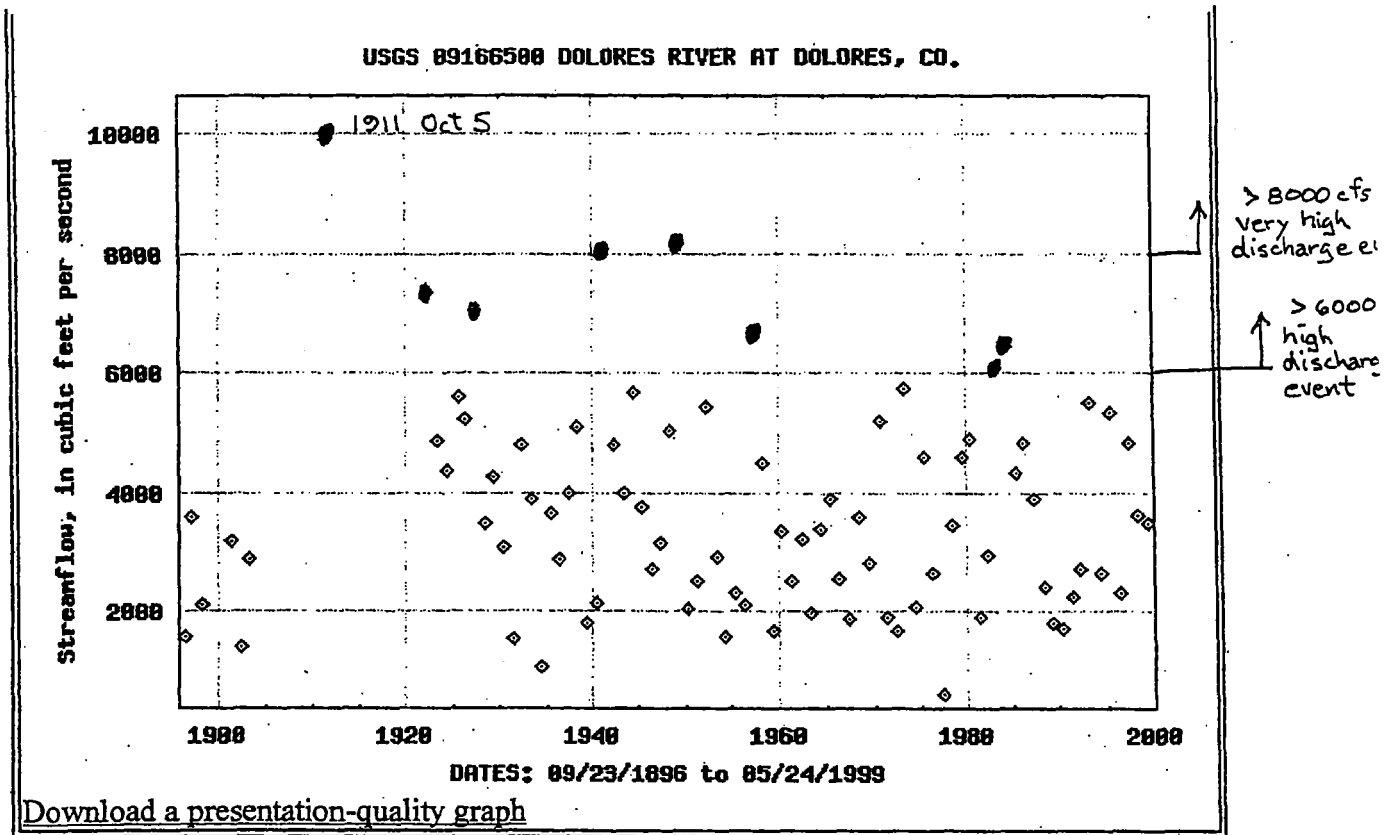
Available data for this site

Surface-water: Peak streamflow



GO

Montezuma County, Colorado Hydrologic Unit Code 14030002 Latitude 37°28'21", Longitude 108°29'49" NAD27 Drainage area 504.00 square miles Gage datum 6,918.74 feet above sea level NGVD29	Output formats
	<u>Table</u>
	<u>Graph</u>
	<u>Tab-separated file</u>
	<u>WATSTORE formatted file</u>
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Questions about data gs-w-co_NWISWeb_Data_Inquiries@usgs.gov

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Surface Water for Colorado: Peak Streamflow

<http://water.usgs.gov/co/nwis/peak>

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Water Resources

Data Category:

Surface Water

Geographic Area:

Colorado



Peak Streamflow for Colorado

WARNING!!

Several tables containing Colorado District Water Quality data have been found to be corrupted. Water Quality data retrieved from this site prior to April 2, 2001 should be regarded as suspect.

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Available data for this site

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Montezuma County, Colorado Hydrologic Unit Code 14030002 Latitude 37°28'21", Longitude 108°29'49" NAD27 Drainage area 504.00 square miles Gage datum 6,918.74 feet above sea level NGVD29				Output formats			
				Table			
				Graph			
				Tab-separated file			
				WATSTORE formatted file			
				Reselect output format			
Water Year	Date	Gage Height (feet)	Stream-flow (cfs)	Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1896	Sep. 23, 1896	4.50	1,560	1957	Jun. 6, 1957	10.68	
1897	May 8, 1897	6.50	3,600	1958	May 28, 1958	9.50	4,490
1898	Apr. 27, 1898	5.30	2,100	1959	May 15, 1959	6.43	1,670
1901	May 20, 1901	6.40	3,200	1960	May 13, 1960	8.42	3,350
1902	May 1, 1902	4.70	1,420	1961	May 22, 1961	7.90	2,520
1903	May 14, 1903	5.70	2,890	1962	May 10, 1962	8.80	3,210
1912	Oct. 5, 1911	10.20		1963	May 9, 1963	7.27	1,980
1922	May 4, 1922	6.98		1964	May 27, 1964	8.91	3,380
1923	May 26, 1923	6.20	4,850	1965	May 22, 1965	9.26	3,900
1924	May 16, 1924	6.30	4,360	1966	May 10, 1966	7.90	2,560
1925	Sep. 19, 1925	6.40	5,600	1967	May 26, 1967	7.09	1,860
1926	May 25, 1926	7.15	5,220	1968	May 29, 1968	8.79	3,590

1927	Jun. 28, 1927	6.10	
1928	Jun. 1, 1928	4.45	3,480
1929	May 10, 1929	4.55	4,250
1930	May 31, 1930	4.00	3,100
1931	May 18, 1931	2.95	1,540
1932	May 18, 1932	4.90	4,800
1933	Jun. 2, 1933	4.52	3,900
1934	May 10, 1934	4.30	1,060
1935	Jun. 15, 1935	6.15	3,650
1936	May 6, 1936	6.05	2,880
1937	May 11, 1937	6.43	4,000
1938	Apr. 25, 1938	6.85	5,090
1939	May 6, 1939	4.95	1,810
1940	May 14, 1940	5.27	2,130
1941	May 14, 1941	7.72	
1942	May 27, 1942	6.39	4,780
1943	May 4, 1943	5.84	3,980
1944	May 16, 1944	6.90	5,670
1945	May 3, 1945	6.03	3,770
1946	Jun. 7, 1946	5.27	2,720
1947	May 10, 1947	5.44	3,160
1948	May 20, 1948	6.72	5,040
1949	Jun. 19, 1949	7.04	
1950	Apr. 23, 1950	4.69	2,040
1951	May 28, 1951	5.04	2,520
1952	May 4, 1952	6.24	5,440
1953	May 28, 1953	8.00	2,900
1954	May 22, 1954	6.49	1,560
1955	Jun. 9, 1955	7.66	2,300
1956	Jun. 1, 1956	7.50	2,100

1969	May 23, 1969	7.69	2,820
1970	Sep. 6, 1970	9.04	5,190
1971	Jun. 18, 1971	6.64	1,900
1972	Jun. 8, 1972	6.27	1,660
1973	May 20, 1973	9.50	5,750
1974	May 11, 1974	6.75	2,070
1975	Jun. 6, 1975	8.66	4,600
1976	May 18, 1976	7.35	2,640
1977	Apr. 18, 1977	4.95	585
1978	May 17, 1978	8.07	3,440
1979	May 30, 1979	8.64	4,580
1980	Jun. 11, 1980	8.94	4,900
1981	May 3, 1981	6.88	1,900
1982	May 5, 1982	7.75	2,960
1983	May 31, 1983	9.49	
1984	May 25, 1984	7.84	
1985	Jun. 9, 1985	6.58	4,330
1986	May 4, 1986	6.93	4,820
1987	May 18, 1987	6.12	3,880
1988	May 18, 1988	5.06	2,410
1989	May 9, 1989	4.62	1,810
1990	May 25, 1990	4.42	1,700
1991	May 14, 1991	5.04	2,260
1992	May 27, 1992	5.25	2,710
1993	May 28, 1993	6.84	5,500
1994	May 18, 1994	5.03	2,650
1995	Jun. 17, 1995	6.67	5,340
1996	May 17, 1996	4.88	2,310
1997	Jun. 2, 1997	5.96	4,840
1998	May 22, 1998	5.39	3,610
1999	May 24, 1999	5.52	3,500

