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From Clam Shells to Recycling: The Ongoing Story of South Jersey Garbage

Jim Alexander



One summer's day many centuries ago, an early native visitor to the tidal marshes near modern-day Tuckerton tossed a clamshell onto a pile. The clam had been delicious, and as more were eaten, the consumers added their discarded shells to the pile. In succeeding centuries, these visitors continued their summer pilgrimages to the shore, and did likewise. Early on, there had been oysters, now at the bottom of the growing pile, which came to include turtle shells, bird skeletons, deer bones, and remnants of small mammals.

The European settlers pushed the Lenape out of the area, and years later those few who remained were asked about the pile (see aerial view below).² They said they did not know, and reportedly suggested they were from some earlier ancestral people.³

In fact, the Tuckerton Mound, a historical remnant that archaeologists call a shell midden, was one of New Jersey's first garbage dumps. With hundreds having once dotted the salt marshes along the back bays of the

Atlantic coast, the mound at Tuckerton is one of the few survivors.⁴

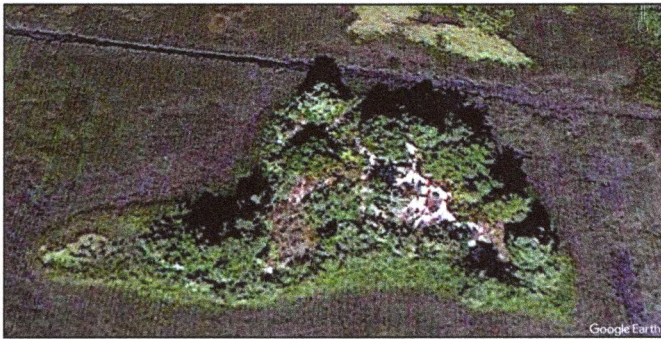
GARBAGE AS A PRODUCT OF LIVING

Throughout the ages, as people gathered to live more permanently in towns and then larger cities, the waste byproducts of their daily lives grew to be problematic. Removing the garbage out of sight did not mean that it no longer existed; it was just located somewhere else, and South Jersey was no exception.

Today, solid waste is classified into many categories,⁵ such as industrial, agricultural, hazardous, and municipal. The latter is our main focus: in large measure this is what the trash and recycling trucks regularly haul away from your home.⁶

It is an endless series of refuse streams which all have to go somewhere, and although well through the nineteenth century it was considered a personal or private enterprise issue, of necessity, the government is now heavily involved in its removal, operations, and oversight.

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Tuckerton Shell Mound. aerial view as seen in 2010.

In the United States, an estimated 4.9 pounds of household waste are produced per person every day.⁷ By one measurement, New Jersey produces 22 million tons of solid waste each year.⁸ The amount has been increasing, and it is an ever-expanding problem.⁹

States have enacted laws regulating how it all gets handled.¹⁰ In New Jersey, the legislature assigned the lead coordinating role to county governments for the services that municipal governments provide. Even the United States Supreme Court has weighed in, curbing the ability of states to control the transport of solid waste across state lines.¹¹

EARLY IN THE UNITED STATES

Pueblo dwellers in the Southwest tossed their trash near their cliff dwellings. Scraps of food, broken pottery and tools went down the slope in front of their homes. Much of what we know about their culture and daily life comes from such garbage heaps, which archaeologists call “kitchen middens.”¹²

As cities grew, the common practice of throwing waste out the window became a problem. In some cities, such waste included not only trash, but food scraps and chamber-pot contents, and at times dead animals were dragged to the gutter. The accumulations became smelly, unsightly, and unhealthy. One resulting practice was that of women being escorted on sidewalks to the right of the gentleman, so as to be better protected, and the use of nosegays whose floral scents helped mask the offensive odors.

NEW JERSEY’S LOCATION PROBLEM

Although not documented, Ben Franklin is often quoted as describing New Jersey as a keg tapped at two ends, referring to its location between New York City and Philadelphia.¹³ Flowing out of the two taps came the agricultural abundance of New Jersey, leading it to be called the Garden State. However, an inflow of waste

from both cities also occurred, eventually leading to the disparaging moniker “the Garbage State.”¹⁴

North Jersey’s problem was more acute. In 1657, New Amsterdam, now New York City, had passed a law to halt the practice of throwing waste onto the streets.¹⁵ With its own land area limited, the city had to export much of its garbage.

It is estimated that into the 1980s, New Jersey received more than 12 million tons of waste per year from other states, much of it from New York and Pennsylvania, into its landfills.¹⁶ Even today, New York ships massive amounts of waste to far-away sites by truck and rail.



New York City garbage train headed south at West Trenton.¹⁷

During the 1900s, the more populous North Jersey generated more of its own garbage than South Jersey and had to also contend with a massive inflow from New York City.

Large landfills spread across the Hackensack Meadowlands, with odors, noise, and pollution of adjacent waterways. In 1969, New Jersey embarked on a decades-long effort to bring those environmental threats under control.¹⁸

Mob rules in NJ garbage industry

When New Jersey created the State Commission on Investigation (SCI)²⁰ in 1968, its first public report the following year was entitled “A Report Related to the Garbage Industry in New Jersey.”²¹ The report revealed infiltration of the solid waste industry by organized criminal elements. It also identified a lack of uniformity in local governments in meeting their needs for waste collection and disposal, with a tendency of each town to act in its own immediate interests, rather than on a larger, comprehensive basis.

It suggested that the State should consider the

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acquisition and operation of regional landfill disposal sites. It identified solid waste “trade associations” which operated to rig prices and block competition; and pointed out the genesis of criminal infiltration as coming from New York, with the Mob’s initial focus on collection contracts for factories and businesses. This resulted in the lawmakers enacting legislation for licensing and regulating solid waste operators, as well as the 1970 New Jersey Antitrust Act.²²

Notwithstanding such efforts, “Mob rules in N. J. garbage industry” was the lead headline in a series of articles²³ that began in March 1982 in local Gannett newspapers. The series criticized the failure of State regulation in keeping the industry free of nefarious infiltration. The examples cited all involved North Jersey, however.

