



PENNSOIL

MAY 2009

The Newsletter of the Pennsylvania Association of Professional Soil Scientists
PO Box 61035, Harrisburg, PA 17106-1035

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Million Acre Mappers Recognized by NRCS

by Ed White

The National Cooperative Soil Survey partnership is closing in on its goal of mapping all soils in the United States. Thousands of soil scientists have contributed to this endeavor. The Chief of the Natural Resources Conservation Service has recognized those soil scientists who have mapped one million acres. They are being recognized with a certificate and specially designed lapel pin.

Those whose whole mapping career was in Pennsylvania are:

Frank Kopas
Merrill Kunkle
Paul Parrish
James Rayburn
Robert Smith
Dave Taylor
John Zarichansky

Others who did Soil Survey work in PA:

Earl Reber (went to Virginia)
David Belz (went to Florida)
Ivan Ratcliffe (PA Correlator)



You can see the entire list at <http://soils.usda.gov/survey/mappers/index.html> There are many soil scientists recognized. ■

National Cooperative Soil Survey Announces 2009 Awards

During 1999, the Centennial Year of the National Cooperative Soil Survey (NCSS), the Soil Survey Division initiated two awards for scientists involved in the production phase of the soil survey program. These two awards are NCSS Soil Scientist of the Year and NCSS Soil Scientist Achievement. In addition a third award initiated in 2005 is given to the NCSS Cooperator of the Year.

The Soil Survey Division, Natural Resources Conservation Service would like to announce the recipients of these awards for 2009. **Michael J. Mungoven**, MLRA Project Leader, Homer, Alaska, is the 2009 recipient of the NCSS Soil Scientist of the Year Award. **Roger D. Windhorn**, Soil Scientist/Geologist, Natural Resources Conservation Service, Champaign Illinois, is the 2009 recipient of the NCSS Soil Scientist Achievement Award. **Dr. Michel D. Ransom**, Professor and Assistant Head for Teaching, Department of Agronomy, Kansas State University, Manhattan, Kansas, is the 2009 recipient of the NCSS Cooperator of the Year Award.

The NCSS Soil Scientist and Cooperator Awards were presented at the 2009 NCSS National Conference, Las Cruces, New Mexico. ■

SANITARIAN TRAINING
Profile Description and Interpretation
for Onsite Sewage Disposal
Sponsored by the Mid-Atlantic Assoc.
of Professional Soil Scientists
Date: FRIDAY, JUNE 5, 2009
Time: 8:30 a.m. to 4:30 p.m.
Location: CARROLL COUNTY,
MARYLAND (Mt. Airy)
Cost: \$50.00; \$25.00 MAPSS members
Includes Lunch and Beverages

A one day soil profile description training course for Maryland Sanitarians is being sponsored in cooperation with the Mid-Atlantic Association of Professional Soil Scientists (MAPSS). The main goal of this session is to get Maryland sanitarians next to soil scientists in soil pits so they gain a better understanding of how to do soil profile descriptions for on-site sewage disposal and in particular the interpretation of high chroma mottling as it relates to soil saturation. Any PAPS members that have experience describing Piedmont soils that developed from micaceous schist would be much appreciated. This session may also be beneficial for SEO's in Pennsylvania that work in the Piedmont.

This is a field class only. Soil profiles will be described in various landscape positions, representing soils that are well drained to poorly drained. There will be discussions of interpretation of soil color (high chroma mottling, redoximorphic features, and lithochromic color), rock content, texture, structure, and consistence as it relates to on-site sewage disposal in Maryland.

Registration or Questions? Contact Gary Jellick at 410-274-0622 or jellick-acorn@comcast.net. ■

DEP Releases 'Land Treatment Manual' for Comment by Chris Whitman

On March 21, 2009 PaDEP released for public comment the draft *Land Treatment Manual* (DEP ID: 362-2000-009), for a 30-day comment period. The document can be accessed through the following link: http://www.dep.state.pa.us/TechnicalGuidance/Draft_technical_guidance.asp

Upon final publication, it will replace in its entirety the current guidance document entitled *Manual for Land Application of Treated Sewage and Industrial Wastewater*. Following is a brief description according to the notice:

"This document is intended to provide general guidance on the existing methods and types of land treatment systems and their relative effectiveness and limitations. Factors are presented which must be considered when determining whether land treatment is a feasible and environmentally sound alternative. This manual also contains information on the general design, installation and maintenance of land treatment systems. Treatment systems developed in accordance with this manual will need to be supplemented with additional detailed research once a land treatment method has been selected."



