2013 LANDFILL RE-USE EXCELLENCE AWARD
RELEASE FORM

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Printed Name of Representative: Megan Hinkle
Organization Name: City of Raleigh Solid Waste Services
Signature: Megan Hinkle
Date: 5/24/13
Executive Summary

The city of Raleigh’s Wilders Grove Solid Waste Services Facility was constructed on a portion of the 260-acre city-owned parcel that includes the former Wilders Grove Landfill and the city’s solid waste transfer facility. By selecting the former landfill site as the location for the new solid waste services facility, the city of Raleigh saved the expense of approximately $4-7 million to purchase land elsewhere.

The facility, completed in March 2012, is expected to receive LEED Platinum certification. It reduces energy consumption by more than 40 percent using renewable geothermal energy, LED lighting, solar photovoltaic panels and a web-based building control system. Recycled building materials were incorporated throughout construction of the facility and nearly 95 percent of construction waste was diverted from landfills.
Design & Construction

In 2011, the city of Raleigh began construction on the Wilders Grove Solid Waste Services Facility on a portion of the 260-acre site of the former Wilders Grove Landfill.

The city of Raleigh had long looked to utilize the open space on the Wilders Grove Landfill site. In 2007, the city constructed its solid waste transfer facility on a portion of the site in order to efficiently re-package the city-collected MSW for hauling to Wake County’s new landfill. The transfer facility allowed Raleigh’s Solid Waste Services Department to optimize its collection and hauling operations. At the same time, the city’s operations were being revolutionized by the shift to weekly curbside collection. It was apparent that the city’s former operations facility in the busy downtown area was inadequate to support the operations and the city’s continued growth.

With the focus of Raleigh’s residential solid waste hauling now squarely at the Transfer Station, logic and economy dictated that Wilder’s Grove would also be the most effective location for the solid waste services facility. State and federal regulations require the city of Raleigh to monitor and maintain the landfill for at least 30 years after closure, so a long term city presence at the site was necessary.

Wilders Grove Landfill served as the primary refuse disposal site for Raleigh residents from 1972 until its closure at the end of 1997. A critical component of the landfill operation and its proper closure was providing soil cover over the refuse. Nearly 170,000 cubic yards of soil was obtained from a borrow site located to the west of the disposal units, including approximately 100,000 cubic yards of soil meeting strict regulatory performance criteria used to construct the final cover in 1999. This left a nearly 16-acre excavation on the site which was not suitable for development or beneficial re-use.

Several candidate locations on the Wilders Grove parcel were evaluated for relocation of the Solid Waste Services facilities. Most locations required extensive clearing, impacts to regulatory buffers or could impact the disposal areas. The former soil borrow area was not only large enough to accommodate the entire SWS facilities, it also required the fewest land impacts. The problem remained that most of the site was occupied by a large excavation and could not be effectively developed in its current state.

The Solid Waste Services and Public Works Departments teamed to “reclaim” the former borrow area by attracting clean fill from various construction projects in the area. The Wilders Grove site is easily accessed from I-440 and U.S. 64, and would be an attractive location to haul excess clean soils during construction of downtown projects. The Public Works Construction Management Division, in conjunction with the contractor and construction manager, arranged for the excess soils generated during excavation of the City’s Convention Center Parking Garage and adjacent Marriott Hotel to be hauled to the Wilders Grove site. This simplified the efforts of the building contractors, who would have otherwise had to haul thousands of cubic yards of soil to a number of fill sites in the region. Not only was hauling cost minimized for both the City and the contractor, the need for land clearing to support various outlying fill sites was eliminated.

The City assured that all the fill soils were clean and suitable for support of the future structures. Control of sediment and erosion was incorporated into the fill program to minimize environmental impact. The soils were placed, spread and compacted in accordance with strict specifications and the in-place density was tested on a routine basis. The City’s intent was to allow the former borrow area to be used as direct support for the buildings without the need for expensive ground improvement or deep foundations.
Environmental Controls

The City of Raleigh Solid Waste Services Department is attentive to the environmental concerns of the community in all aspects of the department’s operations. The Department is particularly mindful of using best practices with regards to the closure of the former landfill. The following are examples of ongoing monitoring activities at the former Wilders Grove Landfill site:

- The city works with a private contractor to conduct groundwater monitoring at the former landfill site. The contractor visits the site once every quarter. Currently, the city is conducting remediation work as suggested by consulting engineers and the state. Potassium permanganate is being used to treat the groundwater; this is a corrective measure prescribed by the North Carolina Department of Environment and Natural Resources.