In 1987, the SCI followed up with a report that deemed the State’s regulatory efforts inadequate. It noted the absence of competition in the solid waste industry. Additional reports followed, often bemoaning the ineffectiveness of state regulation.²⁴

Governor Jim Florio, a South Jersey native, created the Office of Environmental Prosecutor in 1990, which undertook a series of investigations and prosecutions. Those indicted included seven officials in the Camden Public Works Department, on charges of accepting bribes to allow illegal dumping. The *New York Times* described the situation in an article which noted government efforts to assure that “the Garden State does not regain its grim reputation as the Garbage State of a decade ago, when waste dumps smoked and smoldered, waterways were glazed with gunk and Federal officials identified more toxic cleanup sites per square mile than in any other state.”²⁵

“... Regulation itself doesn’t work,” said John Kaye, the Ocean County Prosecutor. “Regulation has been going on for 30 years and people don’t comply, because there are always ways around regulation. . . .”

“In those days you had landfills that were burning, drums of chemicals were exploding; it was a mess,” said Robert T. Winter, director of the Division of Criminal Justice in the State Department of Law and Public Safety. “Polluting was treated under the public nuisance law, a misdemeanor, and if inspectors tried to look over a landfill, they’d just be threatened until they went away. So . . . we had to go after them criminally.”

Again, for the most part, attention to criminal aspects of the business related to North and Central Jersey. Mentions of Philadelphia intrusion in South Jersey were less prominent, although investments in

solid waste disposal sites sometimes involved questionable sources.

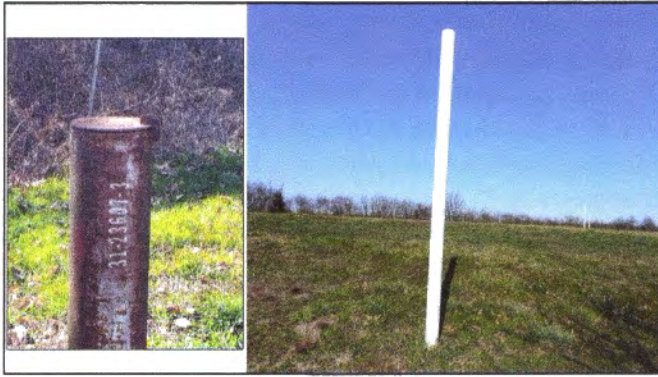
Faced with increased state scrutiny and stronger federal environmental laws, several very large national firms absorbed local garbage companies over time. The industry today is substantially freer from criminal influence than before, with new focus on scientific and business-like processes as the best way to succeed economically,²⁶ although as recently as 2016, some allegations arose regarding the Philly mob’s attempted intrusions into South Jersey.²⁷

Other criminal or law-skirting issues in South Jersey relate to the miles of back roads in the Pine-lands. Poorly patrolled, with few observers around, the “midnight dumping” of dirty waste ranging from drums of used motor oil and chemicals to tons of old tires and construction debris presents an ongoing issue for law enforcement and environmental protection.²⁸ One state official commented: “I flew over that area, and there is some strange stuff down there. It’s very suspicious—dirt roads that go nowhere and just stop at clearings.”²⁹

Certainly, the money involved in handling solid waste can raise questions. When Burlington County began coming to grips with its solid waste problem, it created a County Utilities Authority, but it became a partisan issue with the out-of-power party’s officials claiming that it represented a power grab which, among other things, would enrich a favored engineering firm. The Authority lasted only about one year and the county’s role was eventually assigned to a new Department of Solid Waste.³⁰

In 1993, a relatively new Township Committee member in Lumberton complained about the municipality’s high engineering expenses and other members reminded him of the costs involved in closing the town’s small landfill to meet state regulations. At that time, some had forgotten that the State Public Advocate had identified the site in a 1978 suit against the State Department of Environmental Protection as one of three landfills in Burlington County that had been opened without the legally required engineering designs to prevent pollution.³¹ Just closing a landfill by covering it with dirt and walking away was not sufficient; it required careful engineering. Thirty years later, while successfully closed, that former landfill still requires monitoring at water sampling wells and methane probes, plus regular sampling of the adjacent Rancocas Creek.³² The cost of monitoring landfills and follow-up actions frequently extends for as long as 30 years

following approved closure, and the State now requires municipalities to set aside funds for such purposes.³³



Former Lumberton Landfill, water monitoring and methane discharge pipes.³⁴

Whether by intent or not, some landfills had multiple, changing owners, which complicated legal and enforcement actions.³⁵

The import of waste heavily impacted South Jersey with much of it initially derived from Philadelphia.

In the 1700s, Benjamin Franklin had worked for the creation of the first garbage collection and street-cleaning service in Philadelphia, as well as encouraging the public to dispose of their waste in pits.³⁶ But there was limited land in the city.

The open land in South Jersey beckoned. As things evolved, South Jersey had to contend not only with waste incoming from Philadelphia and even New York, but also from North Jersey's more congested locations.

Like North Jersey, South Jersey had pig farms. As late as 1994, Philadelphia was paying South Jersey pig farmers to collect and haul 24,000 tons of food waste across the river, which saved the city \$3 million a year.³⁷

In 2011 a reporter for the *Newark Star Ledger* visited Deptford in Gloucester County,³⁸ and noted



Harry Stotsenburg at his pig farm in Deptford, New Jersey.

that the area once contained 100 pig farms.³⁹ Tracking down one of the remaining ones by smell, which he pronounced as “the most rancid, rotten moldy cheese stuffed inside a sweaty old sneaker,” he then described its operation. In an interview with its operator, Harry Stotsenburg, he showed the pigs at work consuming food scraps gathered daily from restaurants and food facilities. Nearby, crows waited while vultures circled overhead.

