Solid Waste News & Notes

A Newsletter from the Solid Waste Unit of the Hazardous Materials and Waste Management Division

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Pilot Project - Coal Ash Burial In Saturated Conditions

According to the EPA, coal fired power plants accounted for 50 percent of electricity generated in the United States in 1997. These plants produce more than 100 million tons of coal combustion by-products annually. When coal is burned in a power plant, it leaves behind ash. Bottom ash falls to the bottom of the boiler, while fly ash is carried upward and collected in bag houses.

An estimated 26 percent of coal ash generated in 1997 was beneficially used. Coal ash has physical and chemical properties that make it useful for construction and industrial materials. Beneficial uses include the use of coal ash in cement and concrete products, structural fill, agricultural applications and waste stabilization, solidification and mining applications.

Project Outline and Objectives

In 1999, Varra Companies submitted a proposal to the Colorado Department of Public Health and Environment (CDPHE) and Weld County to evaluate the potential liabilities of coal ash burial under saturated conditions. The study area is located adjacent to a former gravel quarry near the Saint Vrain Creek in Weld County.

The objectives of the pilot project were to: 1) determine the effects of coal ash burial on local hydrology and water quality; 2) determine the physical characteristics of coal ash in saturated conditions; 3) evaluate the economic feasibility of mine land reclamation using coal ash; 4) determine the leaching characteristics of coal ash with respect to varying water quality conditions; and 5) document local background water quality.

Colorado Department of Public Health and Environment

In preparation for the pilot, extensive laboratory analyses were conducted in order to evaluate coal ash leaching potentials. The leaching test was designed to reflect, to the extent possible, the conditions that would be encountered in the field.

Pilot Implementation

During February of 2002, approximately 400 tons of fly ash were placed into two trenches measuring 10 feet in width, 45 feet in length and approximately 10 feet in depth. A track hoe bucket was used to compact the ash during placement. The fly ash was placed so that the water table intersects the ash. The depth to ground water at the site varies from three to 10 feet below ground surface.

Soil conditions encountered in the trenches consisted of silty clay, and gravel with sand. Bedrock was encountered beneath the gravel deposits at approximately 10 to 11 feet below ground surface. Two feet of native soil cover was

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From the Unit Leader . . .

It's snowing nicely as I write this, and hopefully as you will read this, you will be enjoying May flowers.

On January 15, 2003, the Colorado Board of Health approved revisions to the Regulations Pertaining to Solid Waste Disposal Sites and Facilities. These changes were to Section 1.7.3 and pertain to the landfill tipping fee, Hazardous Substance Response Fund (HSRF). The rule change does three main things:

- Clarifies that the equivalent rate structure (ERS) that is authorized in statute is published
- Establishes allowable expenditures and reporting criteria for those sites performing response actions under the National Priorities List
- Sets record retention requirements for audits of facilities that are subject to the HSRF and for expenditures of monies established under Item 2.

The changes to the regulation became effective on March 30, 2003.

Enforcement and Penalty Policies have been posted to the Division's homepage (www.cdphe.state.co.us). These include enforcement policies for both Hazardous Waste and for Solid Waste and a penalty policy for Solid Waste.

The purposes of the Hazardous Waste Enforcement Response Policy and the Solid Waste Enforcement Policy are to provide a general framework for identifying violations and violators of concern and describing timely

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placed over the ash trenches. The trenches were constructed perpendicular to the direction of ground water flow. The two trenches were separated by roughly 15 feet of undisturbed soil. The separation is intended to illustrate the preferential pathways between and around the less permeable ash.

Monitoring Activities

A total of 12 ground water monitoring wells were installed at the site. Ten of the wells were located to intercept upgradient, downgradient and cross-gradient ground water flow. A monitoring well was installed in each coal ash trench to evaluate ground water quality changes within the trench. In addition to sampling the monitoring wells, a gravel pond, located approximately 75 feet downgradient from the trenches, was also sampled to evaluate if leachable constituents would impact the surface water. Pond and ground water samples were analyzed for 29 elements and seven major ions. The rigorous monitoring network and extensive list of parameters was designed to be protective of the environment and to provide an opportunity to study the objectives of the pilot project.

Surface Water Data

Surface water samples were collected to document water quality of the gravel pond. A total of 13 samples was obtained between May 1999 and December 2002. All samples were collected from the same location. A review of the analytical data shows that all pond samples exceeded the standard for sulfate and selenium. It is believed that the elevated selenium concentrations are naturally occurring, as elevated samples were also obtained prior to ash placement.