- Ed Wright, the manager of the city’s Yard Waste Center and a member of the SWS management team, conducts leachate monitoring on a biweekly basis. No leachate violations have been found since the landfill was closed.

- Methane monitoring points are monitored monthly by SWS staff. The Solid Waste Services Department is in a contract with Ajinomoto, a top amino science company with a location in Raleigh. The city sells the landfill's methane gas to Ajinomoto, and as a part of their contract, Ajinomoto monitors and maintains the wells, the vacuuming system, and the flare system.

- SWS staff visit businesses and factories near the landfill site each quarter to conduct testing for methane gas in and around those facilities. No presence of methane has been found.

- Chemists from the city’s Wastewater Treatment Plant monitor air quality quarterly at approximately 30 different monitoring points. All areas are continually found to be in compliance.

The Wilders Grove Solid Waste Facility was designed to be compatible with the environment and the surrounding community. The facility is in an industrial area; nearby businesses include trucking companies, automotive repair shops, and a manufacturing plant.

The City of Raleigh has purchased land surrounding the landfill and the new solid waste facility, to prevent new development from occurring near the landfill site and so that this area of the city can be dedicated to the functions of solid waste services. The new facility does not disturb residents or any neighborhoods. Before the facility was constructed, a public meeting was held to gain the public opinion about the proposal to place the SWS facility at the former landfill site. No objections were received from the public. The department’s monitoring efforts to detect and to prevent any migration of methane gas have also contributed to the positive reception we have received. The general public perception is that the city of Raleigh is committed to the best practices in maintaining and monitoring this former landfill site.

The City of Raleigh took its commitment to environmental protection a step farther after the landfill was closed. The city’s SWS department applied for and was awarded a wildlife enhancement grant from Wake County. The grant allowed the department to plant various types of grasses, grapevines, wildflowers and fruit trees and to install birdhouses and bee posts on the former landfill site. All of the items planted or installed were specifically chosen for Raleigh’s climate. The site is home to wild turkeys, deer, rabbits, coyotes, ducks, geese, beavers, turtles, and a plentiful variety of birds. The site has truly become a wildlife sanctuary in the midst of one of the nation’s most rapidly growing urban areas.
Sustainability

The development of the Wilders Grove Service Center has positively impacted social, economic and ecological conditions in the region. The facility has allowed Solid Waste Services (SWS) to move from an overcrowded downtown site to a convenient location that saves hundreds of thousands of dollars in operations costs. Tangible improvements are realized to traffic, safety and air pollution.

In addition to the jobs created in the construction of the facility, significant economic benefits were provided to local materials and equipment suppliers by the LEED-incentive to specify local materials for construction. New markets have been created for recycled products, such as the use of recycled glass in block used for interior walls and retaining wall facing.

The Wilders Grove Solid Waste Services Facility has become a success story for sustainable design in the rapidly growing Raleigh-Durham region. LEED-Platinum certification is expected to be awarded in the spring of 2014. Sustainability highlights include:

- Renewable solar photovoltaic panels installed on the roof of the Administration Building and Vehicle Wash generate electric power for sale to the power utility,
- Renewable geothermal energy through the use of a closed loop well system provides all of the heating and cooling,
- Innovative geothermal hot water generation requires minimal electric power to operate while extending the life of the well field by diverting waste heat,
- Reclaimed wastewater from the City of Raleigh is used for toilet flushing, saving thousands of gallons of potable water,
- Collection vehicles are washed in the automated wash bay using reclaimed wastewater and no potable water,
- Energy performance saves 40% in energy costs compared with conventional systems,
- 40% of construction materials used for the Service Center utilized recycled content,
- No potable water is used for irrigation,
- Two electric vehicle charging stations are in operation at the facility,
- Natural light in occupied spaces to reduce electric power demand,
- Occupancy sensors to control lighting and heating and cooling in unoccupied spaces,
- A Building Automation System (BAS) that provides real time data on power and energy demand, equipment operation, and systems tracking. Systems can be adjusted remotely to maximize efficiency.
- Efficient LED lighting for both interior and site lighting,
- Educational areas with additional areas set aside for public art,
- Enhanced commissioning to assure that mechanical and building systems operate as design and provide the anticipated environmental and economic benefits.