The industry diminished in the face of suburban sprawl. By 2017, one government survey of Burlington County counted only 2,000 pigs,⁴⁰ typically in smaller and more closely managed locations. As a consequence of the suburbanization pressures, remaining farms must also contend with complaints and neighborhood issues.⁴¹

Landfills serve as the predominant disposal method nationally, with over half of municipal solid waste landfilled. A third is recycled or composted, and 12% is incinerated at waste-to-energy co-generation facilities.⁴²

Of New Jersey's four authorized incinerators, two are located in South Jersey: in Camden City, Camden County, and in Gloucester County's Westville. Both were originally established by the local governments, but now private companies operate these plants under contract. Incinerator operators assert that their facilities require less land to be used, since they leave much less residue that needs to be landfilled. These co-gen facilities can produce electricity as a cheap byproduct, and they allow recyclable metal to be extracted.

Opponents loudly complain that despite claims to the contrary, incinerators produce air pollution that impacts public health, and that 80% of them are sited in low-income neighborhoods and communities of color, thereby making them inherently discriminatory.⁴³ In response, recent New Jersey legislation has led to rules imposing special environmental hurdles for a variety of waste-processing facilities, based on the concept of environmental justice.⁴⁴

Given Federal legislation and regulatory actions, largely initiated in the 1970s and especially related to clean air, considerable garbage flow that might have gone to incinerators ended up at landfill sites.⁴⁵ All eight counties in South Jersey now utilize landfills.⁴⁶ The incinerators in Camden and Gloucester counties do aid in reducing the volume in their various landfills.

THE BURLINGTON COUNTY EXAMPLE

When the State Department of Environmental Protection counted the number of known landfills in

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New Jersey during 2014, it found 853 with most no longer in business. Of this number, South Jersey's eight counties accounted for 335 with Burlington County containing the largest number, 58.⁴⁷

While each county has some variations, a more detailed look at Burlington County's experience provides an understanding of what is at play in South Jersey.

Back when Burlington County featured an agrarian landscape, eliminating trash and waste proved to be less of a problem. Dig a hole out back and bury the stuff, or throw it in a bonfire. Neighbors were not that close and nobody was watching. Small towns had the village dump or unsophisticated landfills, such as at Lumberton, whose improvised landfill occupied a 29-acre area along the Rancocas Creek. Mount Holly, which had developed early in the county's history, initially had its own dump close to town, not to be confused with the much larger nearby landfill that later came into operation on Route 38, sometimes known as the Mt. Holly Landfill. Nearby neighbors protested the problems they encountered with smells, rodents, mosquitoes, as reflected in this headline from 1962, when they descended on a meeting of the town council.⁴⁸

New Mt. Holly Council Organizes Body Gets Baptism of Fire With Dump, Rats Problems

With growing pressures from urban areas elsewhere to find disposal sites for their garbage, open areas like

Burlington County became attractive dumping targets. Major landfills began small, and lacking much future planning, received growing mounds of garbage from urban areas.⁴⁹ Materials continued to be dumped in backcountry areas devoid of official approval.⁵⁰

For an example of a major landfill's evolution, those traveling eastbound on Route 38 toward Route 206 today see a long fenced-off hill on the left, the closed site of a 200-acre landfill, constructed within a former gravel and sand pit, which operated for several decades into the mid-1980s. After depleting the sand and gravel deposits, the pit received demolition debris amounting to ten feet in height. About 1968, the dumping of individual and commercial waste, and even sewage sludge began at the site.⁵¹ By 1986, with its state license having expired, the Mt. Holly Landfill and Development Company closed the site, and proceeded with several decades of remediation.⁵²

Its grassy slopes today host a large PSE&G-operated solar power farm. In a major advancement, its 42,000 panels produce enough electricity to power 2,000 homes, establishing a trend followed elsewhere to find uses for closed dump sites.⁵³ Less evident at the former landfill are sedimentation ponds, a leachate collection system, and methane gas management piping, all designed to counteract potential pollutants emanating from the massive pile of waste as it decays and settles.

Depositing waste on available land without proper planning, now recognized as a necessity, has created serious environmental problems for succeeding generations. The land near this Mount Holly site slopes toward the Rancocas Creek's North Branch. Testing



Partial view, the closed Mt. Holly Landfill and Development Co. Landfill today.

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revealed that the landfill had already polluted several underlying aquifers with a series of chemicals with long names and dangerous consequences if consumed. Remediation efforts are now in place. Workmen installed clay barriers and collection equipment to control leachate (the nasty liquid that drains out from the decaying garbage) and methane gas. The pollution did not reach the important lower Englishtown aquifer, but local wells required redrilling to a deeper level and the pollution caused curtailment of nearby residential development. The EPA regularly monitors the site as part of its Superfund program.⁵⁴

Hundreds of vultures flood New Jersey town

For a decade, Mount Holly residents have had their neighborhoods invaded by turkey vultures. People have tried everything from chopping down trees to setting off firecrackers to let the birds know they aren't welcome.

Even after the closure of landfills with the resultant pollution controlled, other problems can arise. Over 50 years after protesting about the town's later-closed small local dump, residents of Mount Holly again began complaining about several hundred turkey vultures, as well as their cousins, black vultures, this time drawn by the much larger closed Landfill and Development facility farther out on the edge of town along Route 38. They roosted on historic homes and even favored the County Court House, leaving puddles of corrosive excrement on

cars and rooftops, and broken branches on trees where they roosted. Chopping down trees to remove roosting perches, setting off firecrackers, ringing cowbells, and even being advised to hang up a dead vulture failed to discourage the birds and provided no relief. The theories espoused concerning their persistent presence included the birds' attraction to mice at the nearby closed landfill (the Landfill and Development Mt. Holly site). "They might think 'let's roost on these nice rooftops where there's a buffet nearby,'" observed a consulting veterinarian.⁵⁵

Another example is the Big Hill Landfill, located in the Pine Barrens near the Leisuretowne retirement community, located off route 70 in Southampton Township. In 1981, a retention basin ruptured, resulting in the landfill's side collapsing. The ensuing five-foot flood and mudslide swept into nearby homes, carrying polluted water and debris. The flow uprooted trees and damaged buildings. Such occurrences have happened several times, and residents regularly complained about noise, trash, and odors.⁵⁶

The State expended over \$20 million making the site safe,⁵⁷ and Southampton suffered a considerable property tax loss from the disaster. The site recently received a solar array field on its surface.⁵⁸

Stacy Moore, who served for 26 years as Southampton Township's municipal counsel, became involved in years of complex legal advocacy and litigation against Big Hill.