Though there was only a 30-day comment period, several members of PAPS were able to submit comments. Some of the mutual comments were as follows:

- Though regional DEP soil scientists provided technical assistance in preparing the *Manual*, much of their input was disregarded prior to release of the current draft.
- Though numerous references are made to historical studies and methodologies, the *Manual* has virtually no citations or bibliographic information for further research
- Much of the *Manual* contains prescriptive standards, including the determination of peak flows in accordance with the Chapter 73 guidelines for onlot systems; blanket isolation distances of 400 feet to occupied dwellings and individual water supplies; and design guidance for beds, trenches, at-grade and drip systems directly from Ch. 73 and the current *Alternate System Guidance*.
- Errors in nomenclature, such as interchanging the use of "adsorption" and "absorption", and "soil consistency" and "soil consistence".
- Though the Department has over 20 years of permitting experience with these systems, the *Manual* is vague when referring to methods for measuring saturated vertical hydraulic conductivity (Ksat), including the statement "ASTM standards for measuring infiltration rate should not be used to measure hydraulic conductivity". ↓

Coming in June:

New look and updated content on the PAPS website!

- The Manual recommends comparing measured Ksat values with values derived by Dr. Jerry Tyler of the University of Wisconsin (Appendix 5 of the current *Alternate Systems Guidance*). Though an important reference, the Tyler table has a limited range of parameters that may not cover all scenarios for all land treatment systems, especially those that have flows in excess of 10,000 gpd and for which the Manual is intended. One of the tenets of the original *Tyler* table was incorporation of wastewater “strength” as inferred through BOD values. It is unclear whether or not this portion of Tyler’s work was considered.
- Recommendations for appropriately certified individuals, including Professional Soil Scientists, to conduct site evaluations is included in the *Manual*. However, there are currently two separate regulatory definitions (Ch. 73 and *Alternate Systems Guidance*), though the Manual does not differentiate this distinction.

As may be expected with a reference that spans numerous disciplines and sciences, there are many other technical issues that are raised in the *Manual*. Based upon guidance manuals that are being developed or have already been developed in other States on similar topics, the draft *Land Treatment Manual* is quite vague in its approach. For comparison, one can link to Minnesota’s *Design Guidance for Large Subsurface Wastewater Treatment Systems*, July 2008 at: <http://www.pca.state.mn.us/publications/wq-wwprm8-01.pdf> or Connecticut’s *Guidance for Design of Large-Scale Wastewater Renovation Systems*, February 2006 at: http://www.ct.gov/dep/cwp/view.asp?a=2721&q=332888&depNav_GID=1654

Although the public comment period officially ended April 22nd, PAPSS members are still encouraged to review the draft *Manual* and submit their comments to:

Kevin S. McLeary, P.E. | Environmental Engineer Manager
 Division of Planning and Permits
 Department of Environmental Protection
 Rachel Carson State Office Building
 400 Market Street | Harrisburg, PA 17105-8774
 Phone: 717.787.8184 | Fax: 717.772.5156
kmccleary@state.pa.us

Mr. McLeary has indicated that although the pending comment and response document will not address any comments submitted after April 22nd, the Department is still interested in hearing from the professional soil science community, and will consider such additional comments in potential amendments. ■



Allegheny County Landslide Reaches Litigation by Michael Lane

Wal-Mart Stores Inc. has filed suit against the original developer of a store site in Kilbuck Township, Allegheny County, along with engineers and consultants involved in the site work. In September 2006, at a construction site for a proposed Wal-Mart retail store, a 500,000-cubic yard landslide blocked four lanes of Route 65 and an adjacent railroad. The original developer was fined \$470,000 by DEP in 2007 and Wal-Mart later gave up on developing the site. Wal-Mart paid to clean up the landslide and is undertaking a multi-year, multi-million dollar project to stabilize and vegetate the site.

