



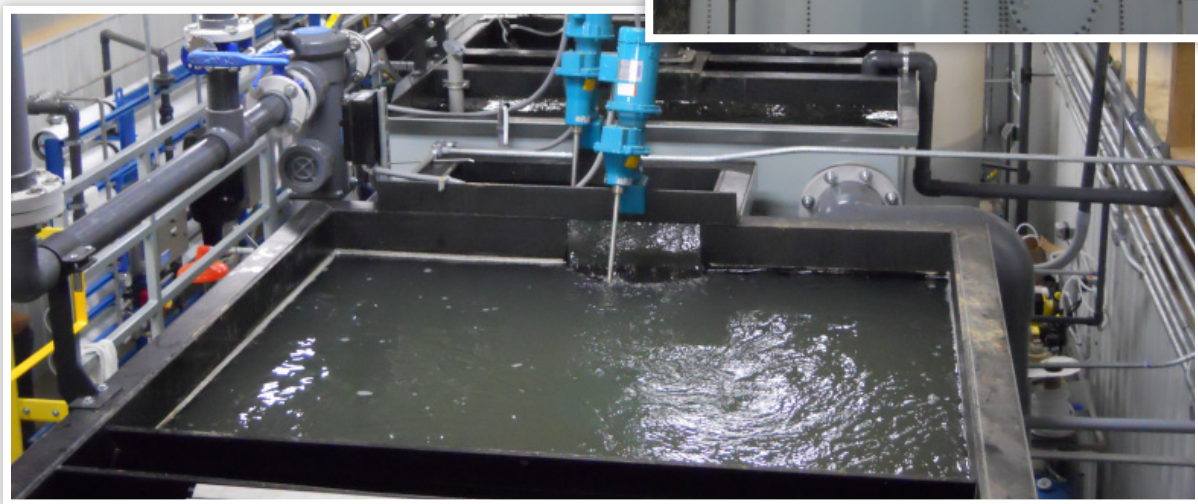
## Corporate Profile

The increasing demand on water supplies has created the need for innovative solutions to food manufacturers water treatment challenges. The Complete Water Services (CWS) group of professionals offers a powerful combination of experience and expertise:

- Water Usage
- Water Supply
- High Purity Systems
- Process Treatment
- Corrosion Control
- Treatment of Wastewater
- Reuse / Recycle Options

### Services include:

- Treatment System Design
- Treatment Equipment/Components
- Treatment System Integration
- Installation
- Construction
- Consulting, Training and Trouble Shooting
- Operational Services
- Custom Fabricated Skid/Package Systems
- Licensed General and Utility Contractors
- Licensed Water and Wastewater Operators





## CWS: An Industry Leader in Water Treatment.

Water is a precious resource. Only 1% of all the water on Earth is available for humanity's needs – agriculture, residential, manufacturing, community, and personal. In the industrial market, a quality water treatment system makes all the difference. Our industry is held up to the highest level of scrutiny.

At CWS, our experience, expertise, and environmental exceptionalism have earned us worldwide recognition as a leader in the treatment of water and wastewater.

We offer a powerful combination of hands-on experience, design, consulting, and construction expertise. There aren't many companies that can provide everything we do and do it well.

Whether you have a water or wastewater issue at your plant, need to install a complete water or wastewater treatment system for your facility, or need experienced assistance with a specialized industrial application, we can help.

## Skid Mounted Package Systems for Water and Wastewater Treatment

We specialize in providing customized pre-assembled water and wastewater treatment systems that simplify field construction activities. Our systems include package pumping and filtration systems, pH adjustment systems, membrane systems, high purity systems and packaged wastewater treatment systems.

CWS offers multiple treatment options including;

- pH Adjustment
- Iron Filtration Systems
- Dissolved Air Flotation
- Precipitation and Clarification
- Oil Water Separators
- Membrane Filtration Systems
- Water Softeners
- Package Wastewater Systems
- Reuse Systems
- Oil Field Skid Systems



## Water Recycle / Reuse

With the decreasing availability of freshwater, increasing cost of potable water, and drought conditions that exist in many parts of the country and world, the emphasis on water recycling and reuse has significantly increased.