Questions about data gs-w-co_NWISWeb_Data_Inquiries@usgs.gov

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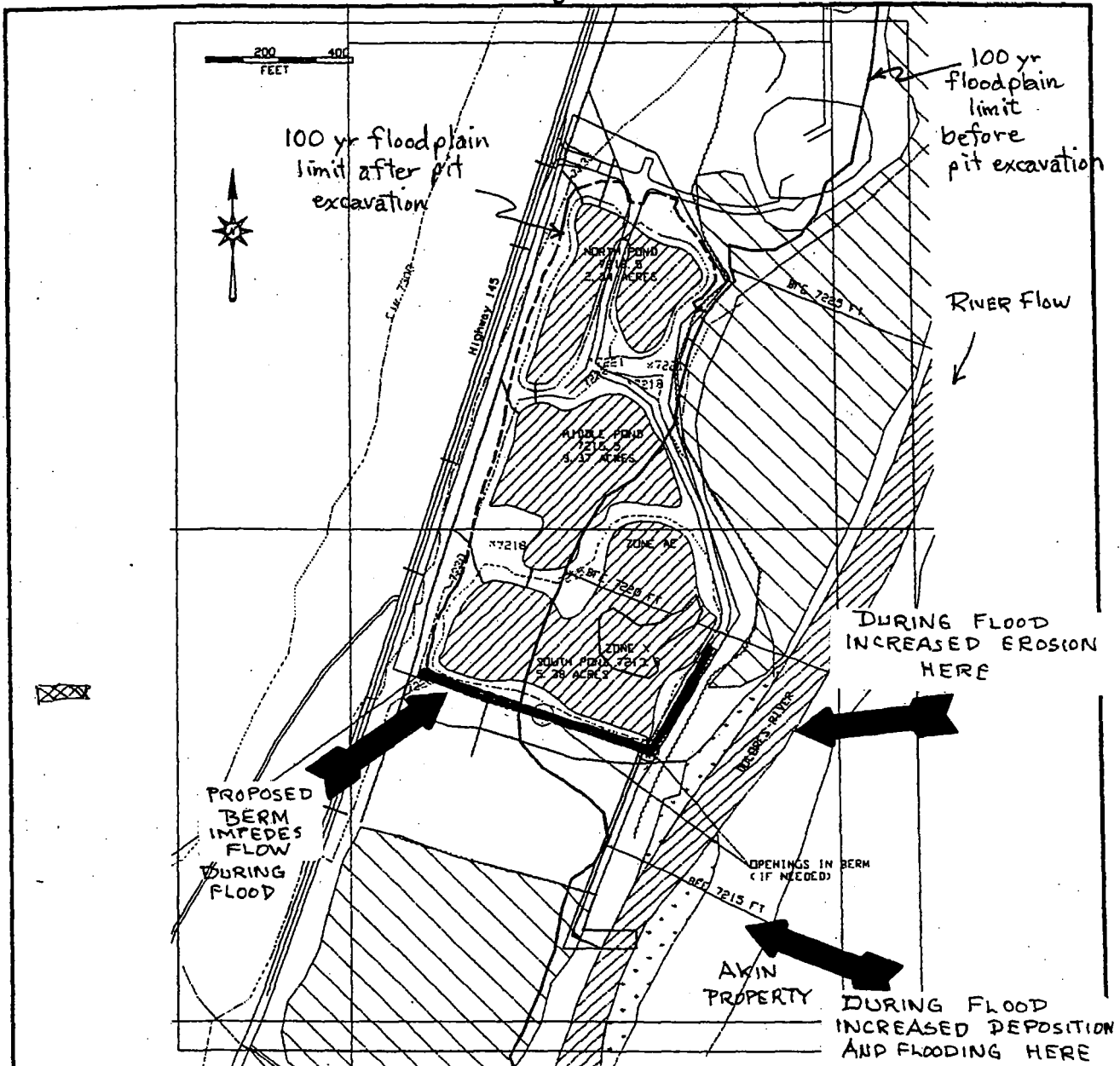
Department of the Interior, U.S. Geological Survey

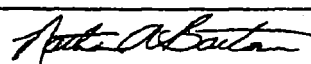
Water Resources for Colorado

http://water.usgs.gov/co/nwis/peak?site_no=09166500&agency_cd=USGS&format=html

5/19/2001

MAP F-2: Entire site showing estimated final (post-reclamation) contours and floodplain changes.



Map Title	Final Contours	Scale	As shown	North ↑
Source of Map	USGS Boggy Draw Quad	Permit No. & Name	M-2001-001 Line Camp	Drawn by NAB Checked by NAB
Legend	As labeled on map, standard USGS. Circles show openings in berms (if required). Cyan solid line is pre-mining 100-year floodplain edge; cyan dashed line is post-reclamation floodplain edge.			Ref Exhibit E
Prepared by N. A. Barton, PE, DEE, #27342 for Four States Aggregates, LLC Applicant		 SIGNATURE		File No. F-2 15 March 2001

-98

USDA-F

24

612130

198-57

Dolores River flows
from north to south



Single
thread
channel

PROPOSED
LINE CAMP
PIT

Braided channel
system subject to
flooding

AKIN
PROPERTY

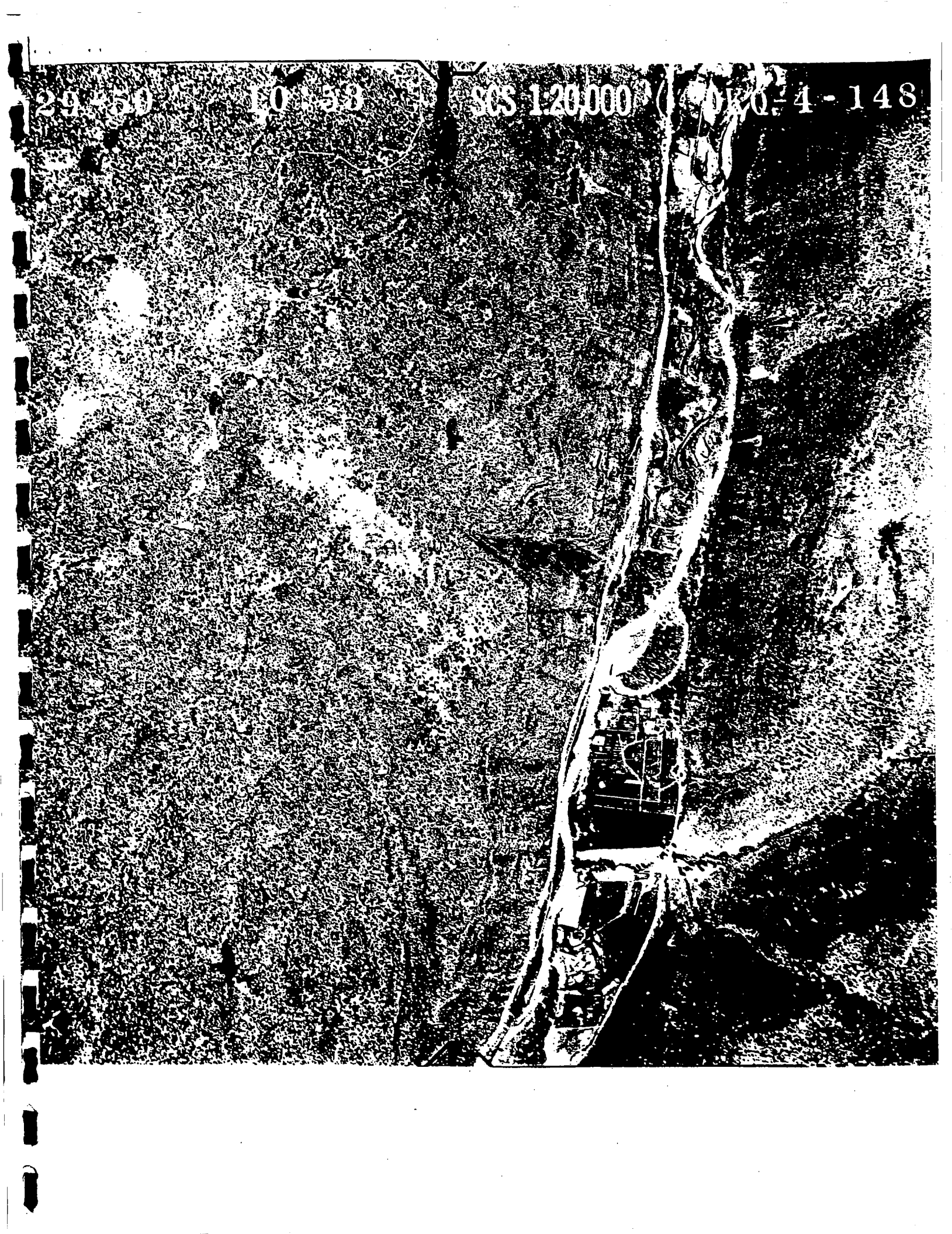
0008 37-31-43N 108-23-47W 6147m 16:29:19 15-07-98 50.1 RC056 NMG

24-50

10-33

SCS 120,000

10-4-148



ABBREVIATED RÉSUMÉ 2001

ROBERT W. BLAIR, JR.

Department of Geology
Fort Lewis College
Durango, Colorado 81301
e-mail: blair_r@fortlewis.edu

Office: 303-247-7263
Home: 303-247-2703
FAX: 303-247-7660

EDUCATION:

Ph.D. Geology, 1975, Colorado School of Mines, Golden, Colorado.
Thesis: Weathering and geomorphology of the Pikes Peak granite in the southern Rampart Range, El Paso County, Colorado
B.S. Geology, 1966, University of New Mexico, Albuquerque, New Mexico

CONTINUING EDUCATION:

2000, Digital mapping workshop, GSA
1997, ArcView GIS workshop
1996, GSA landslide workshop
1994, NSF volcanic processes workshop, Oregon
1993, applied geophysics field course SAGE
1987, GSA workshop on Contaminant Hydrology
1985, NASA workshop on Global Geomorphology
1984, seminar series on Fluvial Geomorphology by Stan Schumm
1981, six workshops in Remote Sensing at Purdue University
1979, NASA Summer Institute in Planetary Geology
1976, AAPG continuing education course Clastic Depositional Systems

WORK EXPERIENCE:

Fort Lewis College, Professor, 9/86 to present, Associate Professor, 9/81 to 8/86, Assistant Professor, 12/75 to 8/81. Instructor, 9/73 to 12/75. Chairman of Department, 4/79 to 4/83 and 4/92 to 9/96 and 4/99 to 4/00. Specialty is geomorphology. Classes taught include geomorphology, engineering geology, field camp, field methods, natural regions of North America, geoscience writing, geochemistry, remote sensing, introduction to GIS, physical geology and earth science.
Independent Consulting Geologist, 1980 to present, projects include establishing a groundwater monitoring program for Durango Landfill, 1988. Determining source of hydrocarbon contaminants near an oil well complex, Farmington, NM, 1987. Evaluation of groundwater potential for the Amherst residential development, Durango, CO, 1986. Evaluation of landslide activity of Sailing Hawks residential development, 1988.
Four Corners Research Institute, Vice President, 6/81 to 6/82, consulting geologist, 1975 to present. Project director and geologist for determining site location for Grand Junction and Rifle, Colorado uranium tailings (1981-82). Geologist to determine site location for the disposal of the Durango uranium mill tailings (1980-81). Constructed landscape classification maps for the U.S. Forest Service in the San Juan Mountains (1979). Responsible for geologic hazard and surficial geologic maps for a portion (7 quadrangles) of the La Plata County, (1976).
U.S. Geological Survey, Physical Science Technician, 3/69 to 8/73.

