SWANA 2014 Landfill Management Excellence Award

Olinda Alpha Landfill

Orange County, California

OC Waste & Recycling
300 N. Flower Street, Suite 400
Santa Ana, CA  92703
Executive Summary

Olinda Alpha Landfill is a modern landfill using contemporary technology and innovation to deliver cost effective waste disposal services to over 3,100,000 residents of Orange County. The second largest landfill in California and home to the third largest LFG-to-electricity conversion facility in the US, Olinda Alpha Landfill is financially sound, a proud steward of the environment and public trust, makes employee and customer safety its top priority, and is a good neighbor to its surrounding urban community.

The landfill is operated by the County of Orange OC Waste & Recycling department. Besides operating the county's three active regional landfills, the department has invested more than $23,000,000 in support of local waste reduction and diversion programs. Through sound strategic planning, OC Waste & Recycling and Olinda Alpha Landfill are taking the lead in evaluating programs, projects, and partnerships to keep up with rapid changes in the landfill and waste management business.

1. General Information

The Olinda Alpha Landfill was opened in 1960 to meet the solid waste disposal needs of north Orange County, California. Olinda Alpha Landfill is owned by the County of Orange and operated by the OC Waste & Recycling department. Located in southern California, Orange County is an urban area with over 3,100,000 residents, making it the second largest county in California and the fifth largest county in the nation in terms of population. Olinda Alpha Landfill is the second largest landfill in California. Its permitted closure date is 2021, but it has remaining capacity through 2030.
Located in two adjacent canyons east of the City of Brea, Olinda Alpha Landfill is approximately 565 acres with 453 acres permitted for refuse disposal. The landfill is permitted to accept a maximum of 8,000 tons per day of MSW. Olinda Alpha Landfill received over 1,634,000 tons of waste in 2013, a daily average of 5,322 tons and served an average of 357 vehicles a day.

Olinda Alpha Landfill is home to the nation’s third largest LFG-to-electricity conversion facility. Through a public-private partnership, this multiple award winning, $130 million facility generates 32.5 megawatts of clean energy, enough electricity to power over 22,000 homes.

With its urban setting, Olinda Alpha Landfill practices a pro-active “good neighbor” policy with its surrounding neighbors, implementing practices to reduce dust, noise, litter, odor, vectors, and traffic on city streets. Trained raptors are utilized to deter airborne scavengers, while grazing goats are used for vegetation removal on steep, unstable slopes.

Olinda Alpha Landfill is a fully-compliant, modern landfill. The employees of Olinda Alpha Landfill are proud of their enterprise and the hard work they put in to keep their landfill operating safely and at high efficiency.

2. Siting, Design & Construction

Landfill Siting
The Olinda Alpha Landfill was opened in 1960 to meet the solid waste disposal needs of north Orange County, California. Located in southern California, Orange County is an urban area with over 3,100,000 residents, making it the second largest county in California and the fifth largest county in the nation in terms of population.

Situated in two adjacent canyons east of the City of Brea, Olinda Alpha Landfill is approximately 565 acres with 453 acres permitted for refuse disposal, containing capacity for 148,800,000 cubic yards of waste. Its permitted closure date is 2021, but it has remaining capacity through 2030. The end-use of the landfill property is planned to be an open-space, passive use regional park. Currently, Olinda Alpha Landfill has as neighbors oil drilling operations, undeveloped wilderness areas, and some housing developments.

Geology and Soils
Sedimentary rocks consisting mostly of sandstone, conglomerate, siltstone, claystone, and shale make up the site geology. The bedrock underlying the landfill footprint is not regarded to be a water-bearing resource due to the low hydraulic conductivity and poor water quality. No beneficial uses for the groundwater have been identified. An area fault zone acts as a hydrogeologic barrier, effectively isolating the landfill from adjacent aquifers. The fault, along with the poor aquifer conditions, create a setting where impacts from the landfill pose little to no risk to the beneficial uses of aquifers located further to the south.

Landfill Design
The Olinda Alpha Landfill is not equipped with a prescriptive composite liner as required by Title 27 of the California Code of Regulations and Part 258 of 40 Code of Federal Regulations. Instead, the naturally occurring hydrogeological conditions discussed above, in conjunction with leachate and groundwater extraction and treatment systems ensures protection of the groundwater beneath the site.