Closed Big Hill Landfill with solar field and Leisuretowne and cranberry bogs in background.

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Moore recalled: "The landfill was accepting waste from not only New Jersey communities but also the City of Philadelphia. Because of its harmful impact on Leisuretowne residents, the Township energetically worked with the State Department of Environmental Protection and in the courts to assure compliance with regulations and in opposition to any expansion of the landfilling activity, eventually resulting in the bankruptcy and closure of the landfill."⁵⁹

An example of the widespread pressures to find disposal sites occurred in 1977, when Parsippany Township in North Jersey's Morris County needed to expand its sewer plant. To make room, it decided to remove 550,000 cubic yards of garbage from its adjacent dump and truck it to Burlington County. Targeted landfill recipients included the Big Hill site, and one in Florence Township, the Florence Land Recontouring site, which in places was already 40 feet higher than its authorized size.⁶⁰

Private haulers bring Phila. trash to N.J.

When an engineer representing Parsippany was asked why the distant Burlington sites had been selected, he cavalierly replied that the "rural area" had "a different sentiment" toward dumping than Morris County did.⁶²

An illustration of the casual manner of dumping in South Jersey occurred in 1978, when city garbage haulers in Philadelphia went on strike, and garbage piled up on the streets. Three years earlier, estimates placed the quantity of Philadelphia's solid waste then hauled to the Mount Holly Landfill as amounting to one-third of all city refuse,⁶³ but now striking city workers blocked any attempt to haul the trash away.

Mayor Frank Rizzo ordered contractors to haul it off. A ten-truck caravan, escorted by eight Philadelphia police cars and half a dozen motorcycles, crossed over the Tacony-Palmyra Bridge, headed for three South Jersey landfills. When they reached the Mount Holly landfill, one Philly cop was asked how it felt guarding trash instead of people. He responded with a grin, "I was assigned this detail. . . Besides, it gets me out into the fresh air and it's a nice ride." When a Mount Holly officer noticed the commotion, he stopped by, leaned out of his patrol car, and commented: "That Frank Rizzo, now he's my man."⁶⁴ Receiving garbage from Philly was just another normal day.

Pressure on Burlington County increased when the county's last commercial landfill, Parklands in Bordentown, reached its full content capacity in 1987, while the county was still building its own new facility.⁶⁵ It was a challenging period. Solid waste management is expensive, complex, and fraught with political, legal, and environmental issues.



Burlington County Landfill in Mansfield Township.⁶⁶

As early as the 1970s and into the 1980s, while Burlington County worked on resolving the challenges of devising a county-wide solid-waste program, efforts of outside municipalities to dump there continued. In 1975, the county successfully blocked Trenton and two of its Mercer County neighbors from purchasing the 90-acre Florence Land Recontouring Landfill site as a disposal site for their garbage.⁶⁷

That site straddled the border between Florence and Mansfield townships, near the Turnpike and Interstate 295. The adjacent area became the choice place for Burlington County to create its new 128-acre county-wide landfill as part of what is now the 520-acre Burlington County Resource Recovery Complex. A major advantage at the site is the several hundred feet of naturally occurring, underlying clay. If a landfill liner ever failed there, it would take 1000 years for any leakage to contaminate the underground water aquifer.⁶⁸

What evolved was a successful, coordinated county solid-waste program that uses modern methods to meet its needs.

HOW DOES IT WORK?



Hauling it away at Lumberton.⁶⁹

For home residents in the county, it all starts with curbside pickups, either by municipal workforces or contractors. Garbage, trash, and bulk items are typically picked up curbside from the homes. Regarding recycling, Burlington County is responsible for collecting paper, cardboard, bottles, cans, and certain plastics, and provides biweekly pickups on trucks contracted for this service, through the Occupational Training Center.⁷⁰ Following the pick-up, “it’s out of sight and out of mind” for residents, but the real work is just beginning when the trucks pull away from the curb.

THE GARBAGE

The garbage ends up at the massive Burlington County Resource Recovery Complex, which is the focal point for the countywide solid-waste program that must meet extensive State regulations.⁷¹ On the following page is a simplified overview of the Complex’s physical facility prior to its pending expansion.

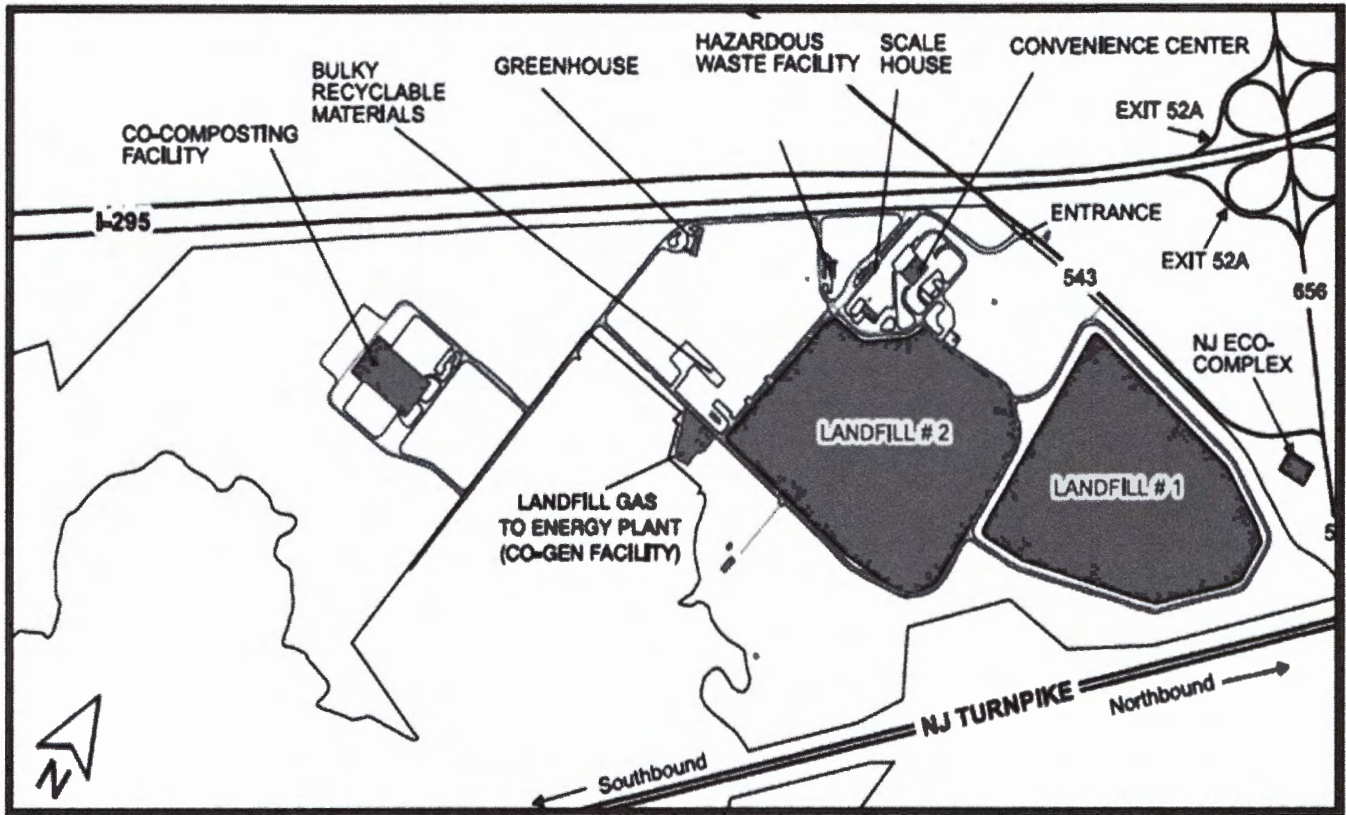
It is a massive, complex, and impressive operation, involving much more than piles of garbage and recyclables.