19856 Hwy 145
Dolores, Co. 81323
8/23/01

Water Conservation Board
1313 Sherman St.
Denver, Co. 80203

Dear Dan,

As per our phone conversation, I have enclosed some relevant information for your upcoming inspection of the Dolores River Valley.

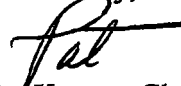
Following is a brief synopsis of our primary concerns:

1. Obsolescence of 1973 Army Corps of Engineers flow and mapping data of the Dolores River used by DMG in recommending approval of Line Camp Gravel Application
2. State has no data on effects of multiple gravel operations and pits in proximity in the flood plain and into the aquifer on river and ground water quality and quantity. We have found current monitoring of the existing Tam Pits inadequate and questionable. There is no monitoring of the aquifer.
3. There will be approximately 28 restored and operational pits within a 5 mile stretch of the river. We have noted the death of Cottonwood trees and woody flora at the Tam Pits, which diminishes the stability of the flood plain.
4. Increased serious flooding potential. Ponds abound, from Twin Spruce on downriver and are the proposed reclamation for both the Tam and Line Camp Pits. Ponds greatly diminish flood plain function and are subject to capture. We are also concerned about silting of McPhee with resultant diminished water in the lower Dolores.
5. The presence of mercury has been documented in McPhee Reservoir. A most recent E.P.A. report confirms significant mercury release from abandoned mines in Rico. Is there mercury in the river bed? Has mercury been deposited in the flood plain? Does gravel mining and discharge remobilize the mercury?

We look forward to meeting with you and possibly discussing these issues further during your forthcoming visit to the Dolores area. Please feel free to call me, if we can be of assistance.

We would appreciate you sharing this information with the Board, since we have decided not to take up their time at the next meeting.

Sincerely,



Pat Kantor, Chairperson CFAR (Citizens for
Accountability & Responsibility)

Gravel pits add danger, Group charges

BY JIM MINAGIA
JOURNAL STAFF WRITER

The numerous gravel pits and ponds lining the upper Dolores River could increase flood dangers by altering the mountain stream's natural course, a citizens' group is warning.

Citizens for Accountability and Responsibility on the Dolores River formed last fall to research the cumulative impacts of having multiple gravel pits along a short section of the river.

Within one mile there are at least 19 pits (mining pits are transformed into ponds), and within a five-mile section of the river there are 19 gravel-mine ponds, with more to come once planned mining expansions are complete.

CFAR members, many of whom live in the midst of working or expired mining operations clustered north of the river, are trying to raise public awareness of the situation.

"We understand the need for gravel resources," said Marilyn Boynton, a CFAR researcher. "We just don't think this river valley is the best place to mine it, considering the dangers of putting so many in that sensitive of an environment, and scientific facts show this."

The group, along with geologically experts such as a Fort Lewis College professor, is concerned about the potential for so-called "pit-capture" in the event of flooding which causes water

Flood Continued from Page 1A

10-20 years. With so many pits and ponds lined up in a row, the fear is that during a flood, they will fill, take out berms, and redirect the river into a new "captured" channel created by expired mines.

Because of its steep gradient, narrow valley and heavy volume of snow melt, the Dolores River has flooded 11 times since 1912, according to state records. During the 1912 flood it ran at 10,000 cubic feet per second and flooded downtown Dolores.

"It is a very powerful river and when it happens again, this pit capture would be disastrous," Boynton said. "For some property owners, like the Robinsons, Mr. (Bill) Ortiz and Jack Akin, it means their residences would be taken out by the new river course, their lives endangered and their property totally inundated."

Rob Blair, a expert on fluvial geomorphology, and a recently retired geology professor at Fort Lewis, surveyed the region last month and confirmed the potential for increased flooding as a result of so many gravel ponds.

from the flood plain, it changes the balance that the river has naturally achieved for maintaining its particular gradient," Blair explained. "Linked gravel pits along the flood plain tend to focus where floods will occur in the future in that they provide the pathways for the new channels during a high-discharge flood. This definitely has the potential to change the course of that river."

Berms of tailings along mines can channel the river flow, or create dams, which increases erosion in those constricted areas. The result is that flood waters get "dumped" in the area where the river spreads out again, increasing flood dangers for residents there, and possibly causing the river to become a more braided system," Blair said.

The group is also researching cumulative effects of mines on aquifers and the potential for silt build-up in McPhee Reservoir from mine tailings during floods.

Government regulators with the State Division of Mining and Geology have said that the law does not require them to consider the cumulative and

environmental impacts that multiple gravel operations may have on water quality and flooding. State statutes require that permit requests be considered case by case, based on their individual merits.

"We think it is time they look at more," said Pat Kantor, CFAR president.

The group is rallying around Carol Stepe and Jack Akin, the couple suing Montezuma County for granting a high-impact permit for a gravel mine at the Line Camp, despite widespread opposition. The commissioners granted the permit, arguing historical use of gravel mines in the area and the need to respect development rights on private property.

Numerous examples exist of flooding rivers diverted by gravel pits into unexpected new courses that have been very costly to man, agreed geologist James B. Johnson, a Grand Junction geologist.

"This behavior is so well-known, I am surprised it appears to have been ignored in the Dolores Valley," Johnson said.

The citizens' group has sent letters to Gov. Bill Owens and

state representatives informing him of their concern, and are urging state geologists to look for alternative sources of gravel in less-populated areas of the county, such as Haycamp Mesa.

But the problem is not just gravel pits, Blair cautioned. Scenic mountain rivers are also more and more stressed by vegetation depletion, increased residential development, and new roads, which — ironically — require ample gravel for construction.

"Competing human development in general along rivers tends to constrict their flows and take up the flood plain they need," Blair said. "The concept of designing with nature in mind would help in reaching an equilibrium because there are limits that any river system can handle."

"Establishing that line can be politically difficult, but not doing so can cause problems in the future."

CFAR is pushing for a geological survey to be conducted on the Dolores River valley to quantify the dangers human impacts are causing. The group's next meeting is May 14 at 6 p.m. in the Dolores Coffee House.

GRAVEL PITS IMPACT FLOODING ALONG UPPER DOLORES RIVER, MONTEZUMA COUNTY, COLORADO

This report presents information gathered over many weeks about the nature of the Dolores River, the siting of numerous gravel pits upriver from Dolores town, and the potential for catastrophic impact upon people living along the river and in the town. Facts will be related to their sources, and opinions will rely upon affidavits from fluvial experts, geologist James B. Johnson, Ph.D., of Mesa State College, and geologist Robert W. Blair, Ph.D., of Ft Lewis College, and also upon my field work with them and conversations. I do not claim to be a professional geologist but have spent years in minerals research and have completed all coursework for a degree in geology. I am the expert repository of information related to river and gravel pit interactions and that is why it is I writing this report.

CONCLUSIONS: A short conclusion to studies by Johnson, Blair, and myself to date (June 2001) is that we see definite threat to lives and property caused by continuing to site gravel pits close together along the floodplain of the Upper Dolores River. This threat goes beyond the sort of overbank flooding that people normally accept when building close to a flood-prone river. Our work reveals that virtually everyone living in the Dolores River Valley could be hit by the entire channel of the river. If a string of reclaimed gravel ponds captures the river, there is no way to certify where the river might then flow. With 28 ponds in a five-mile stretch upriver from the town, the Dolores River soon will have several man-made pathways to shift its channel and send powerful flows upon citizens. Much of the town of Dolores could be wiped out.

RIVER TYPE: The Upper Dolores River above McPhee Reservoir is a high-gradient, gravelbed river with relatively straight channel sections that alternate with low-radius-of-curvature bends and one or two nearly right-angle turns. It moves tons of cobbles and boulders with ease. Latest research by fluvial geomorphologists indicates that channel shape and gradient of rivers depend upon discharge and bedload. A river with heavy bedload such as the Dolores keeps its gradient steep to produce streampower. The Upper Dolores between Rico and Dolores drops 54 feet per mile compared, for example, to the Colorado River through Grand Junction dropping only 10.2 feet per mile and carrying much more sand. Average bedload over millennia maintains the average gradient. Pulses of bedload moving downriver, however, cause changes in channel pattern to fine-tune the gradient to what is carried short-term. When a pulse of gravel enters a reach of channel, the channel gradually straightens to increase gradient. When that pulse has passed through, the channel will create bends to reduce gradient. A very large plug of gravel currently occupies the channel just below the Line Camp Pit along Akin Ranch. In this section the river in 1983 used a 6,000-cfs flood event to shift overnight 100 feet; it is braiding through that section—an even more efficient means of moving bedload.

Recently abandoned channels show relict bends similar to those seen today. These channels are as yet unfilled by sediment and can be seen on topographic maps and aerial photographs literally from valley wall to valley wall. It appears, therefore, that in a time frame of a few hundred years extending to the present, the Dolores is prone to move rather rapidly back and forth. We can expect this habit to continue. Several relict channels have amplitudes of about 600 feet and that size of meander-cutting into the land also can be expected to continue. A new bend along Akin Ranch has cut 250 feet in the past 15 years. People look upon this land and upon the gravel ponds and believe they are permanent. But in truth this is all amazingly ephemeral. It is difficult for non-geologists to grasp this truth—and so far they have not.

FLOODING FACTS: The Upper Dolores River is located on the southwestern edge of the San Juan Mountains, and it catches great snowfalls in winter and rainstorms in summer enlarged by orographic effects. It is especially vulnerable to monsoon rains coming up from storms in the Gulf of Mexico. The Bureau of Reclamation says the Upper Dolores drainage basin is 809 square miles; the U.S.G.S. stream data gathered near the town says the drainage area is 504 square miles. No attempt has been made by us to rectify these figures.

Dr. James B. Johnson in his guest editorial for the *Cortez Journal* wrote, "Expect large floods." On October 5, 1911, the U.S.G.S. stream gauge recorded a peak flow of 10,000 cfs. Given the depth of the river's channel through town, this flood must have put the river 4 feet above its banks; it flooded almost all of the town. Though the Army Corps of Engineers has no records dating back that far, oldtimers say the Corps came in after this flood and moved the whole river channel out of its accustomed position near downtown, over against the south wall of the valley. It is still there today and has been rip-rapped and leveed as it approaches McPhee Reservoir. Dr. Robert W. Blair noted that the Animas River at Durango also recorded its greatest-ever flood on October 5, 1911. He believes a hurricane in the Gulf of Mexico was the source of both floods. But according to Blair the event in Dolores was only a 90-year flood.

