

## Incremental sampling methodology a useful tool in site remediation

By K. MARK TUMLIN

**E**nvironmental professionals are recognizing the increased momentum for using the incremental sampling methodology, ISM, on heavy metal-impacted project sites. While most of the recent ISM attention seems to be focused on performing contamination assessments, it also applies to remediating sites. Recent project experience has revealed certain considerations that should be made between the two efforts.

During the course of a recent heavy metals soil remediation project completed in South Florida, the regulatory-approved remedial action work plan included discrete grab sampling methods for confirming excavation limits.

Although grab sampling has been the industry standard, ISM was also utilized at this site within a specific decision unit to supplement the soil analytical data for confirming the vertical limits of the excavation.

Various challenges were encountered during the ISM sampling program phase, which included the development of the project-specific data quality objectives for the ISM samples and concluded with analytical turnaround challenges. This column summarizes the primary challenges encountered with ISM for remediation and considerations to minimize sampling and analytical error.

Although the site and laboratory identities are being withheld from this article, some project background is useful. The project objectives included capturing impacted soils within the decision unit for disposal and leaving in place the soils above the remediation levels. Visual delineation of impacted soils during excavation was not a definitive tool since discrete sample results collected from homogeneous appearing areas occasionally exceeded remedial action levels. Therefore, attention was focused on the sampling process and high reliance was placed upon the analytical results. The prequalified analytical laboratory performed the analyses on both discrete and ISM samples to maintain analytical consistency.

The difference in collecting and analyzing an ISM sample for the decision unit during a contamination assessment can differ compared to an ISM sample for a remediation confirmation effort because of the considerations required for the environmental media. Within a contamination assessment, the objective of the data is to characterize the contamination location and concentration, whereas on a remediation site, the objective is to confirm the contamination has been removed. With this understanding, our sampling protocol was established.

Since it is commonly understood that the greatest variability in analytical data begins with the sample collection process itself, systematic planning was taken to collect a representative sample in accordance with the current requirements and guidelines. Systematic random sampling within a grid was chosen as the most representative sampling approach. This eliminated potential bias related to the sample collection process which included the collection of natural limestone and sands encountered in the geologic formation cavities.

The proportion of the sample contents of rock and sands was also concerning. If the sample was non-proportional to the formation, the sample data would not be representative of the excavation limits and may not accurately characterize the completion of the remediation.

Once the ISM sample was received by the laboratory, specific sample processing questions needed to be addressed. Questions related to moisture content, aggregate removal, sample splitting, sieving, milling and sub-sampling were addressed. The answers to these questions could potentially change the final data and influence the progress of the project.

For example, large diameter non-impacted formation rock, if left in the sample, would be milled into the final sample volume and could reduce the concentration of the metals in the sample; so removing large diameter aggregates should be considered.

In our case, removing the large limestone aggregate would generate the potential for a worst-case scenario.

Determinations of aggregate removal, sieving and milling should be established during the data quality objectives development process so the laboratory is prepared to generate results consistent with the project data quality objectives.

Finally, when comparing data between the discrete samples and the ISM samples for this project, we found that the ISM results for the decision unit fell within scientific confidence levels compared to the discrete samples, so ISM sampling and analysis proved to be a technically useful tool for soil remediation.

It is important to note that due to the laboratory sample processing time, the turnaround time for ISM samples data may not meet the expedited time demands for a remedia-

tion project. However, as the ISM method matures with increased use and efficiency, the benefits of using it will also improve.

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*Editor's note: For additional details of the laboratory sample processing and analysis, see the Interstate Technology and Regulatory Council publication titled "Technical and Regulatory Guidance, Incremental Sampling Methodology dated February 2012."*

## Increased site closure options spark more opportunities for redeveloping impacted sites

By STEVE HILFIKER and BOB FINGAR

**I**n 2012, the Florida Department of Environmental Protection has emphasized its desire to help facilitate the closure of regulatory files on impacted sites. This is a great opportunity for many impacted-site property owners, lenders and prospective purchasers. The focus on regulatory closure will open opportunities for redevelopment and enable more cost-effective solutions for parties responsible for previously expensive or cumbersome resolutions.

The DEP's Office of General Counsel was on center stage on Sept. 12, when they explained the June 2012 revisions to the Institutional Controls Procedures Guidance document that will ease the process of regulatory closure through risk-based corrective action. The information was presented via webinar to a large audience of Florida environmental professionals, who now have more tools to close the regulatory files on impacted properties.

As outlined in Laurel Lockett's column in the September issue of the *Specifier*, RBCA streamlining has reduced the post-assessment legal documentation process necessary to obtain clearance from lenders, tenants, easement holders and utilities to close discharges with reasonable conditions.