A prime goal of the development of the Wilders Grove Service Center – and an important mission of the Solid Waste Services Department is to inspire the next generation to greatly enhance the use of recycled materials for a more sustainable future. Shortly after completing its first year of occupancy, the Wilders Grove Service Center is clearly achieving that goal.
The Wilders Grove Solid Waste Services Facility is financially sustainable as well. As previously mentioned, the Solid Waste Services Department has contracted with Ajinomoto, a top amino science company with a local presence in Raleigh. Ajinomoto purchases the former landfill’s methane gas, creating approximately $300,000 in annual revenue for the SWS Department. The amino-science company uses the landfill gas to power their local factory. Through this partnership, the city is helping a local business with approximately 200 local employees to lower their energy costs and to improve efficiency.

The Wilders Grove SWS Facility also utilizes energy from the sun as a cost-saving measure. Solar energy is renewable and causes less pollution than energy from coal or oil. The roof of the Wilders Grove Facility contains the solar photovoltaic array. This 50-kilowatt structure captures the sun’s energy and is expected to generate 69,055 kilowatt-hours of electricity per year, the equivalent of the energy needs of five homes in North Carolina. Additionally, the administrative building was oriented along an east-west axis to maximize southern exposure. Most workspaces in this building receive natural light, reducing the amount of time that electric lights have to be turned on. Occupancy sensors automatically adjust the lights and air flow so energy isn’t wasted in empty rooms.

Now that the department has settled into its new space, Wilders Grove staff are now exploring the possibility of placing a solar farm on top of the landfill site. Unlike windmills, solar panels can be placed in such a way that does not penetrate the cap of the landfill. This is an exciting potential revenue source for the Wilders Grove SWS Facility.

The location is also convenient for the department’s daily operations. With the transfer facility on-site, and Raleigh’s recycling contractor and Yard Waste Center nearby, all of the department’s disposal sites are within a two mile radius of each other. The proximity of the facilities to each other has proven to be a benefit for operational efficiency and for the department’s budget as well, as the move enabled the department’s fleet to reduce its annual mileage by over 100,000 miles. The cost savings for gas and the reduction in carbon emissions are worth noting as well.
Public Acceptance, Appearance and Aesthetics

A grand opening for the facility was held on January 25, 2012. The program included remarks by Raleigh Mayor Nancy McFarlane, SWS Director Fred Battle, and two representatives from the project’s general contractors. Following the program, guests were treated to a light lunch and a tour of the facility. SWS staff continue to conduct tours of the facility for the general public or groups on a regular basis.

All city of Raleigh facilities contract with the city’s Parks and Recreation Department to provide building maintenance services. The Parks and Recreation Department’s building maintenance crews regularly visit the Wilders Grove Solid Waste Services Facility to refresh landscaping and to ensure that the building is well maintained. SWS employees clean the building on a regular basis. All of the landscaping materials used on the site are sourced from the city’s Yard Waste Center, which creates compost and mulch from residents’ yard waste. As a closed landfill, Wilders Grove has little to no issues with windblown materials.

With its plentiful supply of parking and meeting space Wilders Grove has become a popular location for public meetings, city employee training, and other activities. In June 2012, the facility hosted the North Carolina SWANA Annual Equipment and Truck ROAD-E-O, and we are pleased that the event host committee elected to hold the ROAD-E-O at Wilders Grove again for the 2013 competition.

The facility’s design incorporated a public educational component as well. SWS staff members — specifically Linda Leighton, Waste Reduction Specialist and Bianca Howard, Community Education Specialist — envisioned a series of educational signage for Wilders Grove’s administrative building. The signs serve to educate visitors about the facility’s sustainable features. The signs were printed on recyclable cardboard.

WASTE TO WALLS

Recycled materials give this building strength and sparkle. The concrete masonry block used to form the walls contains as much as 20% recycled material, including 1% glass aggregate. All of the glass used in the walls was recycled in Raleigh. Look for areas where the block has been polished to highlight the glass.