The most visible component at the center is the landfill operation, where the garbage gets dumped. Trucks carrying incoming garbage are weighed, and towns pay the county a tipping fee of about \$99 per ton. Waste Management, Inc., operates the landfill under a contract with the county. Methane gas from the decaying matter, captured with a series of buried pipes, has served to generate electricity, and enabled a 46,000-square-foot greenhouse on the site to be heated and lighted. The landfill gas-to-energy program entered a hiatus in 2021 due to economic issues, but the county recently signed an agreement for the construction of a renewable natural gas facility that will enable sale of the gas as a transportation fuel.

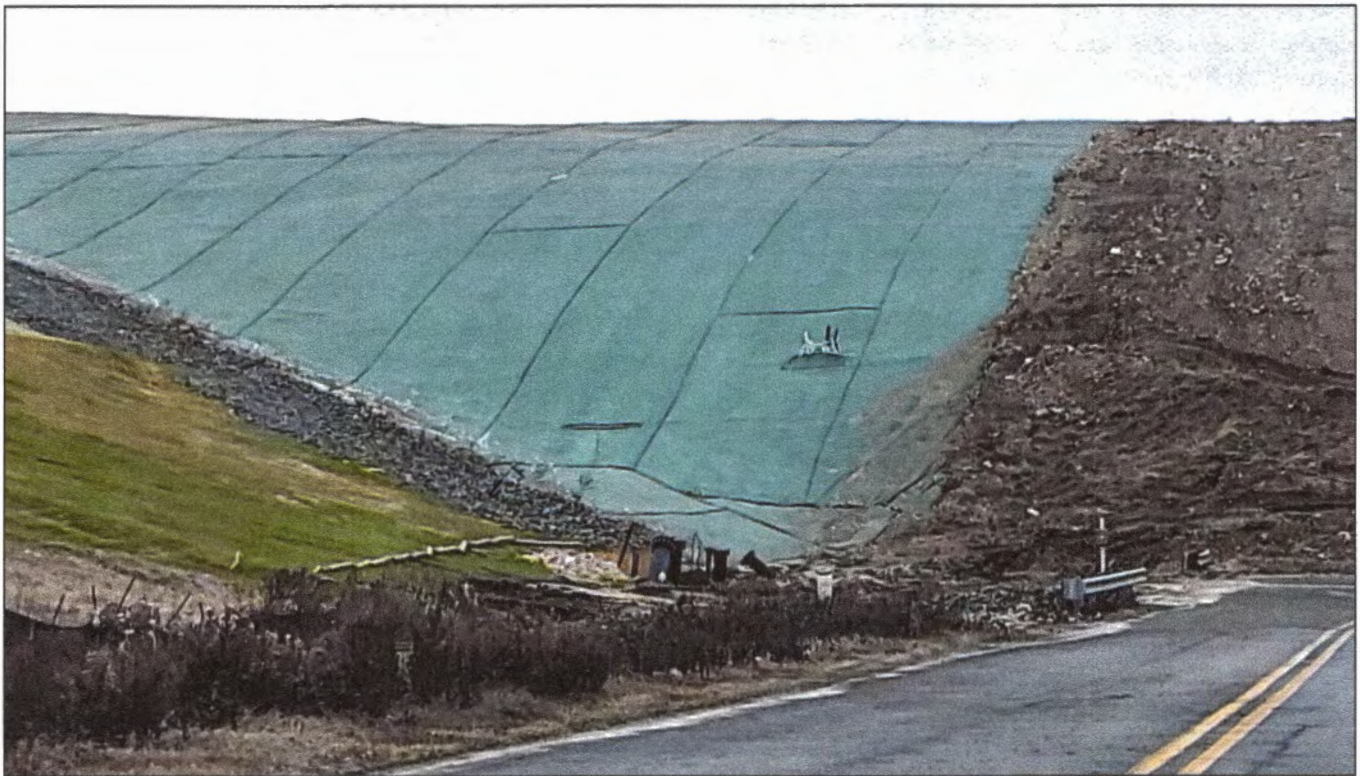
On the site,⁷² Landfill No. 1, with a capacity of 6 million cubic yards, began operations in 1989 and reached full capacity within ten years. From its inception, it featured a clay liner and collection and treatment systems for leachate containment. The county completed constructing an impermeable landfill cap, including a gas extraction and collection system, in 2003.