Olinda Alpha Landfill utilizes a canyon-fill, cut-and-cover method of solid waste disposal. Waste prism areas are lined with compacted low-permeability clay. Intermediate slopes are hydroseeded with native grasses to prevent erosion and mitigate visual scarring.

Leachate Management
A subdrain system transports leachate out of the fill area via gravity-fed pipes to above-ground storage tanks for proper treatment and disposal off-site. In 2013, 6,171 gallons of leachate was collected and disposed.
Groundwater Collection and Monitoring
A groundwater extraction system was designed as a hydraulic barrier to prevent off-site migration of impacted groundwater. Groundwater extraction wells are each equipped with a pneumatic submersible pump used to extract groundwater. Groundwater quality is monitored through 49 groundwater monitoring wells located up- and down-gradient along the perimeter of the landfill property. Extracted groundwater is pumped into a tank where the groundwater is used on-site for dust suppression.

3. Environmental Controls and Monitoring
The design for Olinda Alpha Landfill includes a number of environmental protection and control elements in compliance with applicable local, state and federal regulations. These elements include compliance with surface and groundwater monitoring and protection requirements, and air and landfill gas monitoring and protection requirements. Olinda Alpha Landfill’s environmental controls include:

Groundwater Protection Systems
Groundwater protection is accomplished by prohibiting disposal of liquid wastes in the landfill, effective drainage management which diverts surface water flows away from the landfill, placement of subdrain and leachate collection systems on the slope and bottom of the landfill, and placement of daily, intermediate and final cover. Intermediate cover consists of 12 inches of soil, graded to facilitate runoff drainage. Intermediate slopes are sometimes hydroseeded with native grasses to prevent erosion and for aesthetic appeal.

Olinda Alpha Landfill monitors groundwater quality through 49 monitoring wells. Samples are collected quarterly and analyzed by an independent laboratory for metals, VOCs, inorganic compounds, pH levels, and conductivity. Twice a year landfill staff collects samples of storm water as it leaves the landfill site. An independent laboratory analyzes the storm water for metals, inorganic compounds, pH levels, and conductivity. All monitoring data are reported to Regional Water Quality Control Board. The landfill has no violations or areas of concern from the Regional Water Quality Control Board.

Spill Response Plan
Operations staff is trained in responding to hazardous and non-hazardous spills to prevent or minimize environmental impacts. They also receive OSHA-approved 40-hour Hazardous Waste Operations and Emergency Response training and annual 8-hour refreshers.

Drainage and Erosion Control
The primary surface water drainage control system for the Olinda Alpha Landfill is designed to accommodate a 100-year, 24-hour storm event. The drainage system is comprised of drainage ditches and channels, various down-drain structures, and concrete lined desilting basins. Down drains consisting of corrugated metal flumes or corrugated steel pipes are installed to divert runoff from the deck areas as well as to transport collected runoff from the drainage benches. V-shaped drainage channels are generally maintained along the benches to collect runoff from the slope areas.

The final deck area is designed and will be constructed to a minimum slope of three percent to promote proper drainage and to reduce the impacts of future settlement at closure. Special attention is paid to all deck area grading and interim and final drainage control features prior to the rainy season. Erosion rills formed during storm events on the refuse deck and slope areas are repaired as soon as equipment can access these areas.

For erosion control, processed green material (PGM) is spread to achieve a thickness of approximately 18 inches with a bulldozer to provide uniform coverage. The PGM is then compacted using heavy equipment to an average of 12 inches.

Other erosion control Best Management Practices include hydro-seeding of excavation slopes with native grasses, placement of fiber mats on soil slope, erosion check devices, and use of silt fences and sand bags.
4. Regulatory Compliance

Olinda Alpha Landfill is one of three active landfills in Orange County. All three landfills in the county are owned by the County of Orange and operated by OC Waste & Recycling. Olinda Alpha Landfill is a Class III solid waste disposal site permitted to receive non-hazardous municipal solid waste consistent with the State Minimum Standards for Solid Waste Handling and Disposal. OC Waste & Recycling operates four household hazardous waste collection centers throughout the county. These collection centers accept household hazardous waste free-of-charge for county residents.

While all three landfills in Orange County are owned and operated by the County of Orange, trash collection, processing, and hauling are handled by private enterprises. There are numerous privately owned transfer stations, material recovery facilities, greenwaste processors, and recycling centers serving Orange County’s residents. OC Waste & Recycling has extensive community education programs to promote recycling and increase landfill diversion.