Despite local concerns about the feasibility of the project and despite recommendations in a 2002 hillside study completed for the City of Pittsburgh, grading of the site was started in 2006. A portion of the hillside collapsed in April 2006, closing the roadway for two days. Construction continued until the larger slide in September 2006. A legislative task force was formed to investigate the causes of the slide and to recommend actions to prevent similar situations. The full report of the *Taskforce and Advisory Committee on the Killbuck Township Landslide*, June 2008, can be found at <http://jsq.legis.state.pa.us/Kilbuck%20Landslide%20Report%202008.html>.

The project was at the former site of the Dixmont State Hospital north of Pittsburgh along the Ohio River. At the Google Maps website, type 40.5153, -80.1125 in the search box for an aerial view and street view of the site. On the images, the extent of the slide is evident on the railroad tracks between the site and the river. Thanks to Bill Davis for originally alerting *Pennsoil* staff to this story. ■

Which Came First?

by Michael Lane

Which came first, the chicken or the egg? We are all familiar with the dilemma of the chicken and the egg, either from philosophy class or from the song of the same name. Chickens hatch from eggs, but eggs are laid by chickens. An egg that produced a chicken comes before the chicken, but can a non-chicken lay a chicken egg? Are you answering from a theological perspective, an evolutionary perspective, or are you simply a contrarian? Regarding soil science licensure, we are faced with our own version of the question. Which comes first, the license or the rules? If there are no existing rules that require specialized training in soil science, then why do we need licensing? If there is no licensing, then how can any proposed rules require a licensed soil scientist? Who passes the rules and who issues the licenses?

Licensing in Pennsylvania is regulated by the Bureau of Professional and Occupational Affairs. This division of the Department of State has been overseeing professional and occupational licensing boards and commissions since 1963. The Bureau regulates professional practices to protect “the health, safety and welfare of the public from fraudulent and unethical practitioners.”

Rules are passed by myriad federal, state, and local agencies in the form of laws, regulations, ordinances, and policies. In Pennsylvania, the Department of Environmental Protection is a primary promulgator of state-wide regulations. The Department of Environmental Protection states that their mission is “to protect Pennsylvania’s air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner environment.” Individual municipalities may also pass ordinances intended to protect the welfare of local residents.

This all leads back to the question of which comes first – the license or the rules. Fortunately, we are in no chicken-or-egg, license-or-rule quandary, because, in our case, we know which came first. Following are selections from existing regulations and policies written by DEP to fulfill their mission to provide for the health and safety of Pennsylvania’s citizens. Each example relates directly to soil science and its practice. Additionally, a few examples are provided from municipal ordinances. This is not a comprehensive list of state-wide or local rulemaking and does not include any federal requirements.

- **Municipal Waste Management Title 25 271.122(d)** The soils, geology and groundwater sections of a permit application shall be completed by **experts in the fields of soil science**, soil engineering, geology and groundwater.
- **Municipal Waste Management Title 25 271.915(c)(7)** Sewage sludge may not be applied to agricultural land, forest or a reclamation site that is: Within 11 inches (or 28 centimeters) of the seasonal high water table, nor within 3.3 feet (or 1 meter) of the regional groundwater table. For purposes of this section, the depths to seasonal high water table and to regional groundwater table shall be based on the most recent soil mapping as published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service, or more detailed mapping data as mapped by **an expert in soil science** using standard and acceptable mapping procedures as developed by the USDA Natural Resources Conservation Service.
- **Municipal Waste Landfills Title 25 273.117.** Soil description.
An application shall contain:
The depth to the seasonal high water table within the proposed permit area and adjacent area to demonstrate that seasonal high water table will not contact the liner system.
In preparing the soils description and elevations, the applicant shall:
Base the description on a sufficient number of pits, excavations and samples to allow an accurate characterization of the soils in the proposed permit area and adjacent area, and each onsite or offsite borrow area.
Use the following soil classification systems:
For daily, intermediate and final cover, the United States Department of Agriculture Soil Classification System.
For the liner system, site construction and other noncover uses, the Unified Soil Classification System.
- **Land Application of Sewage Sludge Title 25 275.312** Site characteristics. No person or municipality may apply sewage sludge to a site unless the site complies with the following:
The site has soils that fall within the United States Department of Agriculture textural classes of sandy loam, loam, sandy clay loam, silty clay loam or silt loam, unless otherwise approved by the Department in the permit.
The soils have a minimum depth from surface to bedrock of 20 inches. ↓