Ground Water Data

Background water quality samplings were collected during fall 2001. Eight sampling events occurred for all monitoring wells after the ash was placed in the trenches. CDPHE collected three rounds of split samples from selected wells for all project parameters. Additionally, independent samples for boron were collected from numerous strategic wells on four separate occasions.

All wells not completed within the coal ash trench exceeded the standard for sulfate during all sampling events. In addition, every well installed outside the ash trench exceeded the nitrate standard. With the exception of one well, all wells exceeded the standard for manganese and selenium. Two downgradient wells exceeded the

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From the Unit Leader . . .

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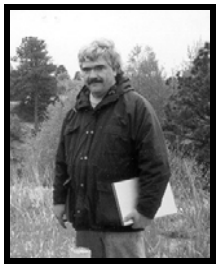
and appropriate enforcement responses to non-compliance.

The purposes of the Solid Waste penalty policy are to ensure that penalties sought pursuant to the Colorado Solid Waste Disposal Sites and Facilities Act are calculated in a uniform and consistent manner, while allowing for reasonable flexibility and discretion.

- Solid waste volume information is now available on the Division homepage. The Division recently posted solid waste volumes by calendar year from 1995 through 2002. The data include waste volumes by cubic yard and tonnage conversions for each facility reporting, along with a summary per county and a state summary. The Colorado data is for all waste received at each solid waste facility, not just municipal solid waste. These data are among the most frequent information requests we receive. The data will be updated annually each April.
- The Division has posted a guidance document concerning the "*One's Own Waste"* exemption to a Certificate of Designation on its homepage.
- A work session regarding the proposed recycling regulations and a re-draft of the scrap tire section of the regulations was held on February 13, 2003. There was a turnout of approximately 30 people who presented thought provoking information to be considered. We received written comments on the draft (see our homepage for the current version) though March 14, 2003. Our plan is to now to rework the draft based on input received.

IN MEMORIUM….



Ron Forlina, environmental protection specialist with the Solid Waste Unit, passed away on Sunday, April 13, 2003, of a heart attack. Ron was only 44, and had been with the Division since 1992. He will be truly missed.

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agricultural standard for boron during two sampling events. The average pH of ground water in the non-ash wells was 7.34.

Samples obtained from the ash wells exceeded water quality standards for boron, manganese, sulfate, nitrate, selenium, fluoride and vanadium. It is of interest to note that background concentrations for boron, sulfate, nitrate, manganese and selenium were in excess of primary and secondary water quality standards. Significant increases in molybdenum, selenium and vanadium were observed in the ash wells; however, concentrations decreased to background levels within two months of ash placement. The mean pH of ground water within the trench was 9.8.

Summary

Although CDPHE staff is currently evaluating the data, and conclusions are only preliminary, some interesting observations can be made.

- The coal ash trench acted as a nearly impermeable barrier and diverted groundwater between and around the coal ash trenches.
- Boron is the most mobile and persistent element observed in the field study, as well as in the column test.
- Ground water samples collected from the ash trenches were 10°F warmer than samples obtained from the surrounding wells up to one month after ash placement.
- Site-specific column studies closely approximated field scale results.
- The concentration differences for several elements in each ash trench were, in some cases, different by orders of magnitude. However, the two trenches did exhibit similar trends in water quality.
- In general, ground water samples from the west ash trench showed higher concentrations of aluminum, boron, molybdenum, sodium and pH, while significant decreases in calcium, magnesium and manganese were measured from east trench.
- The east trench appears to have reached equilibrium (stability in elemental concentrations) more quickly than the west trench.

Several of the above observations were anticipated, based on the results of the column tests, but others were surprising and will require further evaluation .

A more detailed description of this project, including maps and data tables, should be available on the Division's web site (www.cdphe.state.co.us/hm) in the near future. We will announce that in this newsletter.

—Roger Doak, Solid Waste Unit
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One's Own Waste on One's Own Property- Now I Wanna Sell

One's own waste on one's own property. An interesting phrase, and one I've seen property owners hold up to shield them much as they use crosses to ward off Dracula in the movies. "It's okay. It's my garbage; it's my land." Maybe yes, maybe no. Monica Sheets, formerly of the Colorado Attorney General's Office, wrote an interesting article on this subject on Page 6 of the December 2000 issue of *Solid Waste News & Notes* (http://www.cdphe.state.co.us/hm/swnn1200.pdf).

One thing Monica mentioned, but didn't elaborate on, was what happens during a property transfer if you've disposed of your own waste on your own property. Or in a broader context, what if you have other environmental contamination, such as a surface spill or releases from leaky drums or tanks? Simple – you have to inform potential buyers that the property has environmental contamination as part of the disclosure process.