Olinda Alpha Landfill’s principal regulators include the California Department of Resources Recycling and Recovery (CalRecycle) through its Local Enforcement Agency; the California Regional Water Quality Control Board – Santa Ana Region; and the South Coast Air Quality Management District. The landfill is subject to random monthly inspections from regulators.

Olinda Alpha Landfill operates under a state issued Solid Waste Facility Permit. Additional permits cover air and water quality, and biological resources. Olinda Alpha Landfill fully complies with all federal, state and local regulations governing the design and operation of a Class III landfill.

The landfill’s operations superintendent and supervisors inspect the entire landfill every day to ensure regulatory compliance. All landfill employees are instructed in regulatory compliance.
During the past three years, Olinda Alpha Landfill has received, and addressed, three regulatory findings:

- May 5, 2011 – Coyotes dug up buried trash in the night and removed the Alternative Daily Cover material (tarps and mulch). New tarps were received that day and replaced the worn tarps. Additional mulch was applied.
- August 9, 2011 – LFG perimeter probes exceeded 5% methane minimum standard. The wellfield pressure was adjusted and all probes were in compliance by the September 7, 2011 monthly inspection.
- October 5, 2012 – A Joint Technical Document amendment was not submitted by the deadline. The amendment was submitted the next day on October 6, 2012.

As diligent stewards of the environment and the public’s trust, Olinda Alpha Landfill strives for full regulatory compliance. If an area of concern appears, landfill staff takes immediate action to resolve the issue.

Displayed below are the cover pages of Olinda Alpha Landfill’s major regulatory permits.
5. Planning, Operations and Financial Management

Planning
Orange County, California is served by three active landfills. All three landfills are owned by the County of Orange and operated by the OC Waste & Recycling department. Olinda Alpha Landfill is the oldest of the three landfills, opening in 1960 with a permitted closure date of 2021. OC Waste & Recycling is responsible for ensuring that County waste is disposed of in a manner that protects public health, safety and the environment. In 2002, OC Waste & Recycling prepared a 40-year strategic plan that laid out strategies to meet these responsibilities well into the future, while maximizing landfill capacity and sustaining the economic viability of the County's landfill system. Landfill capacity will be maximized through operational efficiencies, vertical and horizontal expansions of existing landfills, promoting diversion and recycling, and investigating feasible alternative technologies and approaches to landfill operations.

Through mandatory recycling programs in California and the economic downturn, Olinda Alpha Landfill has seen a 24% decrease in landfill tonnage since 2005. While landfill diversion does extend the life of a landfill, it also decreases landfill revenue. Additionally, California passed AB 341 in 2012 that sets a state-wide landfill diversion goal of 75%, potentially reducing landfill revenue even more. OC Waste & Recycling has addressed diminishing revenue by aligning major expenses with cash flow forecasts, reducing the size of its heavy equipment fleet, implementing more efficient landfill operations techniques, and accepting some out-of-county waste for disposal.

When Olinda Alpha Landfill closes the county will be served by the two remaining landfills, Frank R. Bowerman Landfill and Prima Deshecha Landfill, through a current permitted date of 2067. OC Waste & Recycling updates its strategic plans frequently to address industry, economic, and public policy impacts to its landfill system.

Operations
On-site landfill management includes a site manager, administration manager, operations, a project manager, and engineering/technical staff. OC Waste & Recycling headquarters staff including strategic planning, environmental services, budget and finance, accounting, and a public information officer provides additional support.

The landfill is open Monday through Saturday 6:00 a.m. to 4:00 p.m. It is permitted to accept a daily maximum of 8,000 tons. Olinda Alpha Landfill accepted over 1,634,000 tons of municipal solid waste in 2013, a daily average of 5,322 tons, and served an average of 357 vehicles per day.

The Olinda Alpha Landfill fully complies with all federal, state and local requirements for operation of a Class III sanitary landfill. Site staff conducts daily inspections to ensure that the site is in compliance with all permit conditions imposed by regulatory agencies having jurisdiction on landfills. These permitted conditions include specific procedures involving daily cover application and nuisance controls such as fire, leachate, dust, litter, vector, bird, noise and odor control.