“Waste to Walls” is one of six educational signs placed throughout Wilders Grove’s administrative building.
Innovation and Creativity

The decision to build the Wilders Grove Solid Waste Services Facility at the former Wilders Grove Landfill site has been called both innovative and creative. The property’s size and its proximity to major roads and highways would make it a compelling location for any public or private venture, but the general concerns of constructing a facility at a former landfill could easily dissuade potential interest. However, nearly every city department worked in coordination with the Solid Waste Services Department and its consulting partners in making a strong case to locate the SWS facility on the former landfill site.

In April 2013, the Wilders Grove Solid Waste Services Facility was awarded the “Institutional Innovation” award by the City of Raleigh’s Environmental Advisory Board. The award is presented annually to a government entity for showing innovation in an area of environmental stewardship. The award committee was particularly impressed by these facts:

- Wilder’s Grove Solid Waste Services Facility is the nation’s first integrated solid waste facility to be built to LEED Platinum standards;
- the facility reduces energy consumption by more than 40 percent using renewable geothermal energy, LED lighting, solar photovoltaic panels and a web-based building control system; and
- recycled building materials were incorporated throughout construction of the facility and nearly 95 percent of construction waste was diverted from landfills.

Perhaps the most creative element of the Wilders Grove SWS Facility is the incorporation of public art in the facility’s design. The public art project budget for the facility was approximately $30,000. The SWS Department collaborated with Raleigh’s Arts Commission to solicit proposals from artists or artists teams in North Carolina to provide site-specific public art proposals for the facility. The selected artists team is currently at work creating their design, which will be placed at the center of the Wilders Grove facility’s administrative building.

The selected artistic concept is an undulating surface of recyclable everyday materials, embedded with animated kaleidoscopes, reflecting the importance of a lifestyle sensitive to the impact of choosing to recycle. The purpose of the art project is to engage the facility’s visitors to create interest in the type of materials that can be recycled, as well as the advantages of recycling and re-use, and promote positive change in disposal habits. Among the elements that are designed to draw visitors into viewing the piece are six digital kaleidoscopes, set into circular frames that blend into the undulating surface of the wall. Two kaleidoscopes will be connected digitally to a wall-mounted interactive stand, with a kiosk allowing visitors to manipulate the patterns using recyclable materials in a tray.

Additional information about the Wilders Grove Art Project can be found at www.wildersgroveproject.com.

An artistic rendering of the public art project to be displayed at Wilders Grove SWS Facility.
Supplemental Appendix

A. Wilders Grove Area Plan (aerial photo).

B. November 25, 2008 letter of approval from the N.C. Department of Environmental Resources allowing construction of the new Wilders Grove Solid Waste Services Facility at the site of the former Wilders Grove Landfill (two pages).

C. News report of the grand opening of the Wilders Grove Solid Waste Services Facility from North Carolina Public WUNC 91.5.

D. Various press releases issued by the City of Raleigh Public Affairs Department regarding the Wilders Grove Solid Waste Services Facility.

1. "Old Landfill is Site for New Solid Waste Services Operations Center"
2. "Raleigh Dedicates Sustainable Solid Waste Services Facility"
3. "Public Art to be Displayed at New Wilders Grove Facility"
4. "New Solid Waste Services Operations Center Has Geothermal System"
Wilders Grove Area Plan

Supplemental Item A
North Carolina Department of Environment and Natural Resources
Division of Waste Management

November 25, 2008

Mr. Fred Battle
Solid Waste Services Director
Solid Waste Services Department
400 W. Peace Street
Raleigh, NC 27603

Re: Request for Permit Modification, Post-Closure Use of Landfill,
City of Raleigh Wilders Grove Landfill
Wake County, Permit No. 92-01, DIN 6293

Dear Mr. Battle:

The Division of Waste Management, Solid Waste Section received a request for a permit modification for
the Wilders Grove Landfill on October 23, 2008. The application was submitted on your behalf by Hazen
and Sawyer, P.C. and proposed a change in the property use described in the approved post-closure plan.

Restrictions for post-closure use of landfill facility property are listed in 15A NCAC 13B. 1629(c) (3).
Post-closure use must not disturb the integrity of the cap system, base line system, or any other
components of the containment system, or the function of the monitoring systems unless necessary to
comply with the requirements of these systems.