Nearby is Landfill No. 2, designed as a bioreactor landfill with a composite liner, an advanced leachate capturing and recirculation system and a gas collection system. It opened in 1999 and, even with the more recent filling of the space between Landfills 1 and 2, will reach full capacity in 2026, with a permitted height of 172 feet above sea level (roughly 100 feet⁷³ above adjacent land). With that in mind, the county planned Landfill 3, to occupy 50 acres of adjacent land, adding about 7.5 million cubic yards of capacity. Now undergoing the State Environmental Protection review and permitting process, it is expected to provide continued service until circa 2040. As expansion occurs, some infrastructure such as the weigh-in station will need to be relocated, and the experimental greenhouse removed.

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Burlington County Resource Recovery Complex General Layout.⁷⁴



View of Burlington County Landfill, showing top liner placement.⁷⁵

This huge facility is not just a place to dump things into a big pile. The number and complexity of operations, involving multiple workers and contractors, with a steady stream of trucks climbing the hill under strict safety procedures, is impressive. While requiring skilled engineering and design, there are major planning, coordination, and managerial challenges involved.

Evolving new techniques are used to extend the life of landfills. For instance, trucks slowly climb the mound and dump their loads in a carefully choreographed manner, on the location designated for the day with enforcement of strict safety protocols. Heavy equipment immediately spreads and flattens the garbage, with spikes puncturing the large number of plastic bags, to facilitate compacting and decomposition. Temporary fencing catches any wind-blown materials, and staff are on-hand to gather any loose materials. Throughout each day, mechanized equipment covers the daily depositions with soil. While management anticipates some settling, a primary objective at most sanitary landfills today is to encapsulate and isolate the deposited material from the environment.

To meet state nuisance-avoidance regulations, the facility releases trained falcons to fly over the area and scare off seagulls. The falcons receive regular feedings, so they don't generally attack the gulls, but their mere presence effectively wards the gulls off.⁷⁶ (An interesting alternative situation may be observed at the Atlantic County landfill, where its closeness to the Atlantic City International Airport makes it critical that no birds interfere with landings and takeoffs. So there, incoming garbage is dumped inside of an enclosed transfer station during the day, and while the seagulls are sleeping at night, crews transfer it to other trucks to spread on the landfill and then cover it by dawn.⁷⁷)

The Burlington County Resource Recovery Complex also receives special items, including used electronics, paints, freon, scrap metal, bulk materials, etc. The complex handles these special items, sometimes in concert with the Occupational Training Center, and then typically ships them to other locations for sale or for further processing.⁷⁸ The complex currently ships excess leachate that can't be processed on-site for offsite processing, but the county anticipates local processing will resume in the future.

The site also receives municipal sewage sludge from the Mt. Holly Municipal Utilities Authority in a process that combines it with fine wood chips to produce composted mulch. Golf courses and other such facilities purchase the composted mulch, which

generates revenue for the complex. The landfill uses coarser wood chips as a temporary covering for daily dumping on the landfill.

RECYCLING

New Jersey mandates that recycling programs be operated at the county level, and intensive recycling efforts are underway throughout the state, involving both public and private investment. The state's goal is to recycle 50% of the solid waste stream, and 60% of the overall waste stream.⁷⁹ Its importance is evident when one considers how much time decomposition requires if deposited in a landfill. While rates vary widely based on conditions and the material, some typical estimates⁸⁰ indicate that glass in a landfill can last a million years, plastic bottles 450 years, and from 6 weeks to a thousand years for other items.

In one research effort, quite legible old newspapers found in landfills were used to date adjacent materials to facilitate economic and social analysis of what people within a given time period threw away.⁸¹

The nonprofit Occupational Training Center operates Burlington County's municipal waste recycling program under a contract with the county, and the collected materials are processed in nearby Westampton Township.⁸² From this location each day, 22 dedicated trucks collect 175 tons of recyclables from homes in the county's 40 municipalities. The training center also performs additional recycling there under contract for nearby state and federal facilities, a major example of successful shared services.⁸³

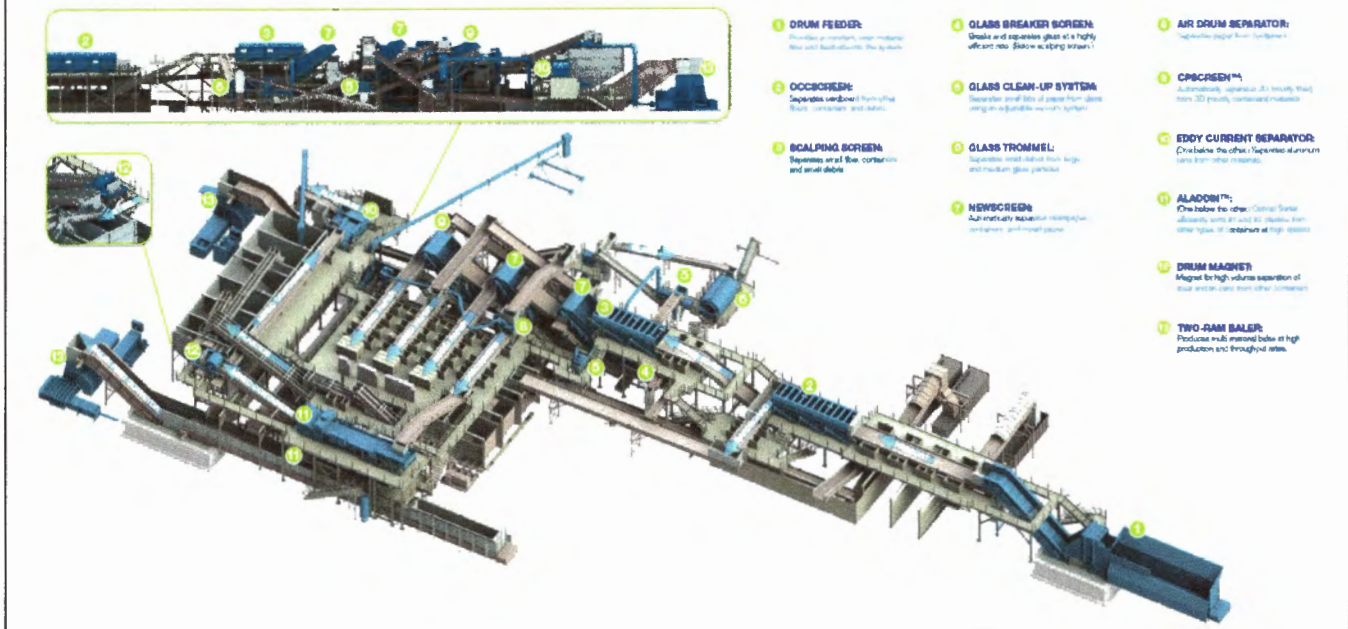
Inside one end of the massive building, each truck dumps its collected materials, and a front-end loader scoops it and dumps it into a feed hopper and metering drum, where the sorting process starts. Automated equipment does much of the heavy handling and sorting, as seen in the diagram below, which includes use of conveyors, gravity sorting, blasts of air, optical scanners, infrared devices, magnets and Eddy currents.