Olinda Alpha Landfill staff operates a fleet of Caterpillar heavy equipment to push, spread and cover its refuse using a canyon fill methodology. Equipment operators are trained by Caterpillar to ensure safe and efficient equipment operation. Landfill Operations maintains a working face of approximately 200 feet by 275 feet, enough to provide 12 to 14 lanes for trucks to unload side-by-side.

Working face with commercial and public areas, mulch ADC, and litter fences
For safety purposes, Olinda Alpha Landfill maintains one working face with two unloading areas: one for commercial waste hauler vehicles and one for smaller public vehicles. Access road signage and landfill staff direct traffic to the two working faces. Waste inspectors monitor refuse being unloaded to ensure that prohibited materials are not buried in the landfill. Additionally, radiation monitors are used at the scale house to detect any radioactive waste before entering the landfill. A separate area on the trash landing is set aside for truck drivers to sweep out their vehicles prior to leaving the landfill, thereby minimizing litter on the roads.

Litter fences are placed downwind of the working face to contain any windborne litter before it can leave the site. Laborers also pick trash throughout the day to prevent litter from blowing off-site.

At the end of the day tarps and mulch are used to cover the trash as alternative daily cover. Mulch is also used to frame the tarps and anchor them to the ground. Tarps are used in lieu of soil to preserve air space for refuse disposal. Soil is stockpiled on-site for use later as intermediate or final cover.

Protecting the health and safety of the public and landfill employees is critical to Olinda Alpha Landfill’s operations. Measures taken to ensure health and safety include:

- All landfill operations and engineering employees attend semi-weekly safety meetings.
- Operations supervisors receive SWANA MOLO certification.
- Operations employees receive a 40-hour course in hazardous material management and annual 8-hour refreshers.
- Additional training courses include:
  - Site safety practices and back safety
  - Respiratory protection and hearing conservation
  - Medic first aid
  - Confined space operations
  - Load check inspection
  - Blood borne pathogens
- The California Highway Patrol and City of Brea Police Department conduct periodic vehicle inspections. Refuse truck inspections occur both on landfill property and along landfill access routes.
- Site contractors must submit a health and safety plan prior to commencing work on a project.
- Landfill equipment operators are enrolled in a random drug and alcohol testing program.

**Budget and Finance**

OC Waste & Recycling is established as an enterprise fund, independent of the County of Orange General Fund. The department relies almost entirely on tipping fees and interest for its revenue. Additionally, the department has no bond debt. OC Waste & Recycling has entered into 10-year Waste Disposal Agreements with all 34 cities in Orange County, ensuring a reliable customer base.

Olinda Alpha Landfill’s Fiscal Year 2013-14 total operating budget is $26,556,628 with $6,700,000 budgeted for capital projects (road improvements and partial closure). The FY 2013-14 revenue budget is $29,000,000 coming almost entirely from tipping fees. As 10-year strategic and finance plans are updated, capital project schedules are sometimes adjusted according to the current needs of the landfill. OC Waste & Recycling places monies in accounts to fund landfill closure, post-closure maintenance, special projects, and specific liabilities. To avoid a drain on the Orange County General Fund, it is OC Waste & Recycling’s intention to fully pre-fund these financial obligations prior to landfill closure when tipping fees are no longer coming in.

OC Waste & Recycling is subject to an independent annual financial audit by a certified public accounting and

“In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the OC Waste & Recycling, as of June 30, 2013.”

Macias, Gini & O’Connell, LLP
Certified Public Accounts

**Special Funding Source**

Orange County’s landfills collect a surcharge of $19 per ton for loads hauled directly to the landfill for burial instead of hauling to a material recovery facility where recyclables are removed. The surcharge, collected to meet the spirit of California’s AB 939, was approved by the Orange County Board of Supervisors in 2006 to address the negative impacts of the self-hauled waste stream through a program that provides economic incentives to self-haulers to divert waste to material recovery facilities. In approving the surcharge the Board of Supervisors also directed that the revenue from the surcharge be used exclusively for public education regarding waste diversion and recycling. Since the implementation of the surcharge in 2006, self-haul tonnage disposed at County landfills has decreased significantly. OC Waste & Recycling believes the surcharge has been an important policy affecting a significant increase in recycling and diversion practices. As of March 31, 2014, the surcharge has generated $23,283,686 for waste reduction activities. This has allowed OC Waste & Recycling to develop new diversion programs and provide grants to local jurisdictions for programs to meet the unique needs of their community. The grants also ensure that regional efforts continue even during the economic downturn.

