Illinois Geologic Mapping Advisory Committee
May 6, 1993
Starved Rock Marina Harbour House #1
Utica, Illinois

AGENDA

10:00 A.M. Opening Remarks, Chairman John Utgaard, SIU-C
Minutes of the February 5, 1993 meeting

10:15 Status of the National Geologic Mapping Program
Discussion

10:30 Status of federal/state cooperative geologic mapping programs

10:45 Geologic Mapping for Landfill Siting in Lake County, Illinois -
Matthew Riggs, Spatial Analysis and Map Production Unit,
ISGS

11:15 Geologic Mapping for Landfill Siting in Will County, Illinois - Curtis
Abert, Spatial Analysis and Map Production Unit, ISGS

11:45 Lunch - Adjacent to Harbour House #1

1:00 P.M. Earthquake-Induced Liquefaction Features in Southern Illinois - Wen-
June Sue, Geologic Mapping Section, ISGS

1:30 Geologic Mapping of the Woodstock 7.5-minute Quadrangle,
McHenry Co., Illinois - Richard Berg, Head, Geologic Mapping
Section, ISGS

2:00 Mapping Karst Areas of Illinois - Pius Weibel, Geologic Mapping
Section, ISGS

2:30 Other Business

3:00 Adjourn
# ATTENDEES
## IGMAC MEETING, 5/6/93

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORGANIZATION</th>
<th>TELEPHONE</th>
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<tbody>
<tr>
<td>Carin Zabak</td>
<td>Assoc. Engng Geologist (EMC, Inc.)</td>
<td>(708) 483 8410</td>
</tr>
<tr>
<td>Bill Lane</td>
<td>SRA/SMT Power Co &amp; AIPEC</td>
<td>708 812 1665</td>
</tr>
<tr>
<td>Ramona Plavota</td>
<td>SRA/SMT Power Co</td>
<td>708 892 1665</td>
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<tr>
<td>Dick Berg</td>
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<td>217 244-2776</td>
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<tr>
<td>David L. Gross</td>
<td>ISGS</td>
<td>217 333-6127</td>
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<tr>
<td>Steve Epling</td>
<td>SOUTHERN ILLINOIS UNIV</td>
<td>618-452-2362</td>
</tr>
<tr>
<td>Matt Riggs</td>
<td>ISGS</td>
<td>217-244-2185</td>
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<tr>
<td>Wen-June Su</td>
<td>ISGS</td>
<td>217 244-2185</td>
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<tr>
<td>Jim Urek</td>
<td>Waste Management</td>
<td>708-487-9670</td>
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<tr>
<td>Clarence J. Casella</td>
<td>N. I. U. - Dept. Geology</td>
<td>815-753-7939</td>
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<tr>
<td>James G. Kirchner</td>
<td>Illinois State Univ.</td>
<td>309-438-8922</td>
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<tr>
<td>Jerry Dalgin</td>
<td>Ill. DEPT Public Health</td>
<td>217-782-5830</td>
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<tr>
<td>Bob Sinclair</td>
<td>Ill. State Water Survey</td>
<td>217-333-4952</td>
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<td>Pius Weibel</td>
<td>ISGS</td>
<td>217-333-5108</td>
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<td>Curtis Abo+</td>
<td>ISGS</td>
<td>217-244-2140</td>
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<tr>
<td>Jack Healy</td>
<td>Hanson Engineers</td>
<td>217-780-2450</td>
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<td>Alan Shaprio</td>
<td>Vulcan Materials Co., S.M.E.</td>
<td>708-462-7000</td>
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<tr>
<td>John Utgaard</td>
<td>SILL</td>
<td>618-453-3351</td>
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<tr>
<td>Don McKay</td>
<td>ISGS</td>
<td>217-333-0064</td>
</tr>
<tr>
<td>Matthew Riggs</td>
<td>ISGS</td>
<td>817-454-2425</td>
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Chair John Utgaard opened the meeting at 10:15. He reported that Brud Leighton sends his regrets. He was not able to attend the meeting because he had to be in Springfield for hearings on the capital and operating budgets for the Survey.

Chairman Utgaard suggested discussing some of the business items before starting the program presentations.

