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Update to Clients

SAI Aids Developers with Land Use Issues

Wetlands are a protected resource and provide a valuable ecological benefit to the natural environment. However, a proper balance must be maintained during land development projects to protect both the functioning aspects of a wetland and the property owner's rights pertaining to development. Poor data and/or insufficient field verification can periodically cause some upland areas to be identified incorrectly as freshwater wetlands. SAI has been involved in several such cases, and has had success in petitioning the NJDEP to reclassify or adjust wetland boundaries as appropriate.

The three elements required to make a determination of a jurisdictional wetland are: 1) hydrology; 2) hydrophytic vegetation; and 3) hydric soils (as determined by the USDA). Determining the presence or absence of any of these should be straightforward; however, in New Jersey this is not always the case. For instance, some soils can mimic hydric soils in color but not be hydric. Weathering of the parent bedrock (with very dark colors) results in a soil horizon with similar colors. Another issue is that a site may have hydric soil, but without the hydrology and hydrophytic vegetation to confirm the determination, the site qualifies as upland.

The NJDEP has a digital database of freshwater wetlands in New Jersey, but these areas are identified from aerial photography and USDA soil boundaries. Not all of the suspected wetlands in the state have been ground-truthed, meaning that these digital data are meant to provide a guide to suspected wetlands, not actual wetland boundaries. A field visit to a potential wetland is crucial to making a jurisdictional determination to verify these characteristics at the site.

The implications of an incorrect determination can extend well beyond the boundaries of the actual area in question. There are many state- and federally-designated Threatened & Endangered (T&E) species that depend on wetlands for habitat. If a wetland is determined to provide habitat for a T&E species, it is classified as having exceptional resource value and assigned a 150-foot transitional area (buffer). A buffer of this size can substantially impact the development potential of a parcel of land. Therefore, a strong background in ecology is necessary to verify the state's T&E determination. This shows again the importance of ground-truthing information received from the State – habitat requirements cannot be assessed accurately from aerial photography alone. The entire project site needs to be assessed to verify whether it truly provides suitable habitat for the species of concern.

Above, Randy Kertes, SAI's Director of Land Use & Environmental Services, considers an upland project site that had been erroneously classified as a freshwater wetland.

SAI has found that it is good business to conduct a thorough review of any and all previous wetland delineations at a project site. This approach has enabled SAI to successfully persuade state regulatory agencies to reverse wetland decisions on several sites, which culminated in more available develop-

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Libya -- The New Environmental Frontier

In today's global economic climate, companies that can strategize creatively can position themselves to take advantage of new markets or new opportunities in existing markets. SAI has been using our creativity to develop work in Libya.

Above, Dr. Sadat in Tripoli in April 2012.

Economic and diplomatic sanctions have kept Libya largely out of contact with the western world for several decades. However, the 2011 Arab Spring has opened Libya up for commerce with the rest of the world. Dr. Marwan Sadat, SAI's CEO, in partnership with Shelley M. Zeiger, President, Zeiger Enterprises, Inc., took advantage of contacts in the Middle East to make several visits to Libya to assess the environmental state

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INSIDE

LSRPs and Organizational Changes

SAI is pleased to announce that we have four Licensed Site Remediation Professionals (LSRPs) on staff to assist you with your project needs. SAI CEO **Dr. Marwan Sadat, P.E.,** President **Dr. Lahbib Chibani, P.E.**, Senior Project Manager **Mr. Khaled Benslimane**, and Project Manager **Mr. Rich Kurisko** are LSRPs. With four LSRPs, SAI is more qualified than ever to help you with your site remediation issues.

SAI would also like to announce the following changes to our organizational structure: **Dr. Amira Fahim, P.E.**, has been named **Vice President, Technical Services**; **Ms. Suzanne M. Ferguson, PG**, has been named **Vice President, Special Projects**; and **Mr. Randy S. Kertes, PG, CPG**, has been named **Director of Land Use & Environmental Services**.