One of the main reasons for water reuse programs is to identify new water sources for the increased water demand and to find economical ways to meet increasingly more stringent discharge standards. Water reuse is a drought-proof, renewable supply of water.

Many companies are establishing water reuse programs to reduce costs and to lower their overall water footprint as part of sustainability policies. Industries are implementing programs to become substantially greener. Often, these programs are based on an effective water strategy.

CWS can assist industries in these admirable goals. Reducing their water footprint can propel a company a long way toward sustainability. Facility water balances, evaluating processes to reduce water use, looking at water sources within the facility for other purposes, and additional water treatment for improved water quality for specific water needs are all ways that CWS can help your company make a difference.

Our innovative systems can purify the water to the level required. Processes include NF, RO, MBR.



## High Purity Water Systems

The majority of natural waters are not suitable for potable uses. Most municipalities or other entities provide some level of treatment prior to distribution to make the water suitable for consumptive purposes. Often, this potable water is not of a quality required for many industrial and most research applications. Additional treatment is required for the water to meet certain quality criteria. Many industries and organizations have established water quality specifications to meet their specific requirements. Many of these include:

- College of American Pathologists (CAP)
- National Committee for Clinical Laboratory Standards (NCCLS)
- American Society for Testing and Materials (ASTM)
- United States Pharmacopoeia (USP)
- Semiconductor Equipment and Materials International (SEMI)
- Association for the Advancement of Medical Instrumentation (AAMI)

CWS can design systems to handle the unique challenges of high purity water systems. Components of these systems can include:

- Filtration Systems
- Softeners
- Iron and Manganese Removal
- Ultrafiltration/Nanofiltration
- Reverse Osmosis
- Ion Exchange/Deionization
- EDI – Electrodeionization
- Ultra-violet Disinfection

CWS has the expertise to provide these systems, designed for specific needs of the client and the level of water quality required.

- Design engineering
- Custom Skid Systems
- Point of Use Systems
- System Installation
- Mechanical/Electrical
- Controls



## Treatment Plant Design and Construction

CWS professionals are hands-on, real world designers and operators. We know what it takes to design and build practical, efficient and effective treatment plants, well suited for their purpose and setting. Sometimes we use the latest, most innovative technologies. Other times we use tried and true methods that have been available for years. At all times, though, our designs are tailored to the needs and budgets of our clients, given present and likely future application requirements.

Our wide range of experience and technical expertise allows us to offer these services in a variety of options, from Turnkey to a la Carte:

- Engineer, Procure and Construct
- Design, Construction Management
- Lump sum Design/Build
- Traditional Design/Bid/Build
- Membrane Bioreactor (MBR)

CWS designs include the entire range of pre-treatment and treatment options, from skid-mounted package plants to custom designed and fabricated systems, including:

- Zero discharge water recycling systems
- Batch treatment
- Continuous flow
- Physical/chemical
- Biological
- Membrane filtration
- BOD/COD removal
- Oil & Grease removal
- TSS Removal



## Turnkey Design/Build WWTP

Complete Water Services specializes in providing complete turnkey pre-treatment and water treatment systems for industrial clients. CWS has the ability to take a project from concept through startup with the engineering, project management, and construction expertise to provide a quality installation. We pride ourselves in being your one-stop source for water and wastewater projects. Installations from Greenfield (including building, utilities and equipment) to modification of existing systems are within the scope of our capability.

CWS designs include the entire scope and scale of pre-treatment and treatment options from skid mounted package plants to custom designed and fabricated systems. No project is too small, too large, or too complex.

We believe that our expertise, contacts and market focus are unique. When you factor in our experience, technical ingenuity and high level of client service, we know we are unique.

The project history of Complete Water Services pre-treatment and treatment systems covers a wide variety of industrial sectors, including:

- Metal Manufacturing and Metal Finishing
- Food Processing, Packaging and Preparation
- Specialty Chemical Manufacturing
- Industrial Laundries
- Paint manufacturing





## Wastewater Treatment Plant Operations

Complete Water Services will operate your wastewater treatment or pre-treatment system, allowing you and your staff to concentrate on your core business. Under the direction of their Certified Operators, CWS will manage the operations, maintenance and environmental compliance of this critical process.