APPROVAL OF MINUTES OF LAST MEETING

Motion made and seconded to approve the minutes as distributed. Motion passed.

OLD BUSINESS

At the last meeting, there was a report on what constitutes a quorum in similar organizations. According to this report, our quorum turned out to be unrealistically high and the committee has had several meetings without a quorum of membership. At the last meeting, a ballot to vote on amending the bylaws to make the quorum at 20% of the membership was approved. Of the 44 members, 34 ballots were returned with a yes for changing the bylaws, which is 75% of the membership necessary to change the bylaws. Chairman Utgaard declared the ballot vote as a meeting of the committee and that it should be recorded that the membership approved changing the bylaws.

SCHEDULED PROGRAM

Geologic Mapping for Landfill Siting in Lake County, Illinois - Matthew Riggs, Spatial Analysis and Map Production Unit, ISGS. As part of the County Assistance for Solid Waste Disposal Facility contract, the geology of a portion of Lake County, Illinois was mapped. The mapping was completed using data from 6,220 water well, engineering, and geologic borings stored in the Geologic Records Unit at the Illinois State Geological Survey. Maps were prepared using Interactive Surface Modeling, Interactive Volume Modeling, and ARC/INFO software packages. Mapping efforts were concentrated on the Quaternary deposits overlying the bedrock surface. Map products include a generalized surface topographic map, topography of the bedrock surface, thickness of Quaternary deposits, cumulative sand and gravel thickness, as well as a series of depth slice maps detailing the cumulative thickness of sand and gravel deposits at 50-foot depth intervals.

Geologic Mapping for Landfill Siting in Will County, Illinois - Curtis Abert, Spatial Analysis and Map Production Unit, ISGS. Curtis Abert presented the findings of the Survey’s (Abert, Riggs, McKay, McLean) mapping efforts for an area of approximately 480 square miles in southern Will County. Maps presented included: Generalized Land Surface Topography, Bedrock Topography, Thickness of Quaternary Deposits, Cumulative Sand Thickness, Depth Slices, and Elevation Slices. Mr. Abert briefly explained how the maps were made using computer modeling software. He also presented a series of computer generated cross sections and addressed the problems of the current Quaternary framework within the study area.
Before Don McKay reported on the status of the mapping program, John Utgaard noted that, as requested by the IGMAC members at the last meeting, he had sent letters to Representative Sidney Yates and Senator Robert Byrd, who are chairs of the House and Senate Appropriations Committees, urging them to fully fund the National Geologic Mapping Act. He also wrote on IGMAC’s behalf to the entire Illinois congressional delegation again urging full funding of the National Mapping Act.

Since Mitch Reynolds was not able to attend the meeting, Don McKay reported on the status of the National Geologic Mapping Program. At the last meeting, priorities for geologic mapping which had been set by this group and the working committee were discussed. On March 25, a letter was sent from Morris Leighton to Ben Morgan, Chief Geologist-Western Region, U.S. Geological Survey, which transmitted a map of priority mapping areas based on the county approach for FY94. It showed our priorities for the current fiscal year of federal fiscal funding—those being the Champaign 30 x 60 minute quad to complete the on-going methodology development that has been underway there and mapping of three quadrangles in southern Illinois. Then in FY94 (federal funding year starts October 1), we would propose that we would be mapping county-size areas and our priorities will be: 1) Kane, 2) St. Clair, 3) Union, 4) McHenry, 5) Peoria, 6) Madison, 7) Alexander, and 8) Lake. Funding is not currently available to start all of those. Nevertheless, the priorities that IGMAC has worked through as a group have been submitted to the USGS to be worked into a national prioritization. Recognizing FY93 priorities, the ISGS submitted two proposals in early April. The first deals with the completion of the three-dimensional geologic mapping of the Quaternary deposits in the Champaign 30 x 60 minute quad. Dick Berg is the Principal Investigator, working with Dave Soller of the USGS and John Kempton of the ISGS. The second includes mapping of the Mermet, Reevesville, Brownsfield 7.5 minute quads in southern Illinois with emphasis on post-Cretaceous faulting. These three quadrangles in southern Illinois are cut by the Lusk Creek fault zone bounding the western edge of the Dixon Springs graben. That fault zone lines up with the western edge of the Reel Foot Rift. If post-Cretaceous faulting has occurred in Illinois, this is a region where evidence might be found.