Through the leadership of the Orange County Board of Supervisors, as of March 31, 2014, $10,383,326 has been expended on projects partnering with cities, special districts, schools, businesses, nonprofit organizations, sports organizations and County agencies to divert recyclable materials from Orange County landfills. The award-winning EcoChallenge exhibit at the Discovery Science Center shows visitors how to reduce, reuse, and recycle through engaging, interactive exhibits.

**6. Equipment/Systems and Technologies**

**Fleet Operations**

Below is a list of heavy equipment utilized at Olinda Alpha Landfill:

- 2 836 Compactors
- 1 826 Compactor
- 3 824 Dozers
- 3 D10 Tractors
- 4 D9 Tractors
- 1 D6 Tractor
- 2 D5 Tractors
- 1 D7 Tractor (electric)
- 3 740 Ejector Dump Trucks
- 2 Dump Trucks
- 1 637 Scraper
- 1 345 Excavator
- 1 140 Motor Grader
- 4 Water Trucks

Heavy equipment operators attend training from Caterpillar to ensure safe and efficient equipment operation.

Maintenance and repair of this fleet are performed by the Quinn Company under a service contract. Under this contract Quinn mechanics perform daily heavy equipment start-up and shut-down, inspections, refueling, refuse clean-out, maintenance, and repairs.
Maintenance is based on usage hours, oil samples, and daily inspections.

Olinda Alpha Landfill is just one of three landfills operated by the OC Waste & Recycling department. OC Waste & Recycling considers all heavy equipment at all three landfills as part of one large fleet. When the need arises, equipment is moved between landfill sites to facilitate effective landfill operations.

Following an operational efficiency study by a consultant, OC Waste & Recycling has re-evaluated its heavy equipment usage and replacement schedule. Over the next several years the three landfills will be strategically reducing the size of their heavy equipment fleet, providing substantial long-term savings in capital expenses and equipment maintenance/repair costs.

**Computer Aided Earthmoving System (CAES)**

Olinda Alpha Landfill utilizes Caterpillar’s Computer Aided Earthmoving System (CAES) to plan and monitor excavation and trash disposal operations. Based on a 3-D digital terrain model programmed into the system by Olinda Alpha engineers, heavy equipment operators receive grading instructions on a monitor installed inside their equipment.

The CAES machine has an onboard computer, touch screen color monitor display, and GPS that allows the equipment operator to see exactly what they are doing in relation to the grading plan. The color display shows the operator in real time how much the trash or dirt must be cut or filled and the exact location of the machine in relation to the plan without looking at a distant grade marker. It even tells the operator the number of compaction passes he needs to achieve optimum compaction.

The CAES system facilitates increased compaction, reduced subsidence, improved drainage, adherence to grade plan, a reduction in cover soil usage, and better monitoring of airspace usage. Additionally, CAES usage eliminates the need for costly ground survey crews.

**Asphalt Wet Weather Deck**

Olinda Alpha Landfill stockpiles broken asphalt for use in creating and maintaining a wet weather deck for waste disposal when muddy conditions exist. This wet weather area allows landfill operations to continue unimpeded during and immediately following rain events.

**Automated Truck Scales**

Olinda Alpha Landfill has one fully automated scale house lane and three non-automated lanes utilizing Paradigm software. During automated transactions transponders on truck cabs and trailers transmit vehicle tare weight to the system, which then calculates the cargo weight for billing purposes. A receipt prints out for the driver to conclude the automated transaction.

Scale house software is fully integrated with OC Waste & Recycling /Accounting to record account information, financial data, tonnage, and geographic origin. Real-time hourly, daily and monthly tonnage and revenue reports are available to landfill employees on OC Waste & Recycling’s intranet site. Refuse haulers are provided read-only access to these reports via a secure internet connection to reconcile landfill scale house tonnages with their dispatch records.

The entire truck scale and fee booth operation is connected to a backup generator to provide emergency power in case of an electrical power failure. If utility grid power is lost, the landfill can continue its operation.
Fueling Stations
Heavy equipment and light-duty vehicles are fueled on-site by one 12,000 gallon diesel fuel tank and one 1,000 gallon unleaded fuel tank. Both tanks are permitted, regularly inspected by the South Coast Air Quality Management District, and are in full compliance with California’s strict emissions regulations.