We offer this service under a variety of models. Benefits to your company or organization include:

- Prolong the life of plant equipment through proper maintenance and repair
- Reduce plant downtime and its impact on production
- Reduce administrative, management, and training costs
- Ensure the proper use and application of all treatment chemicals
- Avoid costly fines for non-compliance
- Minimize surcharges
- Avoid the potential impacts of staff turnover

Complete Water Services personnel visit treatment plant sites on an appropriate schedule to perform at least the following services:

- Onsite analysis and process operations
- Sample collection, analysis, with required decision making compliance reporting
- Residuals solids management
- Chemical management
- Preventative maintenance
- Emergency Response

## Reference Projects:



### Bakery, Atlanta

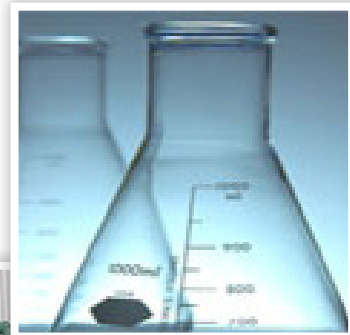
A 40,000 gpd industrial treatment system for high strength bakery waste which includes screening, equalization, pH control, activated sludge system, clarification, and belt press operation for solids dewatering.



## Wastewater Treatment Chemical Programs

Coupled with our other services or as a stand-alone offering, CWS can deliver significant savings in water treatment chemical costs. Our water professionals make sure that you are buying the correct chemical compounds in the correct concentrations for your particular application, and then deliver these chemicals at competitive prices. We will design/install new or troubleshoot existing chemical feed systems to ensure the most efficient chemical delivery. Take advantage of great savings in all chemical categories, including:

- Polymer flocculants & clarifiers
- Odor control chemicals
- Biodispersants
- Foam control chemicals
- Bacterial inoculants
- Micro-nutrients
- Humidification treatment
- Water Stabilization treatment
- Corrosion Control
- Micro-organism Contamination Control



## Mobile Treatment System and Services

CWS provides mobile treatment systems and services for emergency wastewater treatment needs, including clarifier systems, solids dewatering and dissolved air flotation. These systems have been successfully used for treatment plants that are not able to meet permit limits due to temporary problems with biological treatment systems, high levels of solids in lagoons, excessive flow rates, etc.

CWS can provide operations and chemistry along with mobile treatment equipment if desired.



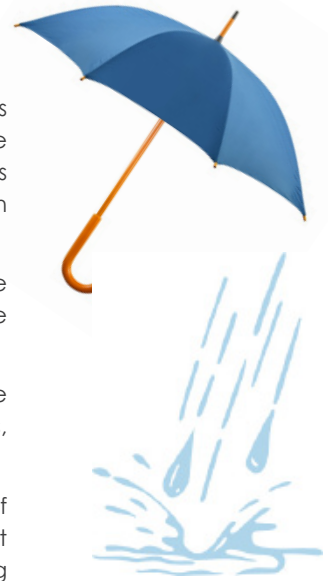
## Finding Real Value in Rain Water

It has never been more important to work for environmental sustainability. Harvesting rain is a practice that has been around for centuries. Cisterns and other rain harvesting systems are widely used in Europe, Africa, Australia, India, the Bahamas, and countless remote countries - many who depend solely on rain for day to day life. Today right here in the USA, we too can successfully harvest rainwater to meet many of our needs.

Anyone, from the individual who wants to use stored rain for watering plants to large companies that use grey water in toilets and sinks, can make a difference. There is a large array of rainwater catchment systems available.

Rainwater harvesting systems provide distributed storm water runoff containment while simultaneously storing water which can be used for irrigation, flushing toilets, washing clothes, washing cars, pressure washing, or it can be purified for use as everyday drinking water.

Small steps can make a huge impact. The Complete Water Services (CWS) team of professional water treatment experts will help you design the optimal rain water harvest system to meet your specific needs. We will supply the equipment and guidance in designing the ideal filtration system to meet your needs.



From a simple barrel system to a complex underground rain water catchment system to selecting the right filtration and processing systems, CWS is your one stop supplier of material and resources to support your sustainable, efficient and effective rain water harvesting system. Saving you time and money while optimizing your use of one our planets most important resources – water.

What could be better!