Based on the preliminary plans presented, the change in post-closure use would not violate use
restrictions. The plan indicated the structures composing the new Wilders Grove Service Center would be
built on land that is separated from the landfill waste limit by Corporation Parkway. Therefore, the
structures would not disturb the integrity of the cap system or other components of the containment
system. The new structures would not interfere with the current monitoring systems. Monitoring wells
and the landfill gas system are primarily located south of the landfill while the structures in the Service
Center are planned in areas west and southwest of the landfill. A perimeter well is located near the
proposed vehicle fleet services and would need to be protected during construction.

The intended use as a service center that will include a Solid Waste Services Administration Building, a
Solid Waste Vehicle Fueling Center, Vehicle Fleet Services, and City/County Vehicle Fueling Facility is
consistent with zoning and property use near and adjacent to the landfill property. The location is also
near the recently constructed Raleigh Transfer Station on the property.

The proposed plans do not appear to be in a buffer that is integral to the monitoring, assessment, or
remediation of the existing landfill, or in a location that would compromise public health or safety. There
appears to be adequate open space such that groundwater monitoring wells or other measures could be
used for environmental monitoring, should conditions dictate such a response. It is, of course, incumbent
upon the city and its consultants to provide adequate monitoring of explosive gases in structures at the
landfill and to ensure safety of the public and workers during construction and operation.
Mr. Fred Battle  
November 25, 2008  
Page 2

This letter serves as an approval of the conceptual plan as presented. A modified landfill permit will be prepared and a permit modification fee accessed to the city. The owner should notify the Section of any significant changes to the approved plans, and must provide the Section a copy of final as-built locations and design of the landfill property.

Sincerely,

Edward Mussler, P.E.  
Permitting Branch Supervisor  
Solid Waste Section

cc: John A. Bove, P.E. – Hazen and Sawyer, P.C.  
Bill Black, P.E. – Public Works Department, City of Raleigh  
Pat Backus, P.E. – Division of Waste Management, Solid Waste Section  
Jason Watkins – Division of Waste Management, Field Operations Supervisor  
Brad Bailey – Division of Waste Management, Environmental Specialist
Raleigh Opens Sustainable Waste Services Facility

By ISAAC DAVY ARONSON

Raleigh has opened what it calls the nation’s most sustainable solid waste services facility. The new operations center was built to LEED platinum standards - the highest level of sustainability certification. City manager Russell Allen says the building was constructed with re-used and recycled materials where possible. It includes solar panels and geothermal systems, and will have plug-in electric vehicles.

Russell Allen: We built about everything that we could that is a sustainable program into this building, but with a cost-benefit. We made sure that we're not just doing it to gain some level of certification, but we've actually studied the payback on those investments and determined those to be solid.

The facility was built on a former landfill. Its proximity to the Wilders Grove waste transfer station is projected to save a hundred thousand miles of driving and hundreds of thousands of dollars in fuel annually.

TAGS: LEED  Sustainable Waste  Raleigh

Source: http://wunc.org/post/raleigh-opens-sustainable-waste-services-facility
Supplemental Item D:1 (two pages)

Jayne Kirkpatrick, Director, Public Affairs
Prepared by: John Boyette, Public Affairs Specialist

For more information: Public Affairs Department, 996-3100

Jan. 25, 2012

OLD LANDFILL IS SITE FOR NEW SOLID WASTE SERVICES OPERATIONS CENTER

The new Wilders Grove Solid Waste Services (SWS) Operations Center is the latest City of Raleigh facility to be located on the old Wilders Grove Landfill site. The City today held an opening ceremony for the state-of-the-art operations center, the new headquarters for the City's Solid Waste Services Department.

Other City operations located at the former landfill site located off of Corporation Parkway in east Raleigh include Vehicles Fleet Services and the East Wake Solid Waste Transfer Station. Solid Waste Services crews take Raleigh's trash to the transfer station; from there the trash is trucked in trailers to Wake County's South Wake Landfill in Apex.

The City of Raleigh opened the Wilders Grove Landfill in 1972. Twenty-five years later, on Dec. 30, 1997, new federal regulations forced the closing of the 260-acre landfill. The regulations require municipal solid waste landfills to have liners and leachate collection systems. These regulations also caused Wake County in 1998 to close the original North Wake Landfill off of Durant Road in north Raleigh. The county opened a new lined landfill adjacent to the old landfill site. That landfill reached capacity in 2008 and is now closed.