According to the Consumer Protection Division of the State Attorney General's Office, Colorado courts have made it pretty clear that the Consumer Protection Act [Title 6 Article 1 Part 105(u), Deceptive Trade Practices] applies to the sale of real property. Environmental contamination is certainly a material fact that, if known, should be disclosed by the seller of the property. This is true regardless of whether the property is residential or commercial, and whether the property is developed or open land. Failure to disclose this information, or misrepresentations about the existence of contamination or other material factor concerning the property, may be cause for action under the Consumer Protection Act or other general common law fraud provisions.

The Colorado Real Estate Commission has Sellers Property Disclosure forms for residential property [LC18-1-03] and vacant land [LC38-1-03] on its website at http://www.dora.state.co.us/real-estate/contracts/CONTRACTSII.htm. At this time, they don't have an equivalent form for commercial property transactions. That doesn't mean you don't have to disclose this information to potential buyers of commercial land, however. Contact your real estate agent or broker to assist you in determining your disclosure requirements.■

—Kathy Hotovec, Compliance Technical Assistant
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STORMWATER PERMITTING FOR SMALL MUNICIPALITIES

There is a new environmental permitting requirement that will affect many public agencies. Beginning on March 10, 2003, all municipalities were required to apply for State permit coverage for certain construction projects and industrial activities. The State permit(s) will authorize the agency to discharge stormwater from these sites/activities to waters of the State.

The Colorado Water Quality Control Division (part of the CDPHE) administers a program that regulates discharges of stormwater to State waters. The regulation is meant to reduce the amount of pollutants entering streams, lakes and rivers as a result of runoff from industrial areas, construction sites and urban areas. The regulation is administered by the use of discharge permits.

Industrial facilities and construction sites that discharge stormwater to surface waters must be covered by a State permit. The industries covered by the program include most manufacturers, mining, transportation facilities, power plants, landfills, wastewater treatment plants, and auto recyclers.

Phase I of the stormwater program began on October 1, 1992. At that time, stormwater discharges from certain construction sites and industrial activities owned or operated by municipalities (including cities, counties, special districts, etc.) with a population of less than 100,000 people were granted a temporary exemption from the need for stormwater permits. (Exceptions to this moratorium included discharges from airports, power plants and uncontrolled sanitary landfills. An uncontrolled sanitary landfill is a landfill or open dump, whether in operation or closed, that does not satisfy the run-on/runoff requirements established pursuant to the solid waste laws. Facilities not subject to the moratorium have required permit coverage since October 1992.)

Most small municipalities have been under this exemption for the past 10 years. With the advent of Phase II, this temporary exemption expired on **March 10, 2003**.

Typical municipally-owned industrial facilities and construction projects that will require State permit coverage include construction projects (greater than one acre, or part of a larger common plan of development), wastewater treatment plants (with a design flow of 1.0 mgd or more), sand and gravel pits, borrow pits, waste transfer stations, recycling centers and landfills that accept any industrial waste.

For construction at landfills, a separate construction stormwater permit is required during the initial development of the landfill. Expansion of an existing landfill is considered part of normal operations, and so does not require a separate construction stormwater permit.

The permit may be issued to any party willing to take responsibility for the quality of the stormwater runoff from the site, including the owner, contractor or developer. The permit can also be applied for by the municipality and then transferred to a contractor at a later time.

In general, the permit requirements include development and implementation of a Stormwater Management Plan (SWMP) to address potential pollutant sources at the facility/site, at least two inspections of stormwater controls per year, annual monitoring and annual reports. Applications and guidance on preparing a SWMP are available on the Division's webpage, at http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html. You may also call (303)692-3517 and leave a message requesting that the forms be mailed to you, or email us at cdphe.wqstorm@state.co.us. ■

Dischargers of stormwater associated with industrial activity who do not obtain coverage under the appropriate Colorado general permit will be in violation of the Federal Clean Water Act and the Colorado Water Quality Control Act, 25-8-101. Civil penalties for violations of the Act or CDPS permit requirements may be up to $10,000 per day.