## Water/Utilities Conservation

One of the main reasons our clients hire Complete Water Services is to save money. Our water and utilities conservation services ensure that these savings continue and compound long after the project is completed. Examples of these services include:

- Water audits
- Reduce - water conservation equipment and practices
- Reuse - partial treatment and re-circulation of process water; heat recovery
- Recycle - full treatment and recovery
- Retainage - locally administered Sewer Diversion credit programs
- Zero discharge plant design or re-design



**CLIENT:** Cargill Meat Solutions Corp.  
Wastewater Treatment Plant (WWTP)



**BACKGROUND:**

Excel Corporation built a new case-ready meat processing plant in Hazelton, PA. The plant takes in sides and sections of beef, and further processes them into select cuts and ground beef, packaged and ready for retail sale. Wastewater produced by washing and rinsing operations is high in solids, fats and oil grease. Because of their prior experience with our firm, Excel specified Complete Water Services as the preferred wastewater treatment subcontractor when they put the plant construction project out to bid.

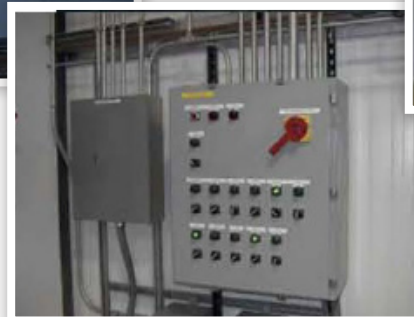
**PROJECT REQUIREMENTS:**

- Treatment for solids, fats, oils and grease
- Design and construction of new building and all systems, from the ground up
- Schedule to match completion of processing plant construction

**SYSTEM COMPONENTS:**

- Flow equalization
- Continuous pH neutralization
- Chemical flocculation/ coagulation
- Dissolved air flotation

- Greenfield installation including building, utilities and equipment
- On time, on budget
- No change orders from original design



**CLIENT:** Toyota Industrial Equipment Manufacturing (TIEM)  
Wastewater Treatment Plant (WWTP)



**BACKGROUND:**

The Toyota Industrial Equipment Manufacturing (TIEM) Plant in Columbus, Indiana manufactures industrial fork lifts. The ferrous metal finishing, phosphatizing and painting operations yield wastewater with high metals concentration.

**CWS was retained to increase the capacity and effectiveness of the plant's WWTP.**

**PROJECT REQUIREMENTS:**

- Double the capacity of existing system to 86,400 gpd
- Reuse as much of existing system hardware as possible
- Design/Build system with small footprint (40' x 45')
- Improve stability, efficiency, ease of operation and maintenance
- Effectively treat a wide range of contaminants
- Increase capacity to treat surges of contaminant volume and concentration
- Return as much treated water as possible to the plant for process water
- Aggressive schedule, coincident with planned plant maintenance shutdowns
- Tight budget



**TIEM agreed with CWS' proposal of a cost-saving two phased approach.**

**Phase I:**

- Flow equalization
- pH neutralization
- Chemical flocculation/ coagulation
- Clarification
- Sludge de-watering
- 40% of original treatment plant equipment was reused
- During the scheduled 5 day plant shutdown, equipment from the original plant was disassembled, moved and incorporated into the new WWTP. Final tie-ins were made, and the new WWTP was operational before the manufacturing plant went back online.

**Phase II:**

- Ultrafiltration
- Reverse Osmosis
- More than 90% of treated water to be recycled into the plant
- Treated water will exceed TIEM's stringent purity requirements for final-rinse process water
- As with Phase I, the WWTP will be designed to allow all modifications, final tie-ins and start-up to be completed during scheduled plant shut-down

- Design maximized use of existing equipment
- Bought on-line with no interruption of manufacturing



**CLIENT:** Hager Companies, Montgomery, AL  
Wastewater Treatment Plant (WWTP)



**BACKGROUND:**

Headquartered in St. Louis, Hager Companies is one of the largest manufacturers of residential and commercial door hardware in the world. The metal finishings, metal plating, and painting operations yield wastewater containing cyanide and high metals concentrations. To keep pace with increased manufacturing operations, the existing WWTP at their Montgomery manufacturing facility needed to be completely replaced with a green field installation, in order to increase both capacity and reliability.