City of Raleigh and Wake County officials both had to take deliberate steps to officially close down their landfills to meet environmental regulations. In the case of the Wilders Grove Landfill, the City capped the site with 2 feet of compacted dirt, a plastic geomembrane liner and drainage system, and 2 more feet of dirt. This final cover exceeded state regulations.

The methane gas (or landfill gas) collected at the Wilders Grove site is sold to Ajinomoto USA Inc., which uses it to power the company's steam boilers. Wake County has a similar arrangement for methane gas generated at the closed North Wake Landfill site. The gas is collected through a system of wells and delivered through a pipeline to Covidien, a healthcare product company. Covidien uses the methane gas as a supplement to natural gas.

Both City of Raleigh and Wake County officials said any excess methane gas not beneficially reused to create power or steam is flared or burned off before it enters the atmosphere.
Supplemental Item D:1 (two pages)

In addition to monitoring and collecting methane gas, the City and Wake County monitor groundwater and surface water at their respective closed landfills.

The $14 million Wilders Grove SWS Operations Center was not constructed on that part of the old landfill that was used for actual dumping. This is also true of the other City facilities at the closed landfill. Because of the methane gas and other environmental concerns, it is not feasible to build on an actual dump site. All the City facilities at the former landfill site, including the new 24,000-square-foot SWS Operations Center, are properly located.

Throughout the nation, closed landfills have been converted to alternate uses. Wake County has converted part of the former North Wake Landfill site into a public park. The North Wake Landfill District Park opened in 2010 and includes a playground ground, open play area, picnic shelter and tables, and walking and bicycling trails. Future plans for the closed 260-acre North Wake Landfill location include a public elementary school and a City community center with athletic fields. Though the landfill is closed, Wake County offers other solid waste disposal and recycling services for citizens at the site.

{NOTE: Attached is a list of locations of former landfills in Raleigh. The list was compiled prior to the closing of Wake County's North Wake Landfill in north Raleigh.}

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Locations of former Raleigh Landfills

<table>
<thead>
<tr>
<th>LANDFILL</th>
<th>LOCATION</th>
<th>DATES USED</th>
<th>SIZE</th>
<th>OWNERS</th>
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<tr>
<td>#1</td>
<td>City Farm Road (off Fayetteville)</td>
<td>1939 to 1955</td>
<td>35</td>
<td>State of NC and City of Raleigh</td>
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<tr>
<td>#2</td>
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<td>4.5</td>
<td>N.E. Eggersen</td>
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<td>1947 to 1950</td>
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<td>Gordon Dorwin</td>
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<td>#4</td>
<td>Dunkin Donuts &amp; Old Shoney's Parking Lot</td>
<td>1948 to 1950</td>
<td>3</td>
<td>Allied Linthicum &amp; Waltham Group</td>
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<td>#5</td>
<td>Jaypee Park</td>
<td>1950 to 1952</td>
<td>6</td>
<td>City of Raleigh</td>
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<td>#6</td>
<td>Diff Street (off Fayetteville) (Access Fayetteville from Landfill #1)</td>
<td>1950-1952</td>
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<td>City of Raleigh</td>
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<tr>
<td>#7</td>
<td>Not on List (Capital Blvd. at Crabtree Creek)</td>
<td>1952-1955</td>
<td>35</td>
<td>J.T. Hobby, '82</td>
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<td>#8</td>
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<td>Not on List (Glenwood Ave/ Crabtree Creek)</td>
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<td>#10</td>
<td>Six Forks in Plantation, parking lot near Anderson Forest</td>
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<td>Six Forks Commons Office Condo Assn, individual condo owners</td>
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<td>City of Raleigh</td>
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Prepared by and for more information: Public Affairs Department, 996-3100

January 25, 2012

RALEIGH DEDICATES SUSTAINABLE
SOLID WASTE SERVICES FACILITY

The solid waste services facility that the City of Raleigh dedicated today is as attractive as it is sustainable and economical.

Mayor Nancy McFarlane said that the Wilders Grove Solid Waste Services Facility was built to Platinum LEED standards. She noted that every aspect of the project expresses the pinnacle of sustainability.