The functionality, however, wholly relies on the watchful eyes of employees who catch and sort what the machinery missed. Several dozen individuals thus perform productive tasks and learn skills and work habits that benefit them and their community.

The automated sorting equipment allows the county to operate single-stream recycling, thereby relieving the citizenry of separating their paper, cans, bottles, and plastics. As with most such recycling systems, market factors affect the ultimate use and destination for the materials. The training center's high-quality processing

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35 TPH SINGLE STREAM SYSTEM BURLINGTON COUNTY, NEW JERSEY



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has aided the county in coping with these pressures. It is estimated that no more than 12% of the recycling collected ends up at the landfill.⁸⁴

The county successfully sells the resulting recycled materials on the open market, where the private sector processes them further. The products that emerge from the other end of the building to be sold include:

- Crushed glass, which a commercial firm then purchases and processes it into “foamed glass” products used for insulation, aggregates for lightweight road and embankment fill, cement, and planting mixes. When a truck fire damaged an overpass on Interstate 95 in Philadelphia during 2023, and the repair work required expedited



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rebuilding, Burlington county's recycled glass, turned into foamed glass aggregate, served as a major element allowing the rapid completion of the project.

- Plastics, which the facility manages to successfully process as a salable commodity to North American companies that reutilize the material.
- Cardboard and paper, bundled in massive bales, that can be reused to create other products, including new paper products.
- Cans, steel and aluminum, to firms that reuse the material.

One state report cites Burlington County as recycling 41% of the materials collected from the towns, while another measure suggests a total rate of 53%.⁸⁵

None of this effort is accomplished without a significant cost. The 2024 annual Burlington County budget to operate the solid waste and recycling activities amounts to \$40 million,⁸⁶ and this does not include expenses municipalities incur to collect and haul their garbage to the landfill and perform other solid waste functions, nor an estimated \$27 million that the County anticipates spending on purchasing equipment and upgrades for solid waste facilities over the next five years.

RUTGERS ECOCOMPLEX

Adding to the success of Burlington County's efforts is the Rutgers EcoComplex,⁸⁷ part of the university's Agricultural Experiment Station, located at the main Resource Recovery Complex site. Space is provided for small startup companies to develop environmental innovations and become successful enterprises, with labs, office space, and meeting facilities. Its activities range from providing advice to the county on its solid waste operations to the latest offshore wind-energy efforts.



A major accomplishment has been the cooperation between the Complex and the county in designing, evaluating, and fine-tuning the portion of the landfill that can use bioreactor technology to promote faster waste degradation, decreased strength of leachate, and more effective capture of landfill gases.⁸⁸

One of the early incubator partners was a company formed based on an idea that a university student had to create worm poop plant food from leftover cafeteria waste and sell it packaged in recycled containers.⁸⁹

A 46,000 square-foot experimental greenhouse operates elsewhere on the site, with guidance from the EcoComplex, and employs people from the Occupational Training Center, devising new methods to grow local produce. Over time, the greenhouse has grown tomatoes and other vegetables to sell in local markets, making use of hydroponics and a variety of pioneering and recycling methods, and in some cases, using energy resulting from landfill gas.⁹⁰ It is scheduled to be removed in 2025 to accommodate the landfill's expansion.

The County's solid waste operation is headquartered within the EcoComplex building, facilitating the sharing of information.

CONTEMPLATING THE FUTURE

"This is the problem with trash, someone can carry it away, but it doesn't actually disappear."⁹¹

And while there is ample land in the nation on which to dump it, and even perhaps some in South Jersey, the dump primarily ends up in the wrong place, has environmental consequences, or would be near residents who understandably want nothing to do with it.⁹²

So, while efforts to recycle and to redesign products to have less disposal impact are underway, the eight landfills in South Jersey are running out of room. Several types of coping approaches are being undertaken.

In Burlington County's case, it has been fortunate to have an ideal geological location, and its pending Landfill 3 should carry it through until 2040. But in terms of planning and financing, that's not a long time, and given the current rate of suburban development, it is not unlikely that future needs will dictate it be hauled off to "somewhere else." Several other counties are facing a more acute pressure.

When Atlantic County began its successful landfill operation in the 1990s, it replaced 46 old unlined landfills which posed the danger of polluting the

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county's high-water table.⁹³ Looking toward the future when it might run out of room, some years ago a group at Stockton University sought to identify potential alternate sites for future consideration. It identified a number of possible locations based on regulatory criteria, briefly considered them, but concluded that much further study would be needed, observing that a multitude of factors would have to come into play.⁹⁴

With garbage being produced endlessly every single day, the methods of handling it requires considerable advance planning. As with Burlington, Atlantic County's Municipal Utilities Authority (ACUA), which operates the landfill, has pursued a series of steps over several decades, all requiring considerable planning and evaluation of changing regulatory and technological factors.

Thus, in 2006, ACUA received permission to expand the landfill's capacity by installing a mechanically stabilized earthen (MSE) berm, essentially a wall, around the perimeter of the existing landfill. The berm provides additional room so that garbage can be placed in the space between the wall and the previously engineered slope of the landfill.⁹⁵ Construction of the wall began in 2020, and the third phase of the project is currently being completed.