**PROJECT REQUIREMENTS:**

- Double the capacity of existing system to 316,800 gpd
- Reuse as much of existing equipment as possible
- Design/Build system including new stand-alone building
- Improve stability, efficiency, ease/cost of operation, and maintenance
- Continuously treat a wide range of contaminants, including cyanide
- Increase capacity to treat surges of contaminant volume and concentration
- Demolish and dispose of existing WWTP (hazardous materials considerations)
- Aggressive schedule, existing WWTP equipment was in very poor condition and was subject to catastrophic failure
- PLC/Computer control system with graphics
- Tight budget



**SYSTEM COMPONENTS:**

- Flow equalization
- Continuous pH neutralization
- Continuous cyanide destruction
- Chemical flocculation/ coagulation
- Clarification
- Cartridge filtration
- Ion exchange
- Sludge decant and filter press de-watering
- Oil separation from alkaline degreaser
- PLC/Computer control with extensive automation

**ALABAMA WATER ENVIRONMENT  
ASSOCIATION PLANT OF THE YEAR**



- Design maximized use of existing equipment
- Brought on-line with no interruption of manufacturing
- Green field installation including building, utilities and equipment
- Demolition/ disposal of existing system



**CLIENT:** Estes-Simmons Silverplating, Ltd.  
Wastewater Treatment Plant (WWTP)



**BACKGROUND:**

Estes-Simmons Silverplating, in Atlanta, GA, specializes in the repair and restoration of precious and semi-precious metal antiques and art objects. The company uses caustic cleaning, metal plating, buffing, polishing, and painting operations, yielding wastewater with high concentration of metals and cyanide.

**Complete Water Services (CWS) was retained to design and build a physically small but effective WWTP to meet stringent local wastewater discharge requirements.**

**PROJECT REQUIREMENTS:**

- Low flow rate (4,500 gpd)
- Design/Build system with small footprint
- Minimum operating costs
- Minimum operator attention and maximum ease of operations
- Effectively treat a wide range of contaminants including precious metals and cyanide
- Recover precious metals such as silver and gold
- Aggressive schedule, coincident with planned building refurbishment
- Tight budget



**SYSTEM COMPONENTS:**

- Flow equalization
- pH neutralization
- Safe cyanide destruction
- Chemical flocculation/ coagulation
- Clarification
- Cartridge filtration
- Ion exchange
- Precious metal precipitation and recovery



- Design maximized ease of operation
- Brought on-line with no interruption of business
- Stringent effluent standards met under low-flow conditions

**CLIENT:** King's Hawaiian Bakery, Inc., Oakwood, GA  
Wastewater Pretreatment System



**BACKGROUND:**

In the 1950's, Robert's Bakery of Hilo, Hawaii, developed the famous Original Recipe of King's Hawaiian Sweet Bread. Nearly a decade later, the well-known bakery expanded and moved to King's Street in Honolulu. The bakery and cafe immediately turned into a destination location for locals and tourists who shipped the bread back to the mainland as gifts. In the late 1970s, some aloha was shared with the mainlanders by the construction of a commercial bakery in California.



In 2004, King's Hawaiian continued to expand with a 150,000 square foot, state of the art baking facility and corporate headquarters in Torrance, CA. King's Hawaiian Bakery decided to expand to the east coast and, in the summer of 2011, constructed a new baking facility in Georgia.



**PROJECT REQUIREMENTS:**

- Design/build of a biological treatment process to reduce BOD
- Storage capacity for wastewater generated over the weekend and process it during the following week
- Treatment for fats, oils, greases, solids, and dissolved BOD

**SYSTEM COMPONENTS:**

- Flow equalization with aeration
- Neutralization/coagulation/flocculation
- Primary dissolved air flotation
- Bioreactor – Activated Sludge
- Secondary Dissolved air flotation
- Effluent monitoring

**WASTEWATER FACILITY WAS FILMED AND SHOWN ON NATIONAL TELEVISION.**

- Design and construction of a new wastewater facility
- Efficient and cost effective design using the same dissolved air flotation unit for primary and secondary separation
- DAF for sludge removal allows higher mixed liquor concentrations
- Higher mixed liquor concentrations result in smaller tank requirements