Landfill Gas Monitoring
The landfill gas (LFG) well field at Olinda Alpha Landfill contains 420 LFG wellheads. Through a public-private partnership, Broadrock Renewables LLC samples these 420 wellheads monthly using Landtec GEM 5000 gas emission monitors. Broadrock also makes well field adjustments to avoid elevated LFG emissions above the 5% limit. OC Waste & Recycling field technicians sample 40+ wellheads each month as an additional check on LFG levels. In addition to these wellheads, Broadrock also monitors 89 perimeter probes to check for LFG migration off-site. OC Waste & Recycling field technicians spot-check these perimeter probes as well.

In addition to monitoring wellhead samples, OC Waste & Recycling technicians perform Surface Emission Monitoring (SEM) each quarter. A Thermo Scientific TVA 1000b toxic vapor analyzer is used during instantaneous and integrated surface testing. The entire landfill surface is segmented into 500’ x 100’ grids. Inside each grid a technician will either take random, spot checks (instantaneous) or will walk the entire grid (integrated). The technician is equipped with a handheld GPS unit that is synchronized with the TVA unit. TVA readings are recorded with GPS coordinates. Should an area require remedial action, the GPS coordinates are provided to landfill operations supervisors to pinpoint precisely the trouble spot for remediation.

Olinda Alpha Landfill’s use of a synchronized TVA-GPS system will be the topic of a presentation at the August 2014 California Resource Recovery Association’s Annual Conference as an Innovation in Landfill Operations.

Landfill Gas Conversion
Through a public-private partnership between the County of Orange and Broadrock Renewables LLC, Olinda Alpha Landfill is now home to the third largest LFG plant in the United States. Going on-line in 2012, this new facility, together with the smaller existing facility at the landfill, produces 37.5 megawatts of electricity, enough to supply power to 22,000 homes. Using landfill gas to produce electricity reduces greenhouse gas emissions from the landfill, and reduces the need to use fossil fuels like coal or oil for electricity production. This conversion facility will be detailed further in the Innovation and Technology Section of this application.

Leachate Collection System
Leachate is collected in a gravity fed sump. From that holding area leachate is pumped into one of two 10,000 gallon tanks. The pumps turn on automatically by an automatic level controller. This controller system is inspected weekly. The leachate is periodically transported off-site for proper treatment and disposal.
7. Public Acceptance, Appearance and Aesthetics

Orange County, California is an urban area with over 3,100,000 residents. Olinda Alpha Landfill was once in a remote area of the county; it now has new neighborhoods in close proximity. Olinda Alpha Landfill strives to be a good neighbor in its daily operations and interactions with the residents of Orange County. Olinda Alpha Landfill’s “good neighbor” activities include:

Nuisance Control
Nothing can spread ill will throughout a community faster than a landfill’s operations impacting neighborhoods. Nuisance control measures at Olinda Alpha Landfill include water trucks spraying the working face and landfill roads throughout the day to prevent dust from blowing. Wind fences stop windblown litter from leaving the site. Laborer crews pick up litter along landfill access roads that may blow off of refuse trucks approaching or exiting the landfill. Additionally, landfill access is restricted to a designated route through the city to reduce landfill traffic on city streets. Finally, tall trees were planted to minimize viewshed impacts, and a sound attenuation system was installed to reduce landfill noise.

Aesthetics
Olinda Alpha Landfill is committed to protecting and enhancing the natural habitat on its landfill property. Landfill slopes are hydoseeded with native plants and grasses to eliminate any visual scarring and provide erosion control. Above ground drainage pipes are painted earth-tone colors camouflage their appearance. To mitigate environmental impacts due to landfill operations, Olinda Alpha Landfill has installed and maintains over 15 acres of off-site native habitat, and planted and maintains over 200 oak trees in a wilderness park. These two projects alone will cost over $2,700,000. Also, in 2014 Olinda Alpha Landfill will begin partial closure on the front face of the landfill, the face most visible to surrounding community. This project includes hydroseeding of the front face, and visual screening to hide from view truck traffic and the LFG-to-electricity facility.