2009 PAPSS Board

President Steve Dadio
sdadio@cmxengineering.com
Vice-President Bill Davis
willdavis@state.pa.us
Treasurer Laurel Mueller
laurel@soilservicescompany.com
Secretary Cathy Sorace
pennwoodsoils@aol.com
Russ Losco
soildude@comcast.net
Michael Lane
mlane@brickhouse-environmental.com
Chris Whitman
Chris_Whitman@URSCorp.com

The site has a minimum depth from surface to seasonal high water table of 20 inches. The operator may establish this minimum depth through the use of a tile drain system, if approved by the Department in the permit.

- **Residual Waste Management Title 25 287.122(d)** The soils, geology and groundwater sections of a permit application shall be completed by **experts in the fields of soil science**, soil engineering, geology and groundwater.
- **Land Application of Residual Waste Title 25 291.104(e)** The information required by this section shall be prepared by **experts in soil science**.
- **PA Stormwater BMP Manual Appendix C. Who Should Conduct Testing** Qualified professionals who can substantiate by qualifications/experience their ability carry out the evaluation should conduct test pit soil evaluations. **A professional, experienced in observing and evaluating soils conditions** is necessary to ascertain conditions that might affect BMP performance, which can not be thoroughly assessed with the testing procedures. These evaluations **must** be conducted by the above professionals in risk areas or areas indicated in the guidance as non-preferred locations for testing or BMP implementation.
- **West Bradford Township, Chester County Ordinance 96-05** The party disputing the boundaries of the Flood Hazard District as established in Section 703 A of this Article shall submit to the Zoning Administrative Officer four (4) copies of a detailed on-site survey of the land in question, made by a professional geologist or **soil scientist**, showing in detail those specifics which the applicant alleges accurately reflect the condition of the land or those changes alleged to have occurred, which remove the land or any portion thereof from the Flood Hazard District as designated in Section 703 A.
- **Kennett Township, Chester County Ordinance 129** Where the Applicant seeks reclassification of hydric soils and their location, such reclassification shall be undertaken by a **Certified Soil Scientist or other similarly qualified professional**.
- **Lower Windsor Township, York County Stormwater Management Ordinance A** detailed soils evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation shall be performed by a **soil scientist or qualified professional**, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability.

Who is determining depths to seasonal high water tables for municipal landfills? Who are the "experts in soil science" that are providing information for land applications of residual waste? What "qualifications/experience" are presented by those completing site evaluations for stormwater BMPs? What "similarly qualified professional" is permitted to reclassify hydric soils? If rules are established by the Department of Environmental Protection and local governments that regulate soil science to provide for the health and safety of Pennsylvania's citizens, and the Department of State regulates professional practices to protect the health and safety of the public, then it follows that those practicing soil science must be licensed.

The newest of the more than 25 licensing boards in Pennsylvania is the State Board of Massage Therapy. That law passed in October 2008, so a discussion of the health and safety implications of a bad massage is moot, but the relevance of the health and safety implications of bad soil science is clearer than ever. Which came first? Of course, it was the rules, and, at the risk of sounding contrary, it was the chicken. ■

PAPSS Manual for Soil Investigation

by Russell Losco

The PAPSS Manual Committee has been moving forward with the Draft Version 2.0 of the Manual for Soil Investigation in Pennsylvania. At the suggestion of Dr. Patrick Drohan, the committee has reviewed existing manuals from other states in the northeastern United States and is using the format of one of them as a framework to adapt to the needs of Pennsylvania. This has saved countless hours of "re-inventing the wheel" and allowed us to move forward faster than originally anticipated. The current draft is 19 pages long with a glossary but no other appendices. It incorporates most of the material in the original first draft version but in a more systematic format.

We plan to solicit outside peer-review from soil scientists from within Pennsylvania and neighboring states. We have submitted an abstract to the Soil Science Society of America for a poster session at the up-coming national meeting in Pittsburgh in November. There we hope to unveil the completed Version 2.0 of the manual for comment. There is still a great deal of work to be done on this ambitious project. Anyone interested in contributing to this effort please contact Russell Losco at soildude@comcast.net. ■

PAPSS Annual
Business
Meeting
November 2009

ASA-SSSA-CSSA Annual Meeting – Pre-Meeting Field Tour October 29 – November 1, 2009

Soils and Geomorphology of the Allegheny Plateau in Pennsylvania

Co-sponsors: USDA-NRCS, Pennsylvania and West Virginia; Pennsylvania Association of Professional Soil Scientists; Pennsylvania Geological Survey.