The National Geologic Mapping Act of 1992 authorized funding in four fiscal years as shown in Table 1.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>FY93</th>
<th>FY94</th>
<th>FY95</th>
<th>FY96</th>
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<tr>
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<td>12.5</td>
<td>14.0</td>
<td>16.0</td>
<td>3.0</td>
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<tr>
<td>Support Mapping</td>
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<td>10.0</td>
<td>10.5</td>
<td>11.0</td>
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<tr>
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<td>18.0</td>
<td>21.0</td>
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<td>0.75</td>
<td>1.0</td>
<td>1.5</td>
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<td><strong>Total</strong></td>
<td>37.5</td>
<td>42.75</td>
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Table 2

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<tr>
<th>COMPONENT</th>
<th>FY93 AUTHORIZATION</th>
<th>FY93 APPROPRIATION</th>
<th>% OF ACT</th>
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<tr>
<td>Federal Mapping</td>
<td>12,500,000</td>
<td>10,852,000</td>
<td>87</td>
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<tr>
<td>Support Mapping</td>
<td>9,500,000</td>
<td>9,791,000</td>
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<td>State Mapping</td>
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<td>Education Component</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$37,500,000</strong></td>
<td><strong>$21,982,000</strong></td>
<td><strong>59%</strong></td>
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The Federal Mapping and Support Mapping components are intended to support geologic mapping activities at the USGS while the state mapping component provides matching funds for state activities. Actual appropriations for FY93 as compared to the authorization are shown in Table 2. The appropriation for FY93 is $21,982,000, representing 59% of the authorization. The portion appropriated for state mapping is only 9% of the amount authorized.

The state geological surveys are thus competing for about $1.3 million in available funds for FY93. Don McKay noted that the ISGS had been informed that the competing states had submitted proposals totalling over $3 million in funding from the USGS. The state match portion was quoted as almost $4.2 million in state funds.

Don McKay noted that some concern was expressed in Washington, D.C. about the amount needed by the states if only $3 million was requested. Actually, the states have documented and reported to the USGS that almost $18 million is available in matching funds. However, the Association of American State Geologists (AASG), seeking broad participation of its member surveys, had requested that each Survey be mindful of the needs of others in submitting their proposals. Each Survey in turn held their proposals to what they considered a reasonable minimum noting that only $1.3 million was available from the federal government. The ISGS reduced its request from the amount requested in previous years in order to help accommodate the needs of others, thus aiming to build a base of strong support amongst all of the states for this mapping initiative.

In addition to the statistics compiled by the states showing $18 million available in matching funds, Don McKay reported that they had also identified that of the more than 59,000 quads reported in the U.S., about 10,500 have been mapped. Thus, only about 18% of the U.S. has been mapped at the detailed scale now needed. To leverage available state funds, McKay noted that the initiative should be fully funded as initially authorized.

The outlook for FY94 was also briefly described. The request by the Administration in Washington, D.C. is for an increase, albeit small, in the state matching portion, an increase of $1.2 million. The AASG Liaison Committee was informed by the USGS that this increase is to be split with $500,000 going to the USGS for its mapping activities, $500,000 to the states under the Statemap component, and $200,000 for USGS administration. McKay again noted that the program is seriously underfunded. He noted that it would be helpful if IGUSAC members could request their Congressional members to fully fund this activity.
David Gross provided a few suggestions as to how Members of Congress had been and could be approached to increase the level of funding. He noted that IGMC chairman, John Utgaard had written letters to Congressmen on behalf of the Committee sometime back. Letters were also written by IGMC members themselves. Copies of the letters received by the ISGS have been compiled into a portfolio and provided to the State of Illinois office in Washington, D.C. for their use with the Illinois delegation. Dave Gross was aware that in at least one case these letters prompted a Congressman to write another Congressman. He felt the letters were having an impact on Congress.

