

GREEN FOUNDRY CASE STUDIES

WASTE MANAGEMENT & BENEFICIAL REUSE

Foundry By-Product Beneficial Reuse



Description

In 2014, approximately 16,800 tons of non-hazardous industrial process wastes were generated by a ductile iron foundry and moved to its on-site state permitted industrial landfill. Of these waste by-products, approximately 40% (6,782 tons) consisted of dry sand/cement, while another 30% (5,061 tons) consisted of cupola iron slag. In the absence of state guidance for beneficial reuse of industrial by-products, the facility developed its own plan in conjunction with the regional regulator. Under the approval and authorization of the regional regulator, the facility implemented an initial 10-year written agreement with a partnering construction company to beneficially reuse the cupola iron slag and dry sand/cement waste by-product as engineered fill in local construction projects.

Environmental Benefits

In the second half of 2015, the facility sent approximately 2,590 tons, or 2,750 cubic yards of cupola iron slag and dry sand/cement for beneficial reuse as engineered fill. This equates to a 14% reduction in the total amount of waste diverted from the facility's landfill in 2015. It is estimated that this single diversion event extended the life of the on-site landfill by approximately one month. The beneficial reuse of foundry materials is expected to continue over the remaining years per the written agreement and will continue to divert otherwise unusable material from the landfill. In addition, the close proximity of the metalcasting facility to the construction company's operations has reduced the total round trip mileage required by the construction company to transport its engineered fill to construction sites.

Cost & Savings

- Landfill occupancy conserved from implementation of the beneficial reuse plan was approximately 2,592 tons (2,750 cubic yards) in 2015. This extended landfill availability is valued at approximately \$250,000, assuming the onsite permitted landfill was not available, and the by-product had to be shipped offsite to a permitted facility.
- Fuel consumption was reduced due to shorter transport distances between the metalcasting facility and the construction site.
- The project cost was zero dollars to implement! The construction company used their own crushing and blending equipment to develop the engineered fill on-site prior to transport to the construction site.

Other Benefits

- Assuming the construction company continues to take all the material produced, the diversion of foundry by-products from the onsite landfill is anticipated to extend the life of the onsite landfill by approximately 10 years.

Applicability

- This diversion of landfill waste could be implemented at other facilities depending on production operations and waste management practices.



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