This should keep the landfill open until around 2029.⁹⁶ In the meantime, the ACUA is pursuing a

national search for innovative solutions, such as creating energy from waste and reducing the amount that has to be piled somewhere.⁹⁷

Ocean County, the only South Jersey county to feature a private-sector owned and operated landfill, is also running out of room. It took a different tack, however.⁹⁸ While there's been discussion about "mining" old landfills to extract plastics, metal, etc., which would also ease capacity, the idea has not taken root in the United States, and involves difficult practical, environmental, and financial challenges. Ocean County is following a different variation of mining. Test borings of their oldest section, which had not been built to current standards, found that its contents had been "cooked" or decomposed to a greater degree than expected, making it a source of new "dirt." Considering that the county paid money to bring in dirt from other sources to cover the daily dumping on the active area, they decided to use this newfound dirt to cover the newly dumped material. The landfill's operator excavates the contents from the old section, runs it through a large trommel to sift the smaller, more decomposed, particles from the larger pieces, and uses the resultant soil as a cover. The soil excavation allows the old area to be rebuilt to receive new dumping. They estimate this effort will add at least ten years to the landfill's useful timespan.



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LOOKING BACK AGAIN

Mining the contents of existing landfills to extract the metal and glass buried there for reclamation and reuse is nothing new. In the early 1800s, when now-forgotten coastal industries needed minerals for their manufacturing processes, and farms needed to sweeten their fields, crude mining occurred at many of the old “Indian” shell middens, including the Tuckerton Shell Mound, for their lime contents. As a result, and coupled with natural erosion and development, most have disappeared from the coastal marshes, leaving only the Tuckerton mound, now reduced in size, to continue relating the story.

And we can place things in perspective: as Burlington County was in the process of establishing its central landfill in 1985, three municipalities still retained their own municipal dumps: Burlington City, Lumberton Township, and Tabernacle. Burlington County’s other towns depended on expensive commercial landfills that fast approached full capacity. One spring day in 1985, a staff writer from the *Philadelphia Inquirer* decided to take a look at the three municipal landfills.⁹⁹

Visiting Lumberton, where suburban development and its impact remained in the future, she wrote:

“There is not the typical mound rising against the horizon . . . no rumble of trucks on pilgrimage to the site. Aside from a weather-worn sign, none of the usual evidence of a sanitary landfill. . . . Life at the Lumberton landfill is quiet, clean, and almost pastoral.”

Lumberton began using the dump in the early 1960s, occupying some 28 acres that she described as appearing to be “nothing more than a barren expanse and sandy bluffs,” with it being hard to see where the buried garbage lay.

Some local residents vaguely remember it today as starting out as “the town dump.” In earlier times, portions of the general area, sloping down to the nearby Rancocas Creek, had undergone mining for sand and marl, probably making it a logical place to begin dumping, although this site was recalled later as “just a low spot that was available.”¹⁰⁰ Again writing in 1985, the reporter noted that the township had one truck to collect the garbage, and one small front-end loader to maintain the landfill. She observed that it was hard to see where the garbage was buried, a fact in which the sole equipment operator, Howard Moore, known to his friends as “Moorey, a tanned, grizzled man,” took great pride. Today, it is a quiet grassy field, part of the park leading down to the Lumberton boat launch.

Farther southeast in Tabernacle, she spoke with the town’s deputy clerk.

The clerk observed that the township’s smaller landfill seemed to have “always been there,” and recalled an earlier time when “it was a daily ritual to go to the dump. On Saturday, you’d meet your neighbors there.”

How things have changed.

ABOUT THE AUTHOR

In graduate school at the University of Pennsylvania, Jim Alexander focused on government, and spent much of his career in New Jersey local and state government management. He has always enjoyed writing on anything he encountered. In retirement, he has focused on local history, railroads, a local Nike Missile installation, the Tocks Island Dam debacle, and currently, on South Jersey’s marl industry.

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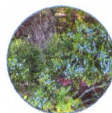
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- 100 To verify the reporter's characterization of these two sites back then, the author contacted Steve Moorero (phone conversation, March 29, 2023), who was Lumberton Public Works Director for many years, about Lumberton's landfill operation, and Rick Franzen, Tabernacle resident and former local official and historian with the Tabernacle Historical Society (email to author April 4, 2023). Moorero recalled that the Lumberton site started out in "a low, swampy area, otherwise useless, typical of where things might be dumped," and added that a local factory used to dump rubber tires near the creek there too. He recalled the character depicted in the article who ran the front-end loader, and the quiet nature of the place. His wife, Debbie Moorero, added that she recalled as a child, many years earlier, digging old glass bottles out of an older dump just upstream. Franzen recalled that at Tabernacle: "Saturdays at the dump were also a social event. You stayed for a while and chatted with friends and neighbors. . . . We also had a regular 'picker,' who often would take stuff from your vehicle, sometimes even before you stopped your car."
- 101 Diagram of Burlington County Recycling apparatus at OTC location, image provided by Ann Moore.
- 102 Photo extracted from *Occupational Training Center of Burlington County Recycling Program* video https://www.youtube.com/watch?v=KLi5Y16bpDU&ab_channel=OccupationalTrainingCenterofBurlingtonCounty.
- 103 <https://www.wastetodaymagazine.com/news/ocean-county-landfill-mining/>.



Savannah is the name of a small stream which crosses Landis Avenue just the other side of Broadway Station and empties into the Maurice River. During the dry season this stream is sometimes drained so that the water will not flow out of the shallow pond-like places. The other day the manager of the canning factory near by saw a great commotion in one of these ponds and, on investigating, found that

there were thousands of pickerel in the water. He got a large bran sack, and placing a barrel hoop in the mouth of the bag, scooped up six hundred pickerel and removed them to Muddy Run where they will be in no danger of dying for want of water. This act is commended by the fishermen, and others will help rescue more fish after the water from the recent rain subsides.

"Saving Pickerel," *The Vineland Evening Journal* (Vineland, NJ), June 19, 1902.