Purpose/Justification: To provide visitors with a first-hand view of soils, geomorphology and related land use issues pertinent to the southwestern Pennsylvania Region.

Dates and times: 10/29 (5 PM presentation) - Nov.1 (3PM)

Highlights: Presentation on Pennsylvania soil and geology
Blackberry Meadows Farm – Organic farming practices
Active and reclaimed mine soils
McConnells Mill and Moraine State Parks
Jacksville Esker

Plan to join thousands of your colleagues and peers as we explore “Footprints in the Landscape: Sustainability through Plant and Soil Sciences,” Nov. 1-5, 2009 at the David L. Lawrence Convention Center, Pittsburgh, PA. PAPSS will conduct its annual business meeting in conjunction with the field tour and conference. ASA-SSSA-CSSA registration opens July 1, 2009. ■

2012 Envirothon hosted by Pennsylvania Susquehanna University, Selinsgrove

The PA Envirothon committee is seeking volunteers to assist in training and testing for the 25th anniversary of the Canon Envirothon, the nation’s largest high school environmental education competition. Pennsylvania will be hosting the event at Susquehanna University in Selinsgrove in 2012. Lorelle Steach and Leigh Beamesderfer, 2012 Canon Envirothon co-chairs, have set a date of Tuesday, June 16th, 10:00AM (location to be determined) to review subcommittees, timelines, and tasks.

Testing stations include Soil and Land Use, Forestry, Aquatic Ecology, Wildlife, and Current Issues. Other committees include Transportation, Hospitality, Student Activities, Opening Ceremonies, and Volunteer Recruitment. Attendees of the June 16th meeting will learn more about the committees and tasks and meet fellow volunteers.



Leigh Beamesderfer
Canon Envirothon 2012 Co-chair
2120 Cornwall Road, Suite 5
Lebanon PA 17042
717-272-3908 ext. 112

Lorelle Steach
Canon Envirothon 2012 Co-chair
702 West Pitt Street, Ste. 3
Bedford, PA 15522
814-623-7900 ext. 111

To volunteer your assistance, email Canon2012@lccd.org or contact Leigh or Lorelle. ■

**Welcome
new members:**

Professional
Scott Andress
Brendan O'Boyle
Neal Parker

**Letter from the President
by Steve Dadio**

Participation – we need more of it. There are several issues that have come up in 2009 that will affect soil use and management in Pennsylvania in general and PAPSS members in particular. It is a difficult time: the economic downturn has severely impacted private sector soil scientists while shrinking government budgets and shifting priorities have also affected public sector soil scientists. However, there are several issues out there that require the expertise and input from professional soil scientists. Here is a list of 4 recent issues:

- 1.) In March, PAPSS Board Members attended a PCPG Board Meeting about the topic of licensing for soil scientists. PAPSS was well received by PCPG and several members of that organization offered to help us any way possible.
- 2.) There have been several drafts and revisions of many of the state regulations that concern soils. The drafts for Chapters 71, 72, and 73 are still at Central Office. Recently, a hastily put together draft document for the land application of wastewater was put out for public comment. Several PAPSS members attended a meeting of the Water Resources Advisory Board (WRAC) where the topic of mandatory stream buffers was introduced. In addition to that, all of Chapter 105 is up for revision.

For those PAPSS members that have attended these meetings or read these draft documents, it is readily apparent that soil scientists were often not consulted in the creation of these documents. It is incumbent on PAPSS members to get involved in these issues, to offer their knowledge and professional experience about these particular issues. The soil scientist should provide comments, and if warranted, criticism if the proposed rules and regulations do not make "soils sense".

- 3.) In May, President Obama issued an Executive Order about the cleanup of the Chesapeake Bay. The result of this Order is that an Executive Committee, headed by the EPA, will be established to enforce the Bay states in reaching their nutrient reduction goals. Up to this point, the Federal Government was seen as more of a partner in working with the states to help achieve their nutrient management reduction goals.