To assess flood frequency along 10 miles of river upstream from town, the following method was used: A resident, Pat Blackmer, 6 miles upstream, observed water running under several houses when the U.S.G.S. gauge in Dolores registered 5,300 cfs. If the river flooded upstream at this volume, it would have flooded upstream at all higher recorded peak volumes. This reasoning is reliable because along this entire 10-mile stretch, the river maintains a similar distance everywhere between water level and floodplain level. Also, there are minimal tributaries to the river along this 10 miles. Italian drainage comes from the north rim of valley wall but barely maintains enough flow to create wetlands. Other small drainages off the south wall are limited by the fact that the surface for 20 miles up there dips away from the river, so most run-off travels away from the river, not toward it. By the above line of reasoning, Dr. Blair counted 16 floods since the one of 1911. Eight floods of greater than 6,000 cfs he termed large floods, and three floods of greater than 8,000 cfs he termed very large floods, which he said could reconfigure the Dolores channel—that is have the power to move the entire channel to a new position.

Dr. Johnson found evidence in the geologic record for floods 3 to 5 times larger than that of 1911. He based this conclusion upon the size of the drainage basin, the size of bedload the river carries, and the fact that on topographic maps, tributaries appear truncated where they reach the valley. Such a flood would be like that of the Big Thompson north of Denver. It would wipe out the town of Dolores completely. Gravel pits would add only increased sediment to such a disaster. Nevertheless, this evidence shows the power of the Dolores River.

In addition to flood frequency, other factors make the Dolores River dangerous. First is its high gradient. Steepness gives the river power to shift its channel both gradually and suddenly. A second danger is confinement. Valley walls often less than 1,000 feet apart force together Highway 145, fields and gravel pits, homes and people. The town itself has space to be only 3 blocks wide! Most of the San Juan Skyway, and all the pits, fields, river, and people are in the floodplain—there is no room to be anywhere else.

HOW RIVER HISTORY AND PITS COMBINE: In both 1983 and 1984, spring floods of greater than 6,000cfs occurred on the Upper Dolores. Just below its junction with the West Fork and about 10 miles above town, the river makes a sharp bend to move from the northeast side of the valley over to the southwest. Either the 1983 or the 1984 flood sent the river out of banks where it made this turn and ripped all the soil off a long expanse of floodplain. Montezuma County officials eyed the devastation and decided to convert that ruined land into a gravel pit. Thus was born the first large pit complex upriver, Twin Spruce Pit, approved in 1985. (Information is from Jack Akin who has lived one mile below what is now Twin Spruce since boyhood.) All other pits including the Line Camp, Koenig, and Sunnyside were developed since Twin Spruce and downriver from it. None of these pits has yet faced a flood of 6,000 cfs, let alone a very large flood of 8,000 cfs. The last 8,000-cfs event happened in 1949. Will we get another three this century? All this gravel development has been dug into the floodplain in harm's way without benefit of any geologic or hydrologic study under a system where the County Commissioners and pit operators just want gravel, and the Mined Land Reclamation Board is set up to see they get it in an orderly manner! Up to now, they have been supported by a county full of people who exclaim, "Why, those pits are perfectly safe. They have been there for years," or "We will worry about another flood when it comes, we have always had floods."

But here is what Twin Spruce has in store for us: Eight rectangular ponds in a line replace the floodplain—ponds which some locals call beautiful but tourists on the San Juan Skyway think are sewage lagoons. Ponds full of fish that must be fed by hand because there is no natural vegetation surrounding them. Ponds nobody is allowed to fish in and that wildlife cannot approach because they are too steep. From wall to wall across the valley we have (1) the highway, (2) the long line of ponds, (3) a line of subdivision houses, (4) the Dolores River. Land all slopes down toward the river. Just above the ponds the Dolores channel still switches across the valley in its tight bend. Dr. Blair found only a sliver of gravel road to separate that bend from the empty channel the river used to scour the land in 1983. The road surface is only 2 feet higher than the river's

normal floodplain, so the next large flood will take out this road and hit the ponds full force. Blair says they could all go like dominos and send the whole river channel down upon people below. Or they could blow out sideways and rush down upon homes between the ponds and the present river channel. Should a high-jacked channel flow down upon the Line Camp it could repeat the wash-out there and then proceed God knows where. If you mention this scenario to the gravel company or to Division of Minerals and Geology staff, they speak of "backwaters." We geologists are not talking backwaters; we are talking *the river channel itself*.

Neither the County Commissioners nor the majority of citizens understand this information, nor have they heard it, nor do they want to hear it. Even citizens who packed the room in three hearings contesting the latest Line Camp Pit did not realize their danger: they just didn't want the scenery ruined or gravel pits dug next to their houses. That is why we have appealed to Governor Owens.

One mile downstream from Twin Spruce, the Line Camp Pit will bring its own dangers. Its reclamation plan calls for two berms that directly threaten families living just downstream. A 350-foot berm along the side of the pit area will constrict floodwaters, then release them in a sideways rush upon the houses of Jack Akin and of the Robinsons. A 700-foot berm across the whole south end of the pit area, even with two gaps, will partially impound floodwaters, break, and send water and fines down upon the Robinsons. Moreover, the Line Camp Pit also will be subject to pit capture in future large flood events. It is set back 500 feet from the river by an old channel filled with cottonwoods. A man the Forest Service in Ft. Collins considers to be the nation's top cottonwood expert stated that these trees will die; and the Dolores is fully capable of carving a new meander into the old channel as explained earlier. A 600-footer, normal to this river, would broach the ponds. Or an 8,000-cfs flood could reconfigure the present channel and cut in above the Line Camp and capture the pit, creating a new pathway down valley. In addition, there is another plug of gravel moving down the channel now, one mile above the Line Camp. When this passes through, it could cause either a new meander or a sudden channel shift via the braiding mechanism.

As the final potential individual victim of pit-augmented flooding, we have 83-year-old Bill Ortiz living just below the expanding Koenig Pit. A mining plan there calls for piles of topsoil and waste fines 20 feet high along the perimeter beside the river. A large flood would again be constricted by these piles acting as pseudo-levees, then released sideways upon Ortiz and upon Highway 145 itself. Dr. Johnson points out that the highway could be severed because it runs adjacent to the river there, near Stapleton Bridge.

Altogether there will be 28 ponds within a five-mile stretch of river, beginning 5 miles above the town. If catastrophic channel shift due to pit capture occurs upstream, there is no predicting where the river will approach Dolores town. It could reclaim its old, pre-1911 route right through downtown. Moreover, 5 miles of pond-riddled, weakened sediments could be dumped into McPhee Reservoir and seriously reduce its storage capacity. Please realize that both Dr. Johnson and Dr. Blair expect a great channel shift to occur. It will not take a 100-year flood to do this; they are worried about 20-50-year

floods. And it will not be an act of God but rather of predictable, normal floods combined with gravel pits.

For all the reasons explained above, both I and the citizen's group CFAR (Citizens for Accountability & Responsibility) are requesting that you obtain a thorough geological assessment of the situation—not by the Division of Minerals & Geology which is established to allow gravel pits, but by people more objective such as the Colorado Geological Survey, or a B.L.M. hydrologist such as Roy Smith in Denver, or by anybody of expertise we all can trust. We request a moratorium on new excavation until our safety is assured. Please help us. There are hundreds more acres of floodplain still higher up the Dolores River. We can see no end to gravel pits, but obliteration of the scenic San Juan Skyway and ever more threat to people's lives. Gravel operators want all this gravel because it is first-rate. But there are miles of gravel up on Haycamp Mesa they could mine in safety with nobody to see—only they do not want the added expense of washing it. We believe a small loss in profits would be a fine trade for the threatened people of Dolores and for this State.

Sincerely,

Marilyn Boynton

July 18, 2001

Re: Dolores River Flooding and U.S. Army Corp of Engineers floodplain and hydrology report, 1978:

I obtained a bound copy of the U.S. Army Corps of Engineers' floodplain maps and hydrology report for the Upper Dolores River between West Fork and town. All County, State, and Federal agencies rely upon these maps and discharge figures. The base elevations of the maps appear to be correct; they match the most recent U.S.G.S. quadrangle maps. However, all the flood discharge figures and channel velocities are extremely incorrect. Army Corps claims the methods they use would compensate for any inaccurate data. They—and all relying upon them—need a big Reality Check. Their figures claim it would take over ~~6,200~~ cfs discharge to reach flood stage. I have numerous newspaper accounts, with pictures, from Cortez Journal archives showing floods and describing damage at discharge volumes of 5,000-6,000 cfs. In fact a witness who boats on the river every spring, Tim Hovezak, states that the minor flood of 1995, at 5,300 cfs, over-ran the reclaimed Caldwell/Reimer pit and destroyed its reclamation. Another witness, Pat Blackmer, stated in affidavit that property he used to own below Stapleton Bridge also flooded in the 1995 event. These real-life reports and photos wipe out the Army Corps claims.

Also, I have computerized, print-out data from the U.S.G.S. river gage in Dolores. They send a man over about once a month to take actual flow measurements. Consistently over a 10-year period with different technicians taking the measurements, these real-time checks show that channel discharge volumes between 3,000 and 4,500 cfs cause channel velocities of 7-8 feet per second. These velocities are what the Army Corps reports would occur only in a 100-year flood! Army Corps claims are totally refuted by all real measurements and evidence.

How does all this science affect us? It means that all our floodplain maps probably are wrong—for discharge and channel velocity both are controlled by water depth. To get the discharge and velocity figures of the Army Corps report, you would have to be using incorrect flood depths and vice-versa. This is why I have called upon the County Commissioners to obtain an objective, modern, re-study of the Dolores by some competent hydrologist. Even a quick, cross-section test run would show whether we have a problem. I am not looking for a study to help environmentalists or to help gravel miners—simply for the truth. People's insurance, livelihoods, and lives themselves all are resting on a false foundation here.

Marilyn Boynton
700 East 2nd St. #20
Cortez, CO 81321
564-8340

May 3, 2001

To: Jim Mimiaga
Cortez Journal
37 E. Main St.
Cortez, CO 81321

A word of caution!

As a visitor to the Dolores River Valley I have enjoyed the riparian habitat that enhances the scenic beauty of the area. It was easy to understand why this route was included in the designation of the San Juan Scenic Byway. That is why it is so disappointing to see the valley bottom lands overwhelmed with gravel pits. The rectangular, steep-banked pits remind an observer of a flood plain covered with sewage lagoons. These pits, and particularly those planned near the town of Dolores, not only detract from the beauty of the area but are potentially dangerous.