"Dependable collection and disposal of garbage is among any City's most important responsibilities," she said. "This new facility will make Raleigh even more efficient in collecting in excess of 85,000 tons of garbage, 25,000 tons of recycling and 17,000 tons of yard waste annually, and it will save the City money in the process."

The Mayor noted the efficiencies that the City already is realizing from efficiencies. She noted that in 1947, Sanitation was the City's largest department, with a staff of 120. Garbage collection claimed 12 cents on every City dollar to serve its population of 60,000 in an area of less than 10 square miles.

"Today, with a staff of just 223 we not only collect garbage, but recycling and yard waste as well from a population of more than 400,000 over more than 143 square miles," she said, "and it only takes 4 cents of every City dollar spent. Now that is efficient!"

Some of the more notable sustainable features include:

- **Its location** - the facility was built on the site of the landfill the City operated from 1972 to 1997. By reusing the site the City saved the purchase price of a sizeable parcel of land.
- **Soil reuse** - The 27-acre site was reclaimed by the placement of nearly 160,000 cubic yards of clean fill generated from several Downtown City, State and County construction projects. This saved the hauling costs and related environmental impacts of hauling the soil away.
- **Its proximity to the transfer station** - In 2007, the City constructed a solid waste transfer facility on a portion of the Wilders Grove site to efficiently repackage Raleigh's solid waste for hauling to the County's new landfill near Holly Springs. Having the solid waste fleet operating from the same site saves at least 100,000 miles of driving and more than $250,000 in fuel annually.
Supplemental Item D:2 (two pages)

- **Geothermal HVAC and hot water** - The Wilders Grove Solid Waste Facility has a geothermal HVAC and hot water system. Geothermal energy is a renewable energy source. The U.S. Department of Energy awarded the City a grant for $1.3 million to build the system. The system is comprised of unitary terminal units using direct expansion water source heat pumps with supply air fans and filters using a geothermal ground loop water source. The closed loop piping system pumps water through these wells to reject heat during the summer and absorb heat during winter. The rejected heat will be used to heat water prior to entering the wells. This system will save more than 30 percent over conventional HVAC system designs.

- **Totally recycled** - The facility’s exterior masonry and siding contain recycled materials. The roof system incorporates a metal roof that allows for photovoltaic arrays. Harvested rain and recycled water are used to clean the Solid Waste Services fleet of trucks.

T.A. Loving, Inc. of Goldsboro was the builder of the $14.65 million project. Hazen and Sawyer designed the uber “green” facility.

The grounds of the facility are landscaped with mulch from the City’s nearby Yard Waste Center. It is sprinkled with recycled glass from Elizabeth City Glass. The main entrance to the facility is laid with pavers in the shape of North Carolina. They were obtained from Grotto Hardscapes in Mebane.

The Solid Waste Services staff is moving to the new location at 630 Beacon Lake Drive from its long-time, cramped and inefficient facility at 400 W. Peace St. Staff from the City’s Public Works Department will move into the facility.

**Since the 1850s**

It was the 1850s before the City of Raleigh began a type of systematic sanitation service for its approximately 4,500 residents. At that time the commissioners ordered that “dirt and offal” be carted from the major streets. Merchants and residents swept such refuse into piles on Fayetteville, Wilmington and Hargrett Streets. Then, once a week between May and the fall, a wagon or cart collected the piles and transported them to a site outside of town.

Still, garbage thrown into the street, privies and open sewer ditches soured the air and spread disease. To address this abominable situation, the City hired a sanitary worker to clean out privies and transport refuse away, charging each property 10 cents per privy. Residents received citations for throwing garbage into the street or into public wells and emptying privies in the City Limits.

As Raleigh’s population continued to grow, this minimal and seasonal removal of disease-causing materials proved inadequate. As Raleigh approached its centennial in the 1890s, it counted a population of approximately 12,000. That is when the City started a municipal garbage removal system and required privies to be connected to the sewer network.

**Solid Waste Services’ Mission Statement**

To pursue a safe, efficient and effective waste collection and disposal system that protects the natural environment while supporting Raleigh’s vision to create a sustainable future for generations to come.