Dave Gross posed the question as to how do we proceed from here and keep the issue before Congress, especially now that there is a mind-set to increase geologic mapping however small. This increase should be applauded. Gross noted that the ISGS had drafted some ideas that IGMC members are welcome to use. There were in the form of draft letters to Senator Byrd and Representative Yates, Chairmen of the responsible Senate and House appropriations committees, respectively. He urged, on behalf of Chief Leighton, that IGMC members do another round of letters. Letters to Senator Byrd and Representative Yates could made a difference. Dave Gross also requested those writing do not use the draft letters verbatim, but to use their own phraseology. He reiterated that an important message is that the state surveys have available $18 million in matching funds. He advocated that members seek full funding for all four geologic mapping components. That was and still is the goal. He urged that geologic mapping be kept high in the thought processes in Washington, D.C. with emphasis on the needs for funding state mapping.

LUNCH BREAK

Paleo-Liquefaction Studies in Southern Illinois Near the New Madrid Seismic and Wabash River Valley Zones - Wen-June Su, Engineering Geology Section, ISGS. Historical accounts (about 200 years) and instrumental records (less than 50 years) of earthquakes along the Wabash River do not cover a sufficient length of time to aid in fully understanding the regional seismicity. Many areas around the world with a history of high seismicity have been identified by studies of Quaternary faulting and soft-sediment structures. The Wabash Valley Seismic Zone appears to lack surface faults, but soft-sediment structures may allow assessment of the pattern of seismicity. During the last two years, the U. S. Geological Survey, the Indiana Geological Survey and the Illinois State Geological Survey have been studying paleo-liquefaction dikes and other soft-sediment structures along the Wabash River. Investigations in southeastern Illinois include the mapping and description of liquefaction dikes and other soft-sediment structures in late- and post-glacial Quaternary lake and alluvial sediments. To date, 15 liquefaction dikes and two other soft-sediment structures probably induced by pre-historic earthquakes have been documented along three tributaries of the Wabash River. The liquefaction dikes range in width from a few centimeters to 60 centimeters. Stratigraphic, sedimentary and archaeological studies suggest that these dikes supposedly formed as the result of at least two or more earthquakes during the middle Holocene. Recent mapping of archeological features and paleosols, and radiocarbon dates, suggest that some dikes occurred 7,500 years ago and others may be as young as, or even younger than, 2,500 years BP. The dike width and the character of the dike material may allow assessment of the seismic energy that caused them if the original ground conditions can be reconstructed. However, genesis of the dikes is still somewhat controversial. Because existing information is quite limited, a conservative approach to assessing seismic energy is essential. The maximum credible earthquake that may occur in the region is uncertain and debatable. From a scientific perspective, the historical and instrument records that existed in the area are just too limited to comprehensively understand the regional seismic activity. Drawing far-reaching conclusions at this time from the limited information is not warranted.
Geologic Mapping of the Woodstock 7.5-Minute Quadrangle, McHenry County, Illinois - Richard C. Berg, Geologic Mapping Section, ISGS. The Woodstock quadrangle area is characterized by a complex succession of glacial and post-glacial deposits overlying Silurian and Ordovician bedrock. Repeated ice advances resulted in multiple diamicton units interlayered with thick proglacial sand and gravel deposits. Consequently, there is an abundant groundwater resource in the area. However, to protect the resource from potential contamination requires knowledge of where aquifers are located, the extent to which they are connected, and the degree to which they are protected from contamination by overlying fine-grained diamicton units. The complex subsurface distribution of diamicton units and sand and gravel aquifers required that a large study area be mapped. This was necessary in order to provide the basin for the ISWS to make realistic interpretations of hydraulic communication among aquifers, identification of recharge areas, and determination of water-well capture zones, groundwater flow directions and rates.