Conditional closure is now easier in most cases. Prior requirements to obtain legal consent from secured lenders, easement holders and others with an interest in the property—who often were simply not interested in the matter—required unnecessary cost and time, and plagued a viable closure option.

For example, the legal department of one Central Florida utility company resisted efforts to consent to RBCA at a site. They simply did not want to deal with it. The matter provided no benefit (or impact) to their operations and busy people tend to not address issues that are not urgent to them. When they did respond, it was hasty and required additional information. We had to try to keep the disinterested utility legal department involved in an outcome that did not benefit them. It took several years.

The new guidance simply requires a demonstration of legal notice if the controls will not materially affect the interest. If the third party has a concern, they have the opportunity to address it. The RBCA process requires an approved assessment, posting legal notices, title research, a survey in many cases, recording fees and some correspondence to obtain approvals, but the parties will usually be motivated to get it done rather than resist the whole idea. This is a good thing.

If streamlined RBCA unfolds as intended, decision-makers will become more comfortable with it. As consultants managing risk so our clients can close files, sell or refinance, it is our duty to educate the lending and real estate community that the 'O' in SRCO stands for 'order.' Site Rehabilitation Completion Orders with Conditions are still orders and represent final agency action on a regulated discharge. It is a viable and reliable means to close regulatory files.

The Low-Scored Site Initiative is another closure option that has helped owners of currently or formerly impacted property in locations where downgradient nearby drinking water wells do not exist. LSSI has increased the rate of regulatory closures and has provided relief to many site owners with low-risk impacts. LSSI enables mitigated risk, allows contamination to remain on sites under controlled and stable conditions, and provides closure to clean sites in the cleanup program that have not had a chance for state-funded assessments in many years.

At RBCA and LSSI sites that have achieved file closure, while contaminants remain on site, sufficient precautions, controls and data have been obtained to protect human health and the environment. In other words, the risks have been mitigated, the liability no longer exists

and the future owners should not be concerned. If they are informed and we do our jobs as consultants to properly document and educate the interested parties, there should be no environmental issues to block economic progress on these sites.

So transactions, redevelopment and refinancing should not be inhibited if a RBCA closure option is successful. To industry representatives, their trade associations and DEP officials involved in making this happen: Well done!

Many sites do not qualify for RBCA because impacts migrate off site beneath the adjacent roadway. Provided that worker safety is protected in a reliable manner, it would be in the best interest of property owners and the state-funded petroleum cleanup program to extend restrictive covenants within public rights of way.

Two aspects of the June 2012 guidance document make this feasible. The process can include off-site impacts if the impacted-site owner agrees to the restrictions and a stipulation of restrictive covenants requires that if impacted areas are disturbed (which could happen if any utility work was done in a right of way), impacted soil and groundwater needs to be properly disposed of in a manner that will not pose a risk to human health or the environment. Cooperation by departments of transportation at such sites would expand site closure options. As long as their interests are managed as part of the closure documentation process, perhaps someday this can become more common.

How many sites exist in Florida with hardships based on one or more of the following scenarios? A responsible owner operating in compliance paid insurance premiums and managed their sites diligently but couldn't afford the upgrades and ended up with impacted property but no insurance. Determinations of coverage were (perhaps wrongly) denied based on differences of opinion regarding the date and source of the release. Annual inspections and/or release detection systems failed at some point to detect an ongoing small quantity release. Sampling was not required during tank closure or upgrade at a PLRIP or PCPP-eligible site (one of the discharge-specific forms of cleanup program eligibility), and impacts unrelated to the eligible discharge that could have been discovered at a time when the owner had insurance were found later and insurance was declined or not available.

Many similar scenarios exist, including owners of non-program eligible sites or sites with a low program cap, and a high copayment or deductible. In each of these cases, an owner is facing substantial liability that they frequently cannot afford. The new closure options should be considered as a form of relief to these property owners.

The most important factor in this discussion is that the property owner maintains the authority to select the best option to resolve the pollution conditions and unique circumstances of their sites. The best form of closure is and always will be to remediate the site to cleanup target levels. Cost-effective remedial advancements such as episodic sparging, bioremediation recirculatory treatment systems and other innovative technologies continue to be developed.

An owner should never be forced to accept a risk-based closure where impacts remain on their site. Provided they have that security, numerous strategies to manage risk and expand options for site closure will help in the restoration and redevelopment of impacted property in Florida. That message needs to be clearly explained to lenders.

Lenders should be encouraged by the developments described in this column. Many of these developments represent an opportunity for banks that understand that loans are secure on sites where the risks are managed. Regulatory file closure, whether it is done through remediation, determinations of No Further Action or conditional closure on deed restricted property, terminates en-

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