Dr. Sadat, CEO of SAI, had this to say about our new organizational structure: "The Science and Engineering staff have been merged under the leadership of Dr. Amira Fahim. This will allow for better coordination of work between scientists and engineers. Ms. Suzanne Ferguson will act as Vice President of Special

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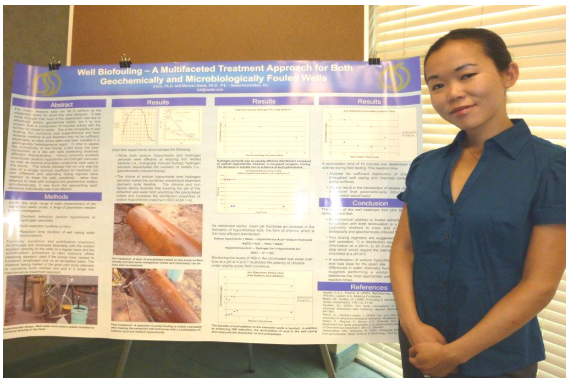
SAI Staff Make Presentations at International Conference in Philadelphia

SAI presented two papers and a poster at the Twenty-Seventh International Conference on Solid Waste Technology and Management, which was held in Philadelphia on March 11 to 14, 2012. Sponsored by the Journal of Solid Waste Technology and Management, the conference addressed a diversity of solid waste themes, such as waste management in developing regions, energy recovery, modeling, and waste management policy, with 180 presentations from 40 countries.



Above, Dr. Kim with her poster presentation, "Well-Biofouling -- A Multifaceted Treatment Approach for Both Geochemically and Microbiologically Fouled Wells."

Dr. Marwan Sadat, P.E., LSRP, presented the paper entitled, "The Regulatory and Financial Implications of Long-Term Persistence of Ammonia in Groundwater Decades After Landfill Closure." The paper provided an overview of the regulatory history of the 30-year post-closure period for landfills. During post-closure, landfills are required to maintain control of a number of potential environmental problems, including groundwater contamination. The paper described how ammonia is often a contaminant of concern and is used at times by regulators as an indicator of overall groundwater quality at landfills. However, ammonia typically requires decades or longer to degrade sufficiently to meet groundwater quality standards. Given that its extended presence could significantly lengthen the post-closure period, its persistence in groundwater has potentially serious regulatory and financial implications.

In addition to discussing published data for numerous landfills around the world, a real-world case study was presented with historical ammonia data collected at a municipal solid waste landfill from 1986 to the present. Modeling simulations performed to project future ammonia concentrations in groundwater demonstrate that achieving 3 parts per million (the current groundwater quality standard) within the 30-year post closure period is not realistic. Based on these results, SAI's opinion is that the regulatory requirements must be carefully assessed regarding the health- and environmental-based threats posed to potential receptors. In many cases, the potential risks are not well defined, and expensive and unnecessary engineering controls are instituted. Often, there are a number of less expensive options available, such as long-term monitoring, that protect human health and the environment while promoting the integrity of dedicated financial resources in the event that a serious environmental concern emerges in the future.

Dr. Sadat's paper should alert landfill owners that they cannot assume that their responsibility for managing a closed landfill ends after 30 years. Well before post-closure ends, owners need to evaluate how the leachate (if it is being collected) or groundwater (for older, unlined landfills) is changing chemically. In some cases the site can become stable enough to stop leachate collection, while in others the problem could persist for decades. The idea of a 30-year closure period needs to be carefully evaluated so that owners can upgrade long-term plans to generate funds (for example, by developing the landfill) to be able to continue landfill closure activities beyond the 30-year period if warranted.

Dr. Emery A. Coppola, Jr., presented a paper entitled, "Combining Fundamental Landfill Monitoring Data with Simple Models for Accurately Estimating Hydraulic Conductivity." The paper presented several different modeling methodologies for estimating accurately the vertical hydraulic conductivity of a low permeability meadow mat layer using fundamental landfill monitoring data.

The poster presentation was made by Dr. Il Kim and featured work performed by SAI in reducing biologi-

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EDITOR: LISA THOMPSON

From the Editor -

If you would like to receive a full-color electronic version of our newsletter in Adobe PDF format via email, or if you want additional information about SAI and its services, please send an email to: lthompson@sadat.com.

Thanks — we look forward to hearing from you.

Libya -- The New Environmental Frontier

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of the country.

Libya's environment suffered under Gaddafi's leadership. The former regime neglected major areas of environmental (and public) health.

"Libya has become much more urbanized in recent years," says Dr. Sadat, "with most of the population concentrated in three major urban areas: Tripoli, Misrata and Benghazi. Gaddafi paid almost no attention to infrastructure, so the inherent environmental problems along with increased crowding have brought these issues to a head."