Mapping Karst Areas of Illinois - C. Plus Welbel (presenter), Geologic Mapping Section and Sam V. Panza, Associate Geochemist, Hydrogeology Research Laboratory, ISGS. Problems with groundwater contamination in shallow aquifers in karst areas may be significant in parts of Illinois. A study is underway to study factors that contribute to karst development and to map the karst areas of the state, including areas where obvious diagnostic karst geomorphic features are absent. Occurrences of caves, sinkholes, and carbonate bedrock area being used to identify the karst regions of Illinois. The main karst regions are in the Driftless area (Jo Daviess and Carroll Counties), around Dixon in Lee County, the Lincoln Hills area (Calhoun, Madison, Pike, and Jersey Counties), the Sinkhole Plains (St. Clair, Randolph, and Monroe Counties), and in the southern Shawnee Hills. Karstification is restricted to the flanks of the Illinois Basin and occurs most often in areas underlain by the thick, generally shale-free Middle Ordovician Limestone and Middle and Upper Mississippian Limestone. Karstification is potentially greater in areas where overlying regolith is absent or thin.

NEW BUSINESS

Chairman Utgaard again encouraged IGMAC members to write Congress in support of geologic mapping.

Next Meeting Date - Tentative meetings dates were set for Thursday, October 14 or Thursday, October 21 in Springfield.

With the committee's permission, Chairman Utgaard requested that ISGS staff make a survey of attendance to determine those individuals/organization who have not been attending meetings; and contact those individuals/organizations to see if they are interested in participating in IGMAC. If there is still interest, request they make an effort to attend or find an alternate. The membership list should be updated to reflect those organizations who are actively participating in IGMAC.

Don McKay asked for volunteers or suggestions on speakers for the IGMAC meetings. A suggestion was made of inviting someone from Kentucky, who have had so much success in their mapping program—do a presentation on the economic analysis they did, who's using the maps, how they are using them. Don noted that there is a group in Indiana thinking about how to map glacial deposits. We might draw on them to share some of the information across state lines.

Dave Gross announced that the Illinois Mapping Advisory Committee and others are sponsoring a two-day program, June 9 & 10 in Champaign on Weather and Water—Water related GIS, climate in Illinois and national spatial data infrastructure. It is being hosted by the Illinois State Water Survey.
Meeting was adjourned with thanks to the speakers.

Respectfully submitted,

[Signature]

Morris W. Leighton
Secretary, IGMAC
Chief, ISGS
Illinois Geological Mapping Advisory Committee
October 14, 1993
Illinois Department of Transportation
2300 S. Dirksen Parkway
Springfield, Illinois

AGENDA

1:00 P.M.  John Utgaard (SIU-C), Chairman
Opening Remarks
Minutes of the May 6, 1993 meeting
Old Business

1:15       Brud Leighton (ISGS), Secretary
Status of the National Geological Mapping Program
Discussion

1:40       Mike Barnhardt (ISGS)
Sediment Mapping and Groundwater Studies in Flooded Areas
Along the Mississippi River Near Rock Island Illinois.

2:00       Dick Anderson (Augustana College)
Surficial Geologic Mapping in the Henry and Whiteside
Counties, Illinois.

2:20       John Nelson (ISGS)
Evidence of Tertiary Faulting in Southern Illinois.

2:40       Keros Cartwright (ISGS)
Screening for a Low-Level Radioactive Waste Disposal Facility
in Illinois.

3:00       Joe Craig (Hanson Engineers)
Geologic and Archaeologic Factors for Siting the Clark Street
Bridge, Alton, Illinois.

3:20       Other Business

3:30       Adjourn
September 29, 1993

ILLINOIS GEOLOGIC MAPPING ADVISORY COMMITTEE

Members and Friends of IGMAC:

With great pleasure, I write to invite you to participate in a meeting of the Illinois Geologic Mapping Advisory Committee (IGMAC), 1-3:30 PM, Thursday, October 14, 1993 in the auditorium of the Illinois Department of Transportation, 2300 S. Dirksen Parkway, Springfield. Enclosed are an agenda for our next meeting and minutes from the last meeting.

We are meeting in the afternoon hours of October 14. The Illinois Mapping Advisory Committee (IMAC) is meeting from 9 AM-12:30 PM that same day in the same room at IDOT. They will focus on maps used in the floods of 1993. IGMAC members are always welcome at IMAC meetings.

Please call my office at 217/333-5111 to report whether you will or will not be able to participate in the IGMAC meeting. I look forward to seeing you.

Sincerely,

Morris W. Leighton
Secretary, IGMAC
Chief, ISGS

Enclosures (2)