Community Support
Olinda Alpha Landfill lives its commitment to be a good neighbor. Not only is the landfill kept clean and litter free, but Olinda Alpha Landfill staff welcome visitors. Although the area was once isolated, new homes have come to the neighborhood. Olinda Alpha is dedicated to educating neighbors and building a foundation of trust. OC Waste & Recycling hosts landfill tours at all facilities. These include Boy and Girl Scout Groups, class visits, international delegations and professional organizations. See the Supplemental Materials at the end of this application to read an article published by the local newspaper describing Olinda Alpha Landfill’s operations and innovations.

Community Outreach
Olinda Alpha Landfill staff has interacted with thousands of county residents in community outreach events throughout Orange County. A new initiative in OC Waste & Recycling has been heartily embraced by the Olinda Alpha Landfill employees. The Ambassador Program provides training to employees so that they can

Spring flowers at the landfill
Ambassador assists at a community clean-up event
Ambassador staffing the booth outside Angel Stadium
represent OC Waste & Recycling at community events to communicate our message to reduce, reuse, and recycle.

8. Innovation and Creativity

Landfill Gas-to-Energy Facility

Through a public-private partnership between the County of Orange and Broadrock Renewables LLC (Broadrock), the third largest LFG-to-electricity conversion plant in the U.S. is now located at Olinda Alpha Landfill. This 32.5 megawatt facility represents a $130 million investment in clean, renewable energy that creates jobs and provides low-cost power to residents of North Orange County.

OC Waste & Recycling issued a Request for Proposal to ascertain how best to utilize LFG rather than flaring this valuable resource. Olinda Alpha Landfill currently produces over 4,848,000 scf of LFG daily. Broadrock’s proposal was selected and facility construction began in 2010. The design of the facility is both high efficiency and low emission. All major equipment components were manufactured in the US. During construction 155 direct jobs were created/retained, and 424 indirect jobs were created/retained (e.g. engineering, manufacturing, consulting, etc.) Approximately 25 jobs were created for the on-going operation phase. The facility was completed and commissioned in 2012 at no cost to Orange County taxpayers.

This facility, in conjunction with Olinda Alpha Landfill’s existing, smaller LFG-to-electricity plant, produce a combined 37.5 megawatts of electricity which is delivered to the regional grid and purchased by Orange County jurisdictions to be used locally. That’s enough renewable energy to power over 22,000 homes while reducing greenhouse gas emissions. Finally, OC Waste & Recycling receives over $1.8 million in royalties annually, and are expected to increase in future years.

This facility and the public-private partnership that created it have been recognized with several awards:

- US Environmental Protection Agency, Landfill Methane Outreach Program – 2012 Project of the Year Award for Electricity – Combined Cycle
- Orange County Business Council – Public/Private Partnership Award (Turning Red Tape into Red Carpet Award) (2013)
- American Society of Civil Engineers, Orange County Branch – Energy Project of the Year Award (2014)
- Orange County Engineering Council – Project Achievement Award (2014)
Computer Aided Earthmoving System (CAES)

Olinda Alpha Landfill utilizes Caterpillar’s Computer Aided Earthmoving System (CAES) to plan and monitor excavation and trash disposal operations. Based on a digital terrain model programmed into the system by Olinda Alpha engineers, heavy equipment operators receive grading instructions on a monitor installed inside their equipment. Each machine has a touch screen color monitor display and GPS that allows the equipment operator to see exactly what they are doing in relation to the grading plan in real time. The color display shows the operator how much the trash or dirt must be cut or filled and the exact location of the machine in relation to the plan. It even tells the operator the number of compaction passes he needs to apply on the trash using color coded display on the screen to ensure optimum compaction. The CAES system facilitates increased compaction, adherence to grade plan, a reduction in cover soil usage, reduced subsidence, and better monitoring of airspace usage.

Natural Vegetation Removal and Bird Control Programs

Vegetation Removal

Olinda Alpha Landfill needed to remove vegetation from 35 acres in advance of landfill operations in those areas. The vegetation was on slopes too steep and unstable for vehicles, and also unsafe for hand crews.

While driving a perimeter road, a landfill field technician noticed goats grazing on a steep slope adjacent to the landfill. The technician learned that the goats were clearing vegetation on the slope to comply with a fire authority directive to perform weed abatement. The tech saw the solution to the problem of safely clearing vegetation from steep, unstable slopes.