According to Dr. Sadat, the representatives of the new government are making continuous progress in stabi-

Dr. Sadat posing in front of a destroyed tank and apartment buildings in Misrata.

lizing security in Libya and incorporating the revolutionary militias into armed forces and national police.

The country has tremendous income potential – it produces 1.5 million barrels of light sweet crude oil on a daily basis. With a population of about 5.5 million, oil income represents almost $10,000 per capita annually. But oil is not Libya's only resource. The tourism potential is enormous, with the thousands of kilometers of beautiful beaches and some of the finest Phoenician and Roman ruins on the Mediterranean coast.

SAI is currently involved with eight projects in Libya, and has been asked to provide information with regard to assistance in several more projects expected to become active in the near future.

Wetlands

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able land for our clients.

One recent example of the value of this approach was for a proposed residential development in Somerset County. SAI found that a previous consultant had delineated and obtained a Letter of Interpretation (LOI) from NJDEP that greatly overestimated the amount of jurisdictional wetlands present, and even included a man-made drainage ditch as a wetland of intermediate resource value (with a 50-foot buffer).

SAI staff visited the site during winter and spring, under wet and dry conditions, and prepared a revised delineation that accurately reflected the acreage of jurisdictional wetlands at the property. When NJDEP staff performed their site visit to verify the new proposed delineation, SAI staff discussed the technical justifications of the new wetland lines, and the NJDEP agreed that the new delineation was more accurate. SAI was also successful in demonstrating that this area, which was previously determined to be potential habitat for the endangered wood turtle, was not in fact appropriate for this species.

All of these changes resulted in a wetland delineation that is more reflective of site-specific conditions, and allowed the client to proceed with the appropriate development plans.

On a similar project, SAI reviewed a previous consultants' work for a parcel of land in Cape May County that was erroneously described as having "facultative" vegetation (meaning slightly wetter than dryer),

Above, a vernal pool in Burlington County. Vernal pools are rare and require a 150-foot buffer from development.

hydric soils, and hydrology to support a wetland.

Based on this information, the NJDEP classified the site not only as a freshwater wetland, but determined it to be a potential resting area for migratory raptors and birds of prey (many of which are T&E species) during their annual migration south through New Jersey. The area was given a 150-foot buffer.

During a field visit, SAI discovered that this parcel contained only "potential" hydric soils. The soils on site were sandy and had dark parent material but did not meet the criteria in any other way. SAI found that the soil on this parcel was not actually hydric.

SAI also determined that there was insufficient hydrology at the site to support a wetland. Once again, this was determined by a site visit, during which staff assessed site topography and existing surface hydrology, and dug test holes to establish that the water table never rose to within 18 inches of the surface of the soil.

Based on SAI's data, the NJDEP issued an Amended LOI, which states that "freshwater wetlands, transition areas and/or State open waters are not present on the subject property".

If you are working on a site with an LOI and have questions about the location or classification of the wetlands, please contact Randy S. Kertes, PG, CPG (Director, Land Use & Environmental Services) at (609) 826-9600.

Congratulations!

Nicole Chamoun

SAI is pleased to announce that Nicole Chamoun has been appointed to the North Brunswick Township Planning Board and Environmental Commission. Nicole began as an intern at SAI in 2009 while finishing her graduate studies at the Edward J. Bloustein School of Planning and Public Policy at Rutgers University. She has since joined the company as a full-time employee, working on a variety of projects that comprise land use and environmental issues. Nicole looks forward to serving her community and using her practical experience at SAI to make informed planning decisions.

Above left, Fathi Algoweri, former head of the Revolutionary Council in Misrata and SAI's partner in Libya (left) with Dr. Sadat (right). Above right, a ruin outside of Tripoli. Photos courtesy of Marwan M. Sadat.

SAI Presentations

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cal and chemical fouling of extraction wells at a landfill. It was called, "Well Biofouling - A Multifaceted Treatment Approach For Both Geochemically and Microbiologically Fouled Wells."

Organizational Changes

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Projects, which will allow her to devote much needed time to her numerous projects and to continue to provide all of us with her extensive expertise and experience in geology and site remediation. Finally, I am pleased to announce the promotion of Randy Kertes to Director of Land Use and Environmental Services. Randy's years of experience make him the ideal candidate to oversee and guide this growing segment of our business."

SAI would like to congratulate all of our staff on their most recent achievements.

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