While not known, it is likely that nutrient management issues as they relate to agriculture and sewage disposal will be more closely examined. It will be up to the soil scientist to help both the farmer and the municipality or authority keep their nutrients on their land.



RUFFED GROUSE.

looking at the state tree (Eastern Hemlock), state flower (Mountain Laurel), and the state bird (ruffed grouse). For much of the hike, we were walking over Hazleton soils! These state symbols would not be here, but for the soil underneath them.



Another way to look at this issue. PAPSS has been trying to get this Bill passed for 4-5 legislative sessions now, or 8-10 years. If the Bill was passed in the first session, those 4th graders would be high school seniors or early in the college career. These students would have been exposed to soils at an early age, some may have found it interesting. It is possible that that interest may have grown and now that they are graduating from high school or are in the first year or two of college, they may be interested in studying soils in college.



So, there is a lot going on with PAPSS, too much for the Board and a few engaged members. Don't be surprised if you hear from one of us seeking your help with one of the above-mentioned issues or another issue that wasn't mentioned. Any help that you can offer will be greatly appreciated. ■

PAPSS Summer
Technical
Session
July 9, 2009

PAPSS Summer Technical Session July 9, 2009

The Summer Technical Session will be held on July 9th at the Milford Township Building (2100 Krammes Road) in Spinnerstown, PA. This location is less than 1 mile from the Quakertown Interchange of the PA Turnpike Northeast Extension (I-476). The topic of the Session will be "Problem Site Drip System Installations". In the morning, PAPSS Member John Chibirka of USDA-NRCS will be speaking about the recently updated Soil Surveys in Berks, Bucks, Chester, and Montgomery Counties. We also hope to have representatives from the DEP discussing the draft protocol for siting drip systems in rocky and forested landscapes ("problem sites").



In the afternoon, we hope to have a field demonstration of a drip installation in these rocky and forested landscapes.

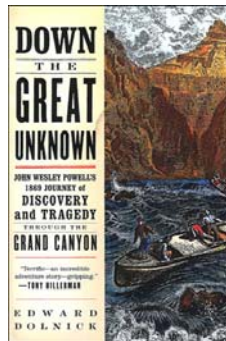
This Technical Session is co-sponsored by the Pennsylvania On-Site Wastewater Recycling Association (POWRA). If successful, we hope to have similar-type sessions in other parts of Pennsylvania over the coming years as DEP completes this protocol for problem sites.

Mark your calendars! ■

REVIEW: *Down the Great Unknown* – Edward Dolnick by Michael Lane



In 1869, ten men in four boats started a three-month, 2000-mile boat ride down the Green and Colorado Rivers. Seven of the men were veterans of the Civil War and five were mountain men, living in the west, hunting and trapping and guiding expeditions. None were older than thirty-six, and as the trip unfolds, it's surprising that any of them made it beyond that. The leader was John Wesley Powell, a Union Army major who lost his right arm at the Battle of Shiloh. Major Powell was unable to secure much funding beyond flour and coffee for what he viewed as a scientific expedition to map the vast unknown territory through the Grand Canyon. None of the men were trained in running rivers of any kind, let alone rivers with unknown numbers of rapids and waterfalls. Their boats were designed for speed in flat water and were particularly ill-suited to river travel.



Undaunted, primarily due to the ignorance of what they would face, they launched into the Green River on May 24th. By June 9th, they had lost one boat, a third of their supplies, and nearly drowned three men. *Down the Great Unknown – John Wesley Powell's 1869 Journey of Discovery and Tragedy Through the Grand Canyon* recounts the first recorded trip down the Green and Colorado Rivers. Using personal journals and other works produced soon after the trip, Edward Dolnick drops us into the canyons with the expedition and compellingly conveys the physical hazards and personal relationships. Powell and his compatriots achieved the improbable in a time when there was still a good deal of improbable left to achieve.

Light on soils, but with graphic descriptions of the geology of the river and rocks, *Down the Great Unknown* is captivating from the start and engaging throughout. Dolnick brings the action to the fore, from the running of the rapids, to the campfire that singed eyebrows and sent everyone running for the safety of the river, to the arguments that broke up the team at Separation Canyon.

Truth is stranger than fiction, and in no case is that more evident than in this account of the exploration of one of the last great unknowns in the continental United States ■