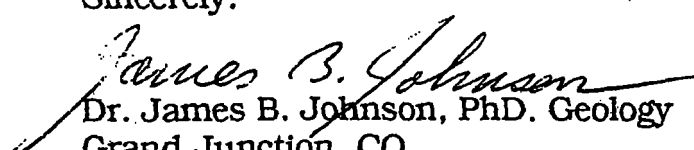
High gradient rivers with large catchment areas are flood producers. As a professional geologist, I look at the Dolores River valley upstream from the town and I see an alluvial flood plain with evidence that the river has repeatedly changed its course across the valley. The stream is gravel-bedded on the alluvial floor and these same gravels are being mined. These gravels that were moved by the river in the past are also used for dikes between the gravel pits and the river. This means the gravel dikes are unstable and will fail.

Rivers always try to take the path of least resistance and what could be easier than to exploit a hole in the flood plain? Numerous examples exist of flooding rivers diverted by gravel pits into unexpected new courses that have been very costly to man. This behavior of rivers is so well known I am surprised it appears to have been ignored in the Dolores Vally. Recent floods in the area have been relatively minor events compared to recorded floods in the past. Even the 10,000 cfs flood of 1912, almost twice the discharge of the memorable flood of 1995, pales when compared to the geologic evidence of earlier floods that were 3 to 5 times larger. My main point is that Dolores should expect large flood events and the gravel pits on the flood plain will cause the channel to shift. It should be noted that although dikes along a river can temporarily confine floodwaters, they provide little insurance against movement of the channel itself. This is particularly true if the dikes are built of rocks which the river is competent to move. Furthermore, dikes tend to flush lower flood flows downstream and accentuate bank erosion in downstream reaches.

Several houses in the vicinity of the newly proposed gravel pit above Spruce Water Canyon are highly susceptible to flooding from any channel shift induced by the pit and from proposed river confinement. Likewise, channel

shift above Dolores has the potential of diverting the main flow of the river through the downtown area. At very least, it is possible to guarantee that when the diversions occur the people of the area will be strongly impacted and it is even possible the Scenic Byway, Highway 145, will be severed. Since other sources of gravel can be found on several of the mesas in the vicinity of Dolores, it seems pit mining of the flood plain is unnecessary. Once you have lost the scenic beauty of the river valley and have allowed gravel pits to help change the pattern and flow of the river you will not be able to restore conditions to what was appreciated before the changes. I advise caution in making these decisions that will have such long term effects on your lovely valley.

Sincerely.


Dr. James B. Johnson, PhD. Geology
Grand Junction, CO

DOLORES RIVER GRAVEL PIT IMPACT

July 18, 2001

To CFAR Committee

INTRODUCTION

I was asked by Pat Kantor to provide a summary of the hydrologic impacts that might occur from the impact of gravel pit mining in the Dolores River valley above the town of Dolores. I have not limited myself to the hydrology because this is a systems problem not just a simple cause and effect.

I am interested in the Dolores River System including its geologic history and current state. Presently my concern is with the human impact upon the river that could lead to the general degradation and value of the river and to the increased potential of flood hazard to downstream residents.

The floodplain areas of the Dolores River are subject to periodic inundation that may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affects the public health, safety, and general welfare. There have been eight flood events greater than 6,000 cfs and three greater than 8,000 cfs in the past 90 years.

QUESTIONS NOT ADEQUATELY ANSWERED

1. What are the accumulative impacts of multiple gravel pit mining activities and pits on the floodplain of the Dolores River?
2. Do these activities and their modifications to the landscape increase the damage incurred by natural flooding?
3. What other negative impacts do these activities have upon the general welfare of the community and users?
4. What are the limits of modification of the channel that can be tolerated by the river system without severely increasing flood hazard?

These and other questions can only be tackled from a systematic study of the Dolores River Drainage watershed. I believe that a systems approach to the watershed is the best strategy because it does not just limit itself to the impact of gravel mining but to the impact of all human and natural processes.

GRAVEL MINING

Gravel is an important resource for our industrialized culture. In the U.S. 11 tons per person of stone and aggregate are consumed each year for roads, buildings and other construction projects. Thus, good gravel sources are modern day "gold mines." Gravel

can be found associated with mostly beach, river and glacial deposits. In the Dolores River valley river gravels dominate. These gravels can be classified as in-stream, floodplain and terrace gravels. The Dolores River valley has all three. Mining of any of these has impacts on the environment, but only in-stream and floodplain mining have the potential of impacting the intensity of flood events and normal water supply to the channel. If it can be shown conclusively that extensive mining does contribute to economic and property loss that would not occur in the absence of gravel pit mining then the mining companies and land owners could be liable for the damages incurred.

POTENTIAL GRAVEL MINING IMPACTS

ECOLOGY IMPACTS

- Disruption or removal of the natural riparian habitat such as the loss of willows, trees, etc.
- Elimination or alteration of migration routes of elk and deer.
- Increases the turbidity of the stream that negatively impacts fish and insect populations.
- Loss of soil cover impacting insect, microflora and vegetative cover.

HYDROLOGY IMPACTS

- Construction of berms and stockpiles increase erosion on site and increase flooding downstream.
- Greater bedloads and suspended loads will occur because of increased surface area from mining and disruption of surface gravels.
- Pit reservoirs will magnify water loss to stream during droughts through diversion and increased evaporation.

WATER QUALITY IMPACTS

- Disruption and reworking of fine fraction in gravel bed releases pulses of heavy metals deposited both pre and post hardrock mining that occurred up stream.
- Dust retardants used on roads and stockpiles add to dissolved and suspended loads in the stream.

ECONOMIC IMPACTS

- Loss of land value because of surface disruption.
- Loss of resale value of adjacent lands and as a consequence loss of tax base.
- Increased truck traffic and heavy loads shorten highway life during pit operation
- There would be a decrease in recreational uses such as boating and fishing.
- Disruption of the natural valley is a turnoff to many motorists driving this National Scenic Byway thus impacting tourist volume.

AESTHETIC IMPACTS

- Unsightly pits and fabricated lakes that do not conform to the natural setting.
- Increased noise during operation.
- Loss in diversity of wildlife and habitats which make environments interesting and desirable.

GENERAL HEALTH AND WELFARE

- Increase in dust and air pollutants.
- During operation there would be a statistical increase in traffic accidents.

RECOMMENDATIONS

1. Initiate a study of the short and long term accumulative impact of gravel pit mining and other river uses in the Dolores River watershed (multi-county study). It is difficult to make good decisions with high confidence levels without the data to back-up one's views. This study could be conducted by the U.S. Army Corps of Engineers, the U.S. Geological Survey or by a consulting firm.
2. Place a moratorium on gravel pit mining until the accumulative impact of existing and future gravel pits can be evaluated.
3. From the above study the county develops a floodplain management plan and implements the plan as a legal ordinance that would define limits to the type and amount of development (not limited to gravel mining) that can occur in flood prone areas.

Sincerely,



Robert W. Blair Jr. Professor Emeritus Geology
Acting Director of Center for Mountain Studies
Fort Lewis College
Durango, CO 81301

970-247-7263

Blair_r@fortlewis.edu

July 3, 2001

Mr. Paul Frohardt, Administrator
Colorado Water Quality Control Commission
4300 Cherry Creek Drive South
Denver, CO 80246

Dear Mr. Frohardt:

In light of recent experiences I have had with staff of the Water Quality Control Division with respect to water quality enforcement issues I feel compelled to write to you to assure that my concerns are addressed at the public rule-making hearing the Commission will hold on July 9 in Grand Junction.

I live in the Dolores River valley and am one hundred percent behind your efforts to set new water quality standards to protect the waters of the Dolores River basin. However, I believe attention needs to be focused also on a thorough review of present monitoring and enforcement rules and policies of the Water Quality Control Division to assure that any new standards are truly meaningful. Special emphasis needs to be given to improving the Division's responsiveness to the public when specific concerns are raised and to encouraging a more open and full disclosure policy on water quality issues of public health consequence.

To explain further, I have been doing extensive research into the water quality impacts of a proliferating number of gravel pits along the Dolores River corridor which has led me to address certain issues with staff of the WQCD. In all frankness I must say that I am appalled at the oversight deficiencies I have found in the agency and am dismayed over the apparent lack of protection the agency provides to the public. Three specific incidents that occurred and addressed separately below support my conclusions.

On April 25 I sent a letter to Greg Brand in the Durango WQCD office reporting what I and others believed to be an irregularity in the manner in which it appeared the Koenig/Tam gravel pit was obtaining its effluent discharge samples. It was requested that the matter be looked into and if corrections were needed that they be implemented. As of this date I have yet to hear from Mr. Brand. A copy of this letter is attached for your information.

In the course of conducting my research I requested from the WQCD and received copies of effluent discharge data reported by the Koenig/Tam gravel pit over a period of some three plus years. While I don't profess to be a statistician I do have some statistical knowledge and was quite amazed to discover that the TDS data reported defies statistical probability and gives every appearance of being fabricated. What equally disturbs me and amazes me even more is the apparent lack of oversight review exercised by WQCD staff of this data before it is entered into the Division computer database. A copy of this report is attached for your evaluation.

The third incident concerns mercury contamination entering the Dolores River from mining sources near the town of Rico, CO. I was recently enlightened by a member of

the EPA mining team that such sources had been identified. This is of extreme importance to me because it has been known for some time that mercury residues are present in silt deposits in McPhee reservoir and have been detected in mature fish species inhabiting the reservoir and there would seem to be a Rico connection. Mercury, depending on which form it may exist, can re-deposit in the riverbank alluvium and then be remobilized into the waterway as result of disturbances to the alluvium resulting from gravel mining activities. It would have been my expectation that the WQCD would have been on top of this and have released some sort of report or statement. I have been unable to find such information and would appreciate any updates you can give me. I am also hopeful that you will address this issue in your new rulemaking considerations.

In conclusion, I must say in all honesty that because of the lack of credible data on the impacts of gravel mining on water quality and the absence of any meaningful monitoring programs we simply do not know what the health consequences are, and can therefore provide no assurances to the public that their health is not being compromised or endangered.