A vendor was obtained and 327 goats were deployed in January 2011. The landfill staked out the zone to be cleared and the vendor installed a low-voltage electric fence surrounding the grazing area. A goat herder maintains the goat area, feeds and cleans up after the goats every day, and moves the goats to a holding area each night for their safety. Also, a Great Pyrenees dog lives with the goats to protect them from predators in the area. The hungry goat crew can clear about six acres of vegetation per week at a cost considerably less than a hand crew.

Using goats for vegetation removal on slopes has proven to be a cost effective, environmentally-friendly, and safe method to remove vegetation.
Bird Control

Many animals make their home at landfills. Orange County’s three landfills are home to coyote, rodents, reptiles, cougars, bobcats, feral cats, deer, insects, and birds (primarily gulls, pigeons, crows, and ravens). Foraging for food can become a real problem for landfill operators when waste is carried off-site and litters surrounding neighborhoods. Additionally, birds flying overhead will “bomb” landfill employees and customers creating a public health situation. California landfill regulations mandate that landfill operators throughout the state take measures to minimize bird nuisances.

Over the years Olinda Alpha Landfill has implemented numerous bird abatement techniques with limited, short-term success. Past abatement measures include strobe lights, radio controlled airplanes, broadcasting gull in distress calls, and firing off cracker and whistler pyrotechnics, plus many others. Each method to scare off birds was successful at first, but over time the birds got habituated to the nuisance and stopped flying away. A better, permanent solution was necessary.

While researching various abatement techniques available, a Project Manager came across an article about using raptors to scare away blackbirds in vineyards. In 2012, a bird abatement project using raptors was initiated at the Olinda Alpha Landfill. Licensed master falconers strategically release trained falcons and hawks to periodically soar over the landfill. The mere presence of these predatory raptors motivates scavenger birds to leave the area, but does not harm them.

Strategic Planning

The days of simply burying trash and walking away are long over. Today’s landfills cannot be content being in the burial business; they must be in the waste management business to survive. Olinda Alpha Landfill is strategically planning for its future with this new mission in mind.
In 2012, California passed AB 341 that set a state-wide recycling rate of 75% and bans organic waste from landfill burial by 2020. Other initiatives over time have encouraged the diversion of greenwaste and construction & demolition debris from landfills. As landfill tonnage continues to decrease, OC WASTE & RECYCLING is taking the lead in evaluating various programs, projects, and partnerships to keep up with the rapid changes in the landfill business.

As mentioned above, Olinda Alpha Landfill no longer flares a large portion of its LFG, but is now sending all of it to an on-site state of the art LFG-to-electricity conversion facility. Looking forward, the landfill is investigating joint ventures in organic waste management, and enhancing its community outreach and recycling education programs.
Supplemental Materials

TRASH haven

Capturing methane gas

Here is a look at how gas emitted from decomposing waste, collected across north Orange County and hauled at the landfill, is turned into electricity. The project is expected to reduce greenhouse gas emissions by more than 1.2 million tons of carbon dioxide equivalent annually, according to the U.S. Environmental Protection Agency.

- Collected gas is piped at a physical facility and transported by truck to the Olinda Alpha Landfill.
- Electricity is then sold to a city or small town, where it is used to power fire stations, police, and other buildings.
- Collected gas is used to power the building, which generates electricity.

By the numbers

500
trash a day sucked back at the landfill
565
acres the Olinda Alpha Landfill, with 451 acres used for trash
6,000
tons of trash dropped off each day

When you take out the garbage, Olinda Alpha Landfill is where it goes.
The Olinda Alpha facility works to convert methane gas from rubbish into electrical power.

LANDFILL

FROM PAGE 1

Northwest of Oahu’s Waikiki Beach Park is the Olinda Alpha Landfill, which was named for its award-winning project management efforts. The Olinda Alpha Landfill is the second-largest landfill in the state of Hawaii, and it is the second-largest in the United States. The Olinda Alpha Landfill is located in the town of Waianae on the island of Oahu and is owned by Waste Management, Inc. The Olinda Alpha Landfill is the second-largest landfill in the United States and is located in the town of Waianae on the island of Oahu and is owned by Waste Management, Inc.

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Falconry keeps gulls away

Nature against nature.

That’s the strategy being used at the Olinda Alpha Landfill, where a team of predatory birds keeps pesky seagulls away from exposed trash.

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