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Hazardous Waste Fees

On February 18, 2003 the Colorado Hazardous Waste Commission passed amendments to the hazardous waste fees in Colorado that increase the existing fees and add some new fees. It has been three years since the hazardous waste fees were last amended. The reason for the increase is to enable the Department to maintain an adequate level of resources to continue to operate a hazardous waste program that meets criteria established by the U.S. EPA. The EPA has authorized the Department to implement and enforce the hazardous waste rules in Colorado in lieu of the federal government. The fee structure affects some hazardous waste generators and all Treatment, Storage, and Disposal (TSD) facilities, including those in post-closure and those doing clean up under the hazardous waste program requirements. You may access the specific information on the new fee structure on our homepage in the Hazardous Waste Regulations, Annual Fees Schedule Table, and Section 100.31. If you have questions regarding the fee structure and your business, please contact our public assistance line at 303/692-3322 or through 1-888/569-1831.

THE LIFE AND TIMES . . . STAFF BIOGRAPHIES
Ms. Virginia Duffy

For those readers expecting to open this issue of the *Solid Waste News and Notes* and learn about the "leader" of this gang of inspectors, I'm sorry to report that he has eluded this author once again! That does not mean, however, that this issue will go without a staff member profile – no indeed. In fact, biography #10 is another relative newcomer to the Solid Waste unit, and recent Colorado transplant – yep, the chain of natives has been broken.

Virginia Duffy was born and raised in Chicago, along with her 10 brothers and sisters. Ninth in the brood, Virginia knew at an early age that she wanted to work for the EPA. She recalls being in the seventh grade, in 1974, when environmental laws were still new and environmental consciousness was just emerging. Following this dream, Virginia attended the University of Wisconsin-Stevens Point, one of the few higher education institutions offering courses focused on natural resources and soil science. In 1985, bachelors degree in hand, Virginia headed north to Rockford, Illinois, and began work for Steverson Dells – a Forest Preserve System – as an agricultural interpreter with the Environmental Education Center on the Preserve's agricultural farm. A degree in soil science was a definite plus, as this position involved developing and leading instructional programs for kids' groups and city folks, as a way of introducing them to nature.

After two years with the Forest Preserve, Virginia took some time "off" to work on a farm before beginning work as a crop scout and soil tester for local Rockford area farmers. This position kept her very busy during the growing season, walking farm fields, noting the existence of any pests or other indications of failing crop health, and conducting chemical screens on collected soil samples. This information became part of recommendations made to the farming community as to the best method(s) for addressing any identified disease or pestilence concerns.

It was not until October of 1990 that Virginia's seventh grade dream became reality – a job with the Illinois EPA! Headquartered in Springfield, the Illinois EPA has eight field offices, with one, luckily for her, located in Rockford. Work began as a field

inspector for the Land Pollution Division, Leaking Underground Storage Tank Unit. For six years, Virginia reviewed Corrective Action Plans, investigated complaints, assisted in criminal enforcements and conducted on-site sampling. This term was followed by a four-year stint with the Waste Tire Program, described by Virginia as one of the nation's best, both in operation and funding.

Finally, in March of 2000, Virginia heeded the call for change – sold her house, packed her car and headed to Colorado. In answering the question of "Why Colorado?" her response was simple – she loves outdoor activities, a healthy lifestyle and, of course, nature. So, where better than Colorful Colorado! Virginia's first stop was Boulder where she worked for a brief time for the Snow and Ice Data Center, gathering and supplying information from and to individuals around the world. During her stay in Boulder, she was also applying for jobs in Denver, which ultimately led to an interview with Glenn and her current position as part of the SW Unit, beginning in February of 2001.

Virginia had some mighty big steel-toed-boots to fill, those of recently re-retired Pete Laux. Pete stuck around for two months to train and get her familiar with her new responsibilities, namely, Adams, Denver,

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LIFE AND TIMES

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Arapahoe and Douglas Counties, and the Stapleton clean-up project. Virginia currently works part time, and therefore, Adams County and Stapleton have moved from her desk to Pat Martinek's – also a part time staff member and previous biography sufferer (*December 2000, Volume 3, No. 2)*. Virginia still aims to make a difference in the environment, and it is this goal that continues to drive her in her daily work responsibilities.

More at ease with her role as part of the SW Unit, Virginia is now able to start enjoying the Colorado great outdoors and not simply regulating it. Hiking, rock climbing, biking and gardening are just a few of her outdoor interests, and when the weather chases her indoors, yoga, weight lifting and a spiritually uplifting book are her pastimes of choice – that and planning ahead to her next long-term goal of returning to a life on the farm.

Virginia's response to the question of "what one thing best describes you?"– Seeker of Balance. Finding a healthy balance of work and play; fun *at* work and fun *with* work. An excellent goal for someone with a true love of the environment and a childhood dream of returning part of the world to its own natural balance. Welcome to Colorado, Virginia – stick around for awhile!

—Brenda Lujan, Contributing Columnist Extended Family and former Solid Waste unit staff member

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