Sincerely,

David B. Wuchert
26495 CR 38.5
Dolores, CO 81323
970-882-8081

**Synopsis of Oral Arguments in Opposition to Line Camp Gravel Pit
Application #M-2001-001 Before the Mined Land Reclamation Board
May 23, 2001**

This writer argued issues of cottonwood tree mortality, water quality impacts and water quality enforcement failures of the Colorado Water Quality Control Division as they pertained to the validity of data used by the Division of Minerals and Geology.

Cottonwood Tree Mortality

Cottonwood tree mortality is an unfortunate reality of gravel pit mining resulting from depletion of the water table during mining operations. The applicant, Four States Aggregates, presented inaccurate and unsubstantiated information that cottonwood trees could tolerate a ten foot drop in the water table without harm. This is refuted by evidence presented by the opposition, including a study by the USGS showing water table declines of as little as two feet will cause mortality (copy attached), and photographs taken of substantial numbers of dead cottonwood trees surrounding the Koenig and Sunnyside pits located downstream from the proposed Line Camp Pit.

Furthermore, the applicant after reviewing this new information which was not addressed at all by the DMG, agreed to having a similar USGS study conducted at his proposed Line Camp pit. The MLRB Board declined to discuss or consider this proposal further, again indicating their unwillingness to fairly consider all the issues. Neither did they allow testimony on collateral cottonwood damage to adjacent private and federal lands.

The real issue here is that substantial loss of cottonwood trees along the riparian areas of the river increases the flood threat, causes soil erosion and increases silt loads in the river and the downstream McPhee Reservoir.

Dolores River Water Quality Issues

It was argued that conclusions by the Division of Minerals and Geology regarding " no water quality issues of concern " were based on falsified, invalid and irrelevant data and that some of the data was outside the reach of the proposed Line Camp site.

Specifically, the DMG used water quality monitoring data obtained from a site approximately 70 miles downstream from the proposed Line Camp site and failed to take into account the dilution effect of the many downstream tributaries that flow into the Dolores River.

The DMG staff relied on effluent data from the Tam/Koenig gravel pit which does not hold up to statistical scrutiny in drawing their conclusions.

The DMG failed to acknowledge mercury sources entering the Dolores River from mining sites in the upstream town of Rico and the effects of gravel mining on exacerbating the release of potentially toxic mercury compounds into the streamflow and only admitted to the truth of this after being examined under oath.

The DMG staff stated that there were no significant deposits of iron at the proposed Line Camp site which is contradicted by owners of nearby water wells who have had to install expensive filtering equipment to remove very high levels of iron compounds. This is important because intake of excessive levels of iron in drinking water and from dietary sources has been linked to a higher risk of heart disease.

Water Quality Enforcement Failures of the Colorado Water Quality Control Division

Crucial to establishing issues of concern regarding water quality impacts on the health of citizens affected by the proposed Line Camp gravel pit was the sworn testimony from staff of the WQCD. However, the Attorney General's Office failed to issue the subpoenas as requested and to which we were entitled to by law.

The specific issues to be addressed with WQCD were as follows:

- 1) The DMG used water quality data reported by the currently active Tam/Koenig gravel located approximately 2 miles downstream from the proposed Line Camp pit in developing there recommendation for approving the Line Camp gravel pit. A statistical examination of this data shows it is not credible and appears to be fabricated. It would appear that the data was not reviewed by WQCD staff before it was entered into the Division's data-base. The conclusions drawn by the DMG from this data are therefore invalid. (copy of report attached)**
- 2) What knowlege did WQCD have regarding reported sources of mercury entering the Dolores River from mining sites in the upstream town of Rico and what public health hazards do these present and will gravel mining in the downstream alluvia exacerabate risks.**
- 3) What action has WQCD taken to respond to issues raised in this writer's letter of April 25 to Mr. Greg Brand concerning perceived effluent sampling irregularities at the Tam/Koenig gravel pit. (copy attached, no response as yet).**
- 4) In light of what appears to be the absence of credible data to establish the existance or non-existance of water quality health issues associated with gravel mining operations along the Dolores River would some**

monitoring of gravel pit effluent be undertaken independently by the WQCD.

Conclusions

The opponents to the Line Camp gravel pit were not given a fair and equitable opportunity to present their arguments in opposition to the operator's application because of agency bias, time constraints precipitated by attorney's use of opponents' allotted time to argue legal issues, failure to subpoena critical witnesses and acceptance by the MLRB board of data challenged by opponents as false and invalid.

The MLRB without reviewing in detail the substantial amount of material presented by opponents and without investigating the credibility of certain data challenged by opponents made an undeliberated decision within minutes of the closing of the hearing.

While there are ample "due process of law" issues on which to launch an appeal the sad truth is the opponents do not have the financial resources to so.

The unfortunate net result is that another gravel pit will begin operation along the Dolores River with no knowledge of the health risks to the citizens of this state.

As a closing comment I would strongly recommend that any review action taken by any group of this matter include first a review of the transcript of the hearing record. In this way emotions which run strong and which unintentionally may have been expressed here-in will not be a factor.

**David B. Wuchert
970-882-8081**

CFAR Meeting- Research Presentation July 17, 2001

MLRB Hearing, May 23, 2001

At the MLRB hearing in Denver on the Line Camp Gravel Pit the following issues were argued before the board on behalf of CFAR.

- 1. Cottonwood Mortality**
- 2. Water Quality Impacts**
- 3. Reclamation Bonding Requirements**

Cottonwood Mortality

We argued that dewatering of the gravel pit would lower the water table to the extent that there would be substantial loss of cottonwood trees within the pit boundaries and on adjacent Forest Service and private lands and that this could lead to an increase in flood damage potential and an increase in silt loading of the Dolores River and McPhee reservoir.

We presented as evidence of this the results of a US Geological Survey study showing that a decline in the water table of as little as two feet could result in cottonwood mortality. A drop of ten feet in the water table at the Line Camp pit is predicted. Pictures of dead cottonwood trees at the Tam / Koenig and Sunnyside pits were also presented as evidence. The board briefly looked at the pictures and totally ignored the USGS study.

Four States Aggregates could offer no evidence in rebuttal and admitted they had no hard data to support their contention that cottonwood trees could tolerate a ten foot drop in the water table.

We also attempted to argue that based on the applicant's own hydrological data, damage would occur to cottonwood trees on adjoining federal and private lands and that some provision for compensation should be established as a condition to the application. We were cut off by the board which stated that collateral damage issues were outside of their purview. This is in clear contradiction to the provisions of the Construction Materials Act which governs gravel pits and which states that the permit applicant must show that there will be no off-site impacts from the gravel mining operation.

Water Quality Impacts

Regarding water quality impacts, the issues we planned to address were as follows:

1. To rebut the data presented by the Division and Minerals and Geology that there would be no impacts as being irrelevant and/or not credible. Because of the absence of reliable we simply do not know what impacts gravel mining will have on water quality and what health risks may be present.
2. To address the high iron content in nearby water wells as evidence that the alluvium in the region contains substantial amounts of iron. Affidavits from well owners in the vicinity of the proposed gravel pit were introduced as evidence to refute statements made by the DMG that iron amounts were insignificant. High levels of iron intake have been linked to heart disease.
3. Perhaps the most important and most concerning issue is the suspected impact of gravel mining on mercury releases into the Dolores River and into Mcphee Reservoir. We know that mercury has been detected in the bottom silt of Mcphee and in fish inhabiting Mcphee. Recent information we have uncovered confirms that mercury is entering the Dolores River from abandoned mines in the Rico area. Mercury was used extensively in very abundant quantities to extract gold from ore and residual mercury remains today in highly contaminated sediments at mine sites. From these sediments mercury leaches slowly and continuously into the Dolores River. We believe in the theory supported by some EPA scientists that mercury in its elemental form will re-deposit in the river alluvium as it travels down the river. Disturbances to the alluvium as are caused by gravel mining activities will re-mobilize the mercury into the river aquifer where it could conceivably contaminate water wells, redeposit downstream or travel to the resevoir itself.

We had intended to support our allegations with sworn testimony from staff members of the Colorado Water Quality Control Division and had made motions for these witnesses to be subpoenaed. The MLRB chose not to issue the subpoenas.

Reclamation Bond Requirements

Finally, we intended to argue that the reclamation costs stated by the applicant of \$42,000 were understated but were unable to do so because of time constraints placed on us by the board. However, the DMG also believed the amount was understated and raised the figure to \$93,000.

The current status is that a petition for re-consideration of the board's decision has been filed the main thrust of which focuses on denial of due process of law issues. The MLRB will take this up during their August meeting.

I have also sent a letter to the Colorado Water Quality Control Commission which is the policy and rule-making body governing water quality issues. I have both of these documents with me tonight so feel free to read them if you are interested.

What We Have a Right to Know

1. Is mercury being introduced into the water table and the Dolores River as a result of gravel mining?
2. Have aquatic species in the Dolores River been tested for mercury and if so what were the results?
3. What is being done to eliminate sources of mercury from mining operations in the Rico area?
4. Can increasing mercury loads in Mcphee lead to significant drinking water risks?
5. Are other potentially hazardous contaminants being introduced into thr Dolores River and Mcphee Reservoir as a result of gravel mining along the river?

David B. Wuchert
July 17, 2001

Responses of Riparian Cottonwoods to Alluvial Water Table Declines

MICHAEL L. SCOTT*

PATRICK B. SHAFROTH

GREGOR T. AUBLE

United States Geological Survey,

Midcontinent Ecological Science Center

4512 McMurry Avenue

Fort Collins, Colorado 80525-3400, USA

ABSTRACT / Human demands for surface and shallow alluvial groundwater have contributed to the loss, fragmentation, and simplification of riparian ecosystems. *Populus* species typically dominate riparian ecosystems throughout arid and semiarid regions of North America and efforts to minimize loss of riparian *Populus* requires an integrated understanding of the role of surface and groundwater dynamics in the establishment of new, and maintenance of existing, stands. In a controlled, whole-stand field experiment, we quantified responses of *Populus* morphology, growth, and mortality to water stress resulting from sustained water table decline following in-channel sand mining along an ephemeral sandbed stream in eastern Colorado, USA. We measured live crown volume, radial stem growth, annual branch increment, and mortality of 689 live *Populus deltoides* subsp. *monilifera*

stems over four years in conjunction with localized water table declines. Measurements began one year prior to mining and included trees in both affected and unaffected areas. *Populus* demonstrated a threshold response to water table declines in medium alluvial sands; sustained declines ≥ 1 m produced leaf desiccation and branch dieback within three weeks and significant declines in live crown volume, stem growth, and 88% mortality over a three-year period. Declines in live crown volume proved to be a significant leading indicator of mortality in the following year. A logistic regression of tree survival probability against the prior year's live crown volume was significant ($-2 \log \text{likelihood} = 270$, χ^2 with 1 df = 232, $P < 0.0001$) and trees with absolute declines in live crown volume of ≥ 30 during one year had survival probabilities < 0.5 in the following year. In contrast, more gradual water table declines of ~ 0.5 m had no measurable effect on mortality, stem growth, or live crown volume and produced significant declines only in annual branch growth increments. Developing quantitative information on the timing and extent of morphological responses and mortality of *Populus* to the rate, depth, and duration of water table declines can assist in the design of management prescriptions to minimize impacts of alluvial groundwater depletion on existing riparian *Populus* forests.

