ONE OF IESI'S MANY CUSTOM DESIGNED AND CONSTRUCTED REMEDIATION TRAILERS

Innovative Engineering Solutions, Inc.

February 2015 Newsletter

IN THIS ISSUE

IESI- Interesting News You Can Use!

Welcome to the Innovative Engineering Solutions, Inc. (IESI) newsletter. Our newsletters present interesting and relevant information for environmental and energy services customers and practitioners. In each newsletter, we provide at least one article related to renewable energy, site remediation and energy efficiency.

5 Renewable Energy (Solar) Facts

1. A recent World Resource Inst. report indicated that solar energy is 50 times more efficient at capturing the sun's energy than biofuels!
2. The largest solar power plant in the world is located in the Mojave Desert in California.
3. Every hour the sun beams onto Earth more than enough energy to satisfy global energy needs for 27 years. We just need to capture it!
4. All the energy in the earth's reserves of coal, oil, and natural gas equal just 30 days of energy produced by the sun.
5. IESI has installed solar panels on buildings, trailers, open space, landfills and parking lots.

For more information contact Rich McCarthy, CEM RMcCarthy@IESIonline.com

5 Site Remediation Tips

1. Advances in in-situ stabilization offer more option for treating source zone NAPL.
2. Groundwater flow is laminar and over 90% of contaminant transport is through advection, not diffusion.
3. Metals solubility in groundwater is highly pH and redox state dependent.
4. Almost any electron donor is suitable for transforming chromium 6 to chromium 3 under reducing conditions.
5. IESI has successfully implemented bioremediation at over 40 full scale sites including a 50-acre chlorinated VOC plume and multiple sites containing DNAPL.

For more information contact Sami Fam, Ph.D., P.E., LSP: Sami@IESIonline.com

In This Issue

Matai Falls-New Zealand-Left- Franz Joseph Glacier New Zealand- Right- Courtesy of Mike Gaudette;

IESI Turns 20 (1995-2015)!

IESI was started by Sami Fam, Ph.D., P.E., L.S.P. in April 1995 as a one person company. Joe Higgins, P.E., L.S.P. joined IESI as a partner in 1998. We have had significant growth in number of employees (28 in 2013) and total revenues (25 million in 2014). The company owes its success to its talented and loyal employees. It's been a great ride on the team bus!

IESI has always been a leader in implementation of innovative remediation technologies with special emphasis in bioremediation. We are likely the only firm in the US to bioremediate a dilute 50-acre chlorinated VOC plume. IESI has also bioremediated multiple project sites that contained measurable DNAPL. Also a feat accomplished by few other consultants.

Our diversification into energy services in 2008 has been instrumental to our continued growth and success. IESI offers services in solar design & construction of small and utility scale solar fields. IESI also performs operation & maintenance on solar arrays. We also do work in energy efficiency and sustainability planning.

For more information contact Sami Fam, Ph.D., P.E., L.S.P.: Sami@IESIonline.com

5 Health Tips

Below are 5 super foods for healthy eating. How is this related to energy and environment? Good question. When you feel better, you make better decisions.

- Oat meal;
- Lean pork;
- Brown rice;
- Pomegranate;
- Acai berries!

Solar Project O & M!

Operation and maintenance of solar arrays is not glamorous work but it is very important! The goal of the maintenance program is to maintain optimal performance by maximizing power generation and minimizing system down time that may be due to equipment malfunction. Telemetry allows the simplest way to keep an eye on energy production and to compare the actual vs. projected generated energy. Subsequently one must make every effort to meet or exceed design energy production expectations. Maintenance tasks include equipment repair, periodic cleaning, grounds maintenance, evaluation of network voltage and frequency, evaluation of generation trends and performance of preventative maintenance. Yes, it is not glamorous work, but if you don't do it, the potential cost savings by installing solar power would disappear!

IESI's 8.6 MW project in Franklin MA.

Adaptive Remedial Design

Don't you wish the feasibility design (FS) process made scientific sense- instead of just comparing a bunch of alternatives that may or may not work? The reality is that there is generally only one remedy that is scientifically defensible but the exact implementation strategy or procedure may not be immediately known.

With IESI's adaptive design approach, the selected remedial alternative is considered an "adaptive design", wherein certain components will be initially installed, followed by a performance evaluation and subsequent expansion, as required. The expansion can incorporate other technologies and/or approaches. The incremental remedy installation allows for testing and evaluating the remedy prior to expansion so as to allow for maximum remedy performance upon full installation.

For more information contact Sami Fam, Ph.D., P.E., L.S.P.: Sami@IESIonline.com

IESI has designed and constructed dozens of Remediation system trailers across the US

Above are photos of the interior of Remediation system trailers.

Hospital Energy savings

A 2010 National Renewable Energy Laboratory Report (report # NREL/TP-550-47867) report had lots of encouraging news for hospital energy conservation. The modeling results indicate that approximately 50% energy savings can be achieved in large hospitals across all U.S. climate zones. Energy savings were smallest in the humid climates and in the extremely cold climates. The highest energy savings were achieved in marine climates, with relatively high energy savings achieved in the dry climates. In general, for each climate type, savings were seen to decrease as the climate became progressively colder. The following energy design measures were used to attain 50% energy savings:

- Reduced lighting power densities.
- Day lighting sensors in applicable perimeter zones.

- Occupancy sensors in applicable zones.
- More insulative envelope (opaque exterior and fenestration).
- Overhangs on south-facing fenestrations.
- A multizone variable air volume dedicated outdoor air system with zone-level water-to air heat pumps. The heat pumps shared a common condenser loop whose temperature was maintained through the use of a chiller and boiler.
- High-efficiency chillers, boilers, and water heaters.
- Demand controlled ventilation.
- More efficient pumps.
- Reduced infiltration through tighter envelope construction.
- Integration of subsystems to achieve whole-building performance. Table ES-2 summarizes the energy design measures used to attain 50% energy savings.

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About IESI

Innovative Engineering Solutions, Inc., is a leading provider of environmental consulting services for the remediation of contaminated properties - including chemical facilities and manufactured gas plants.

IESI provides the consistent, high quality, responsive, and low-cost environmental services associated with smaller firms, but with the depth and expertise of larger traditional environmental consulting firms.

IESI offers a wide variety of remediation services to its clients, which can generally be grouped into four categories: Bioremediation, Hydrocarbon Cleanup, Regulatory Compliance, and Manufactured Gas Plant Cleanup. Please explore the rest of this site or contact one of our principals for further information. The combination of our technical, design, laboratory, and most importantly practical common sense and experience, makes us the best remediation firm in the United States

IESI Energy Services provide customers with comprehensive solutions to energy efficiency and renewable energy concerns. Our competencies include the expertise required to develop, engineer, design, permit, procure, build, project manage and commission energy efficiency projects from the audit stage through project completion. Our projects take advantage of all available utility incentives. Our sustainable technology team provides an integrated sustainable design process, working with all stakeholders, to deliver successful renewable and sustainable energy projects including solar, biogas, geothermal, biomass and landfill-gas-to-energy technologies. Through June 2014, IESI has constructed over 30 MW of solar projects and has an additional 15 MW under contract. In 2013, IESI installed approximately 6% of all solar panels in Massachusetts. We work with our customers in taking a creative financing approach to projects and can incorporate leasing, debt financing, asset-based lending and power purchase agreements as well as other financing methods into projects.

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Photo of a solar powered remediation trailer for 1,4 dioxane.

For More Information:

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