Redeveloping a Superfund Landfill

Landfill Gas-to-Diesel/Wax Project – Mosley Road Landfill/East Oak Landfill

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Sometimes When You Travel Down a Well Beaten Path You Can Make New Discovery's

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SO HOW DID ALL THIS START?

A little history of the facility.

- Located in Northeast Oklahoma City.
- East Oak RDF was originally permitted as the Mosley Road Landfill in 1973 by the OSDH.
- Was purchased by Waste Management in 1982.
- Expanded and changed name to the East Oak Recycling and Disposal Facility.

CHALLENGES ALONG THE WAY

- In 1976 the OSDH authorized the landfill to accept industrial waste from the Royal Hardage Landfill in Criner, OK.
- Testing later indicated contamination within the upper alluvial groundwater
- In 1988 the EPA proposed the site for inclusion on the NPL
- In 1992 the EPA selected the remedial action for the site
- In 2014 site was removed from the NPL

Engineering Controls at Mosley Road Superfund Site

- Capping Waste
- Landfill Gas Collection System
- Groundwater, Soil and Air Monitoring
- Institutional Controls

But what really set this project apart from any other Superfund project?

Tried to expand on EPA plan to become Sustainable

Key - Continued Use as a Landfill

Same Plan, Different Result

Mosley Road Landfill was the first Superfund landfill that continued operation as a landfill. Typically a Superfund site is closed and even more typically never developed upon once clean.

Typical closure plans include trails and/or wildlife habitats.

Key - Landfill Gas Collection System

What else can we do other than destroy Greenhouse Gas

- Initially engineered to destroy Greenhouse Gas
- Ended up being the solution to groundwater contamination
- With new technologies made the site a renewable energy resource

As part of the Superfund Remediation we stumbled across an old technology

- Approached by a Gas-to-Liquid company in 2004 with an opportunity
- State of Oklahoma awarded WM a Grant to develop renewable technology
- Initial project using Fischer-Tropsch reactor was constructed in 2005
- Was slow to develop
- Eventually the project was purchased by Waste Management in 2007 and small scale unit began operating
- Project was further developed by Waste Management's Organic Growth Group
- In 2014 the project was developed into GTL Joint Venture

Finally – Some Success

- In 2010 the first large scale demonstration unit was constructed
- The demonstration unit has accumulated more than 10,000 hours of successful operation
- Gained recognition as a potential renewable resource
- Gained interest from other groups

ENVIA Facility – East Oak Landfill

Sustainable Products From A Superfund Site

You've got to be kidding!

- Using a WWII technology, landfill gas was used to create No-Sulfur Diesel and Wax
- WM constructed a demonstration unit and got approval from the EPA for use in engines
- Waste Management has joined a Joint Venture Group to construct and operate a full scale unit

GTL Joint Venture

New Company – ENVIA

- This company consists of 4 contributing companies
- Waste Management will supply the landfill gas and, in certain cases, project sites.
- Ventech will construct the JV's projects.
- Velocys will provide the Fischer-Tropsch reactor and catalyst
- NRG will provide clean energy development and natural gas expertise.

What will the Unit Produce?

The JV's first project will be a dual-fuel GTL unit that will produce clean diesel, synthetic waxes, and naphtha from landfill gas and co-fed natural gas

Opportunities!

The opportunity is to take landfill gas, co-fed with natural gas, and create clean-burning, drop-in diesel, high value synthetic waxes, and naphtha. Diesel products produced from landfill gas is also eligible for Renewable Identification Number credits under the Renewable Fuel Standards.

What are the challenges we see ahead for moving this forward?

"Waste Management has formed this joint venture with partners whose specific expertise mitigates, as far as possible, the main challenges inherent in this type of project. We believe the combination of Ventech's engineering expertise, Velocys' technology, and NRG's experience when developing large projects involving natural gas will complement Waste Management's capabilities in the sector."

David Murphy - WM

Lessons That Were Learned

- Re-use of Superfund sites can be more than wildlife areas and parks
- Sometimes continued use of a site makes sense
- Landfill gas collection technology has advanced
- Landfill gas can be Sustainable

Key Factor in Success!

Communication between EPA, ODEQ, City of Oklahoma City and Local Citizens!

Conclusion

- This project used the spirit of the Brownfield initiatives to turn a Superfund site into a Renewable/Sustainable facility
- Although the primary purpose of the Superfund program is to identify and ultimately clean up hazardous waste sites, with a little creativity, these sites can become more than wildlife habitats or parks
- Believe it or not, Landfill technology has advanced and allows us to better protect the environment and create useful properties