Riparian corridors occupy important landscape positions between upland and aquatic ecosystems and are uniquely productive, physically dynamic, and biologically diverse (Brinson and others 1981, Gregory and others 1991, Naiman and others 1993). Depletions of surface and shallow alluvial groundwater have contributed to the loss, fragmentation, or severe ecological impairment of these systems (Dynesius and Nilsson 1994, Stromberg and others 1996). Species of *Populus* are the most abundant trees of riparian ecosystems throughout arid and semiarid regions of North America. *Populus*-dominated stands provide unique structural habitat (Brinson and others 1981) and are vulnerable to reductions in surface and groundwater availability.

Declines in *Populus* forest cover have been observed where severe drought or land and water management

activities have decreased water availability by reducing surface flows or depleting alluvial groundwater aquifers (Albertson and Weaver 1945, Groeneveld and Griepentrog 1985, Rood and Heinze-Milne 1989, Rood and others 1995, Stromberg and others 1996). For example, approximately 1125 km of once perennial streams in Kansas are now intermittent, in part a consequence of groundwater pumping in the High Plains Aquifer (Layher 1986, Luckey and others 1988), and flow depletion along the Arkansas River is associated with loss of riparian trees (Kromm and White 1992). Similarly, large areas of riparian forest have been lost to groundwater pumping and associated flow depletion in the southwestern United States (Stromberg 1993). Human activities that directly or indirectly influence alluvial groundwater sources include damming and diversion of rivers and streams, groundwater pumping, and channel incision resulting from altered flows of water and sediments, bank stabilization, and instream gravel mining (Bravard and others 1997, Kondolf 1994, 1997, Rood and others 1995, Stromberg and others 1996, 1997).

KEY WORDS: Colorado; Water stress; Groundwater; Gravel mining; *Populus deltoides*; Riparian; Water table declines

*Author to whom correspondence should be addressed.

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BOARD OF COUNTY COMMISSIONERS

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J. Kent Lindsay
Glenn E. Wilson, Jr.

Administrator:
Thomas J. Weaver

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CFAR hosts slide show on gravel pits

Citizens in the Dolores River Valley have consistently protested the gravel mining operations of the Line Camp Gravel Pit, citing dust, noise, and traffic hazards as their main concerns. Concerns were also raised at a meeting last Tuesday night about the mercury levels in the water (see related mercury story).

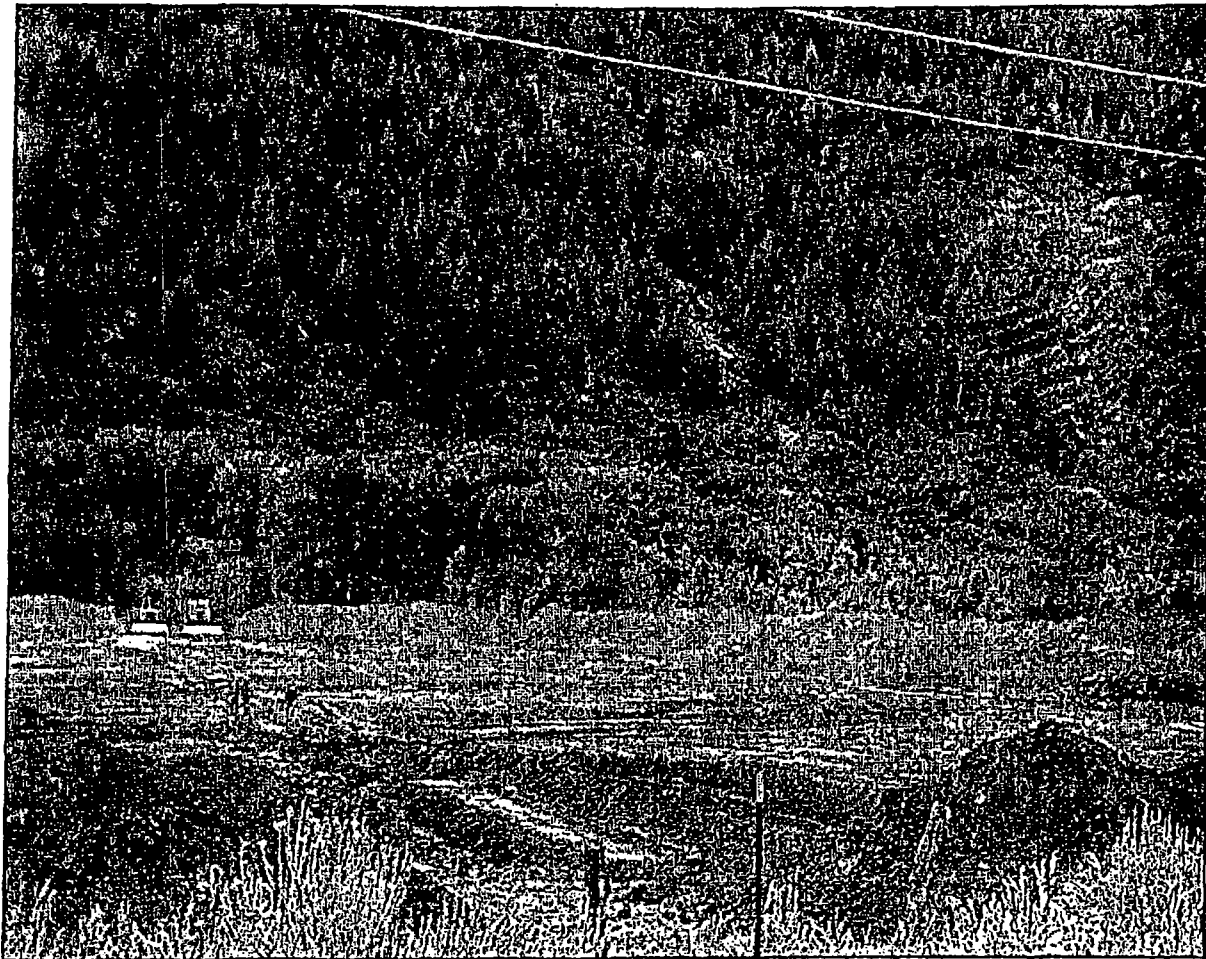
CFAR (Citizens for Accountability and Responsibility) was organized in October of 2000, following several public meetings with the County Commissioners concerning the proposed pit. CFAR sponsored a talk and slide show on Tuesday evening, July 17. An audience of about 30 were in attendance, including State Rep. Kay Alexander, and two of the Commissioners Kelly Wilson and Gene Story.

According to Pat Kantor of CFAR, they have done a lot of research, and learned a lot about potential dangers of mining in the floodplain of the Dolores River and the deficiencies in laws and monitoring. "We have shared our information with the Governor, Federal, State, and County legislators and state agencies. We have informed our fellow citizens through our open meetings, the media, and informational material in both the Dolores and Cortez libraries. We are all learning together and that is what this meeting is about," said Kantor.

According to Kantor, Gov. Bill Owens, Greg Walcher, Director of the Colorado Dept. of Natural Resources, and U.S. Senator Wayne Allard have all requested information. State Rep. Mark Larson, she said, had also contacted them several times and has spoken to the County Commissioners about visiting with representatives from the State Conservation Board. She continued that State Rep. Alexander has also been working with the group.

Tom Perlic, director of the Western Colorado Congress, resented the slide show and state update on issues concerning gravel pits. He showed slides of the damage to floodplains and riverbeds gravel pits are doing. The slides showed cutbanks, dying trees, and damage to wetlands and riparian areas.

Perlic said that, since 1973, over 3,200 applications



MINING OPERATIONS HAVE begun at the Line Camp Gravel Pit. The operations are under strict guidelines set forth by the Montezuma County Commissioners. A sculptured, landscaped pond is planned when the project is completed.

have been filed with the State Mined Land Reclamation Board, and that only 18 have been denied in Colorado. He stated that it was up to the local people to "make the County Commissioners put restrictions on the gravel

pits". When asked if he had done any research into what restrictions the Montezuma County Commissioners had

See CFAR on Page 2

CFAR

Continued from Page 1

already placed on the Line Camp Gravel Pit, he answered no.

Dave Wuchert expressed his concerns about the water quality issues. He said that, after five hours of testimony, the State Mined Land Reclamation Board had not listened to them, and went ahead to issue the permit for mining gravel to Four States Aggregates, Inc.

Tim Hovezak and Marilyn Boynton, who has said she has done some research into the geology of the river valley, both spoke about their concerns with flooding issues and the gravel pit. Leslie Sisler discussed reclamation issues.

According to CFAR, what they are dealing with is the future of the Dolores River Valley - a very significant state and county resource - not only for its pristine status and natural beauty, its riparian habitat, and its attraction for hunters, anglers, and rafters, but for the water it supplies for

families, ranchers, and farmers.

COMMISSIONERS SET RESTRICTIONS EARLY

The Montezuma County Commissioners, Kent Lindsay, Kelly Wilson, and Gene Story, listened to concerned neighbors of the Line Camp Gravel Pit during several public hearings last fall. As a result, before the county high impact permit was issued, a number of restrictions were placed on the pit. The permit was issued contingent on several factors, including Four States Aggregates obtaining all other permits, from the federal to the local level.

Restrictions include hours (8 a.m. to 5 p.m.) and days (Monday through Friday) of operation, and months (late December into March) that a crusher may be used. The company is responsible for building berms and landscaping them prior to and during construction. The Commissioners

restricted operation of the pit to five years, and required a \$10,000 bond for reclamation.

In addition, Four States Aggregates, Inc., the applicant, is responsible for conduct of their truck drivers and equipment operators, and for making sure that noise and dust are kept to a minimum during operating hours. The Commissioners have also reserved the right to pull the high impact permit if conditions of the permit are not met.