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Supplemental Item D:3

CITY OF RALEIGH PUBLIC AFFAIRS DEPARTMENT

News Release

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Jan. 25, 2012

PUBLIC ART TO BE DISPLAYED AT NEW WILDERS GROVE FACILITY

In addition to its many sustainability features, the new Wilders Grove Solid Waste Services (SWS) Operations Center will have public art. The City of Raleigh is reviewing qualifications from artists or artist teams in North Carolina to provide site-specific public art for the operations center, which had its grand opening today. A final artist selection is expected by spring.

The public art project budget for the Wilders Grove facility is $29,447, inclusive of all expenses including design, fabrication, installation, travel, taxes and fees.

Public art at selected City of Raleigh sites is authorized by the Half Percent for Art Ordinance adopted by the City Council in 2009 and implemented by the City's Arts Commission and the commission’s Public Art and Design Board. The Wilders Grove SWS Operations Center was selected for public art based on its educational opportunities and public accessibility through its programs for environmental sustainability.

Under goals established by the City's Public Art and Design Board, the public art at the new operations center should complement the Solid Waste Services Department's mission — to pursue a safe, efficient, and effective waste collection and disposal system that protects the natural environment while supporting Raleigh's vision to create a sustainable future for generations to come. The selected public art should also include an educational component that raises awareness and encourages learning about the various ways to reduce and reuse waste as well as recycle.

Ten artists or artist teams have submitted their qualifications to the City for consideration. The selection process has two rounds. The first round is under way and involves an evaluation of the qualifications of the artists by an artist selection panel appointed by the Public Art and Design Board. The evaluation is based on criteria that include artistic merit, integration of educational opportunities, place-making experience, collaborative public art processes, project management experience, and technical expertise. The artist selection panel will identify up to three finalists to invite to Raleigh for interviews as part of the second round of the selection process, which will also include providing a proposal.

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Jan. 25, 2012

NEW SOLID WASTE SERVICES OPERATIONS CENTER
HAS GEOTHERMAL SYSTEM

The City of Raleigh was awarded a $1.3 million grant from the federal Department of Energy for a geothermal heating and cooling system at the City’s new Wilders Grove Solid Waste Services (SWS) Operations Center. The City hosted an opening ceremony for the new facility today.

The grant covered about half of the estimated $2.6 million cost of the geothermal system. City funds were used to cover the rest of the system cost. Installation of the geothermal heating and cooling system at the Wilders Grove SWS Operations Center follows the City Council’s adopted policy of using renewable energy in municipal buildings to enhance energy efficiency.

Geothermal heating and cooling systems use ground temperatures as an energy source for heating and cooling comfort. Though outdoor temperatures fluctuate throughout the year with seasonal changes, ground temperatures four to six feet below the Earth’s surface remain relatively moderate and constant year-round. The geothermal heating and cooling system uses pumps to circulate water from a series of wells through an underground loop piping system.

During the heating cycle, the water circulating through the loop piping system extracts heat from the ground. The geothermal unit compresses the extracted heat to a high temperature and, in this case, delivers it to the Wilders Grove SWS Operations Center through a heat system. The process is reversed for the cooling cycle. Because the earth is much cooler than the air temperatures on a hot day, the geothermal system removes heat from a business or residence and deposits it into the ground. This results in cooler indoor temperatures. Also, some of the heat that is removed by the geothermal system can be used to heat water.

The geothermal heating and cooling system at the Wilders Grove SWS Operations Center is expected to pay for itself and produce energy savings in just two years. Energy savings from the unit are anticipated to be more than 30 percent compared to a conventional heating, ventilating and air conditioning system, the City of Raleigh estimates. Additional savings of 20 percent are expected from hot water heating provided by the system.
Furthermore, the geothermal unit helps the City achieve its goal of reducing its use of fossil fuels by 20 percent over five years.

The state-of-the-art 24,000-square-foot Wilders Grove SWS Operations Center, located off of Corporation Parkway in the City’s now closed Wilders Grove Landfill, is the new headquarters location for Solid Waste Services Department staff and vehicles. The department had been housed at 400 W. Peace St. The operations center is among the first remote operations facilities built by the City of Raleigh to make City services more convenient to residents.

The City of Raleigh is seeking Platinum LEED certification for the Wilders Grove SWS Operations Center. LEED, or Leadership in Energy and Environmental Design, is granted by the U.S. Green Building Council for meeting high standards of environmentally sustainable construction. Platinum is the highest LEED rating.

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