The Commissioners also required that the concerned landowners form an advisory committee, presenting them with names of those who were interested in being on the committee. The Commissioners would then appoint the three-member advisory committee, to consist of one of the landowners, a resident of the Town of Dolores, and a resident of the Dolores River Valley. The committee will be

responsible for overseeing operations of the gravel pit, and advising Four States Aggregates and the Commissioners of any failure to follow the conditions of the permit.

According to Chairman Kent Lindsay, several letters of intent have been received. However, the Commissioners extended the deadline for the letters and will consider naming the committee at a later date.

DIVISION OF MINERALS AND GEOLOGY EXPLAINS APPLICATION PROCESS

According to Wally Erickson of the Durango office of the Division of Minerals and Geology, his office is part of the staff to the Mined Land Reclamation Board. They review a mining application, and then let the operator(s) know what further information, if any, is needed. Then DMG

See CFAR on Page 5

Letters to the Editor

The Dolores Star welcomes letters from its readers on any subject of public interest. The publisher reserves the right to edit, condense or reject any contributions. Letters must be signed and limited to 300 words or less. Views expressed in this section are not necessarily those of the Dolores Star.

Disappointed in paper

To the Editor:

My wife and I were surprised and disappointed when last Friday's edition of the Star failed to cover a newsworthy local meeting. I refer to the Tuesday gathering of the CFAR group, with attendees from Durango and Montrose, as well as our District State Representative and two Montezuma County Commissioners.

As summer-time residents of Dolores

game of dodge 'em played daily with huge, noisy, smelly gravel trucks.)

A local newspaper has a responsibility to its readers to cover local news. If you oppose something, and you have a right to do so, the place to express your opposition is in an editorial. To withhold a news story because you don't like its source is at the very least capricious, and at the worst arro-

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Friday, July 27, 2001

DOLORES STAR

CFAR Continued from Page 3

staff lets the applicant know what is adequate to fulfill the requirements according to state statutes. When the applicant has completed the requirements, the DMG then begins to verify the issues.

Erickson said it is not an "overnight process. It takes 90 days to get the application, review it, and verify that it satisfies the statutory requirements. This particular application went 131 days."

He continued that the extension was because of significant changes in the application before it was approved.

BOARD ORDER ISSUED PRIOR TO HEARING

Erickson continued that, prior to the formal hearing before the State Mined Land Reclamation Board, a pre-hearing conference was held. "It is basically an organizational meeting, to distill and streamline the issues before the hearing. That way, the hearing can be conducted in a more organized format," he said.

This results in a Board order on what witnesses are to be called, how much time they have, and what evidence is to be submitted (to the state board) from the conference. It was, in fact, the first item the board considered in the hearing on the Line Camp Gravel Pit, Erickson said.

The State Board asked if anyone had any objections to the pre-hearing order. Erickson said that no one objected, and the Board then lined out how much time each person had at the hearing. "In fact, the witnesses from CFAR were actually given more time than the board order allowed," he said. "However, late in the formal hearing, some protested that they had not been given enough time for research."

The State Mined Land Reclamation Board is made up of seven members. They include people from industry, conservation, government, and other interests, and well as private citizens. They are charged with considering every issue concerning an application, and making sure it satisfies all statutory requirements. "It is a matter of law," said Erickson. "They have to base their decision on all the evidence; on facts and the information made available to them."

The local office of the Division of Minerals and Gravel had presented a 51-page document to CFAR two weeks prior to the hearing. It outlines and states exactly how and why the decision was made to continue with the application for mining gravel at the Line Camp Gravel Pit.

The review of the Line Camp Gravel Pit application was conducted by a team from the Durango DMG office. It included Erickson, who has an extensive background in physical geography and geology of Colorado. The geo-chemistry and water quality issues are reviewed by a staff member with a Ph.D. in geochemistry. The floodplain and flooding issues are reviewed by an expert staff engineer, who is familiar with the area's geology and geography. Erickson said the team invested significant amounts of time to ensure that the statutory requirements on this, and all, applications are met.

He concluded, "The record clearly shows that the process was carried out properly and in its entirety. It is not a fast process, and is, of necessity, a team effort on our part."

Visits Continued from Page 1

of 2000.

There were a total of 94,178 total visits in June of this year, compared to 98,175 visits during June of 2000. These 3,997 fewer visits represent a 4.1 percent decrease.

For the first six months of 2001, the park has seen 203,279 total visits, compared to 207,487 visits during the same period of 2000. These 4,208 fewer visits represent a 2.0 percent decrease from last year's statistics.

compared to 38,919 campers in the same period of 2000. This reduction of 3,228 campers represents an 8.3 percent decrease.

Superintendent Larry T. Wiese commented, "We're starting to see the normal summer increase in visitation that starts around the Fourth of July. The next few weeks will be pivotal in determining the visitation pattern for the entire summer. Obviously, we're hoping for a strong

State's eagle p

Despite severe spring storms that the death of several bald eagle Colorado's population of our nation bol is doing well. Colorado Divi Wildlife (DOW) biologists monite of the known 51 nests docum eaglets that fledged, meaning they the ability to fly. Of these, 24 were

"I think we lost more young after hatch this year than is typical volunteer eagle bander Deanna said. She reported that at least blown out of its nest and suspect deaths were caused by hypotherm unusual cold and wet spring cond

Unusually high winds also crealems blowing down nests. "Elev nest sites were constructed in ne the same general area of last year she added.

The 51 pairs of nesting bald eag highest ever recorded since DOV Jerry Craig began the bald eagling program in 1974 when he v



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Lundahl, Brad

From: Mark Larson [marklarson@qwest.net]
Sent: Tuesday, July 10, 2001 4:29 PM
To: James E. Preston
Subject: Re: Gravel Pits in Dolores

Hello James,

Good questions all. I will forward them to our legislative liaison in the Dept. of Natural Resources for dissemination and a better understanding of what has transpired in our community. I do not have answers for you. However, I will work to assure that a similar occurrence does not happen. If, indeed, all of your information is accurate, I can only assert that I do not live by those same standards and will rail against such behavior any time that I encounter it.

Thanks for the reply. It has given me a better understanding of why your original email smacked of indignation. I will let you know what I find out, if and when I receive a reply. I believe that we share the same goals of long term human safety with pragmatic environmental responsibility. Thanks again,

Mark

"James E. Preston" wrote:

Hello Mr. Larson: Thank you for responding to my email. Please allow me to answer, "forthrightly," some of your questions. I also have a few rhetorical questions of my own for you. The governor's office started an investigation of bias by the Division of Mining and Geology [DMG]. The DMG "hearing officers" brag at hearings, in public, on the record, that they have ALWAYS granted every single gravel pit application and have NEVER denied a gravel pit application. The "investigation" started with a neutral agency - the Colorado Geologic Survey. Once the investigation was three-weeks underway the Geologic Survey was finding reasons to uphold citizen concern of bias on the part of the DMG. At that point political "pressure" was put on the Geologic Survey to hand the "investigation" over to the Executive Director of DMG. This is the proverbial "fox guarding the henhouse." What do you think the head of the DMG will find when he investigates his own agency? If any "investigation" is done at all, it will be a "white wash" and a "cover-up" and everyone knows it. In the meantime, the lives of people are endangered in the Dolores River Valley from catastrophic floods and high levels of contaminants. The Colorado DOW has just posted new signs warning people of toxic levels of mercury in fish found in McPhee Reservoir. The EPA knows that the probable source of mercury is excavation by gravel pits which "remobilizes" mercury from century old mines in RICO. The DMG admits it knows of the mercury problem. They ignore it and the MLRB grants the applications for gravel pits anyway. Two independent Ph.D.'s in geomorphology (each with over 30 years of field experience in addition to their academic credentials) have reviewed the gravel pit situation in the Dolores River Valley. Both of these Ph.D.'s conclude that "pit capture", which would result in the loss of lives under the right flooding circumstances, is inevitable as a result of the last fifteen years of gravel pit mining in the Dolores River Valley. The DMG (MLRB) ignores it. In fact, they have never even allowed any evidence to come before it. You are going to bring in a new agency to study it? How long before that agency succumbs to the same "pressure" that removed the investigation of the MLRB and put it in the hands of the head of the agency that tells the MLRB what to do? There is nothing in the statutes which prohibits the MLRB from considering the "cumulative effects" of gravel pit mining . . . in fact, the legislature's express intent was to focus on the safety and welfare of the citizenry in giving the MLRB the authority to regulate the issuance of gravel pit permits. Focusing on the safety and welfare of the citizenry, instead of "rubber-stamping" gravel pit permit applications demands that the agency study the "cumulative effects" of gravel pits, especially in the

07/11/2001

Dolores River Valley. Why does the agency claim they cannot consider the "cumulative effects?" The answer is simple . . . if they honestly considered it, they would have to deny some permits. Denying even a single permit is not consistent with the political "pressure" that is put on them. How long before political "pressure" will be put on your "investigation" and the agency conducting it? James E. Preston
P. O. Box 1416
Dolores CO 81323-1416
(970) 882-4245

----- Original Message -----

From: Mark Larson
To: James E. Preston
Sent: Tuesday, July 10, 2001 3:12 PM
Subject: Re: Gravel Pits in Dolores
Hello Mr. Preston,

I am taken aback that you think I would initiate ANY action with the intent that it would be a "white wash" or "cover up". Obviously, I think that the CWCB has significantly different resources and statutory authority than the MLRB or I wouldn't have gone to the effort to bring them down. Further, if I was looking to whitewash anything, and given that there is no other effort really underway other than a law suit, why on earth would I spend so damn much time and effort when doing nothing would have served a similar purpose.

I am not in this office to posture or do things simply to get my name in the paper. I responded honestly and forthrightly to several constituent concerns and thought this to be the best "first step" in assessing the cumulative impacts of the multiple pits such impacts not having been adequately assessed previously, at least by the state or federal government. My motive is pure. I guess I should have known that someone would think an ulterior motive simply because I took the initiative.

I hope I satisfied your concern over my motives and anticipated outcomes.

Mark

"James E. Preston" wrote:

Dear Representative Larson: I am a concerned constituent. I had mixed feelings reading the article in today's edition of the Cortez Journal about your proposed study of gravel pits in the Dolores River Valley. Is this just going to be another "white wash" or "cover-up" or is this investigation of yours going to have some integrity? James E. Preston
P. O. Box 1416
Dolores CO 81323-1416
(970) 882-4245