**CLIENT:** Voith Paper Fabric & Roll Systems, Inc.,  
West Monroe, LA  
Wastewater Pretreatment System



**BACKGROUND:**

Voith Paper Fabric & Roll Systems, Inc. is a German-owned company that repairs, refurbishes and maintains large rollers for the paper industry. These repairs/ maintenance include:

- Repair or replacement of journals
- Rubber roll covers
- Mechanical repairs
- Balancing

Repair activities are different for each roller that enters the facility. Any combination of the above can be conducted on the roller or its associated parts. These activities can be comprised of any of the following:

- Solvent cleaning
- Burning bar/lancing to remove journal
- Lathe removal of existing cover material
- Machining
- Welding
- Thermal metal spraying
- Abrasive blasting
- Application of rubber cover material
- Wet grinding of new cover
- Application of surface coating

These repair activities generate process wastewater which is constantly changing. CWS completed a design/build of a flexible pretreatment system that removes grit, adjusts pH, removes oil & grease, removes Total Suspended Solids, and removes metals to levels that consistently meet the required discharge limits.



**PROJECT REQUIREMENTS:**

- Design/build of a multi-staged treatment process
- Small space for treatment system (20' x 40')
- Influent rate of 40 gallons per minute
- Increase the capability to treat surges of flow volume and contaminant concentrations

**SYSTEM COMPONENTS:**

- Oil separation and grit removal
- Flow equalization
- Neutralization/coagulation/flocculation
- Dissolved air flotation
- Effluent monitoring

- Maximized the layout of process equipment in limited space
- Effluent concentrations meet discharge limits

**CLIENT:** CeramTec North America, Laurens, SC  
Wastewater Pretreatment System



**BACKGROUND:**

CeramTec is a leader in manufacturing “high-performance ceramics”. The Laurens, SC, facility has been continuously producing technical ceramic products since 1961. These products support automotive, aerospace, cryogenics, high-energy physics, telecommunications, electronics, structural, textile, microwave and nuclear applications. During the manufacture of these technical ceramics, wastewater is generated that is high in metals and Total Suspended Solids. CWS was retained to upgrade and replace the existing pretreatment system with one that would continually meet discharge requirements.

**PROJECT REQUIREMENTS:**

- Influent flow rate of 10 gallons per minute
- Pretreatment for metals and solids
- Design/build of new system in limited space allotted while existing system remained online
- Reuse of some of the existing equipment

**SYSTEM COMPONENTS:**

- Filtration
- Flow equalization
- Tank for emergency flow or high concentration wastewater holding
- Neutralization/coagulation/flocculation
- Clarification/sedimentation
- Sludge dewatering



- CWS completed the system with no interruption in plant operations
- Design maximized the use of existing equipment
- Effluent consistently meets discharge limits

**CLIENT:** FCC NC, LLC, Laurinburg, North Carolina  
Water Treatment System  
Wastewater Treatment System

**BACKGROUND:**

FCC, NC, LLC, is a Japanese-owned company that manufactures clutches. FCC, NC, LLC, in Laurinburg is a friction paper material manufacturing plant. Manufacture of paper-based friction materials includes sheet-making, resin impregnation, resin hardening, and friction sheet attachment.



**WATER TREATMENT:**

Process water quality is important in the manufacture of high quality friction papers. Source water for production is groundwater. Analyses showed the water too high in iron.

The water treatment system installed included sand removal, pH adjustment, and iron removal. System components include:

- In-ground Concrete Tanks
- Hydrocyclones
- Neutralization
- Manganese Greensand Plus™ Iron Removal Filters



**WASTEWATER TREATMENT:**

Process wastewater treatment at FCC, NC, is to be conducted in two phases. The installed system is Phase 1: clarification.

The wastewater treatment system under Phase 1 included:

- Equalization
- Coagulation
- Clarification
- Sludge Dewatering (belt press)
- Monitoring



This 1.07 MGD system was installed in a very limited area. System meets quality requirements for process water and discharge requirements for wastewater.



**CLIENT:** Wayne Farms, LLC, Pendergrass, Georgia  
Wastewater Treatment/Nutrient  
Removal/Recycling System



**US Poultry and Egg Association, Clean Water Award, Full Treatment  
Category, 2018**

**Georgia Association of Water Professionals, Industrial Direct Discharge -  
Biological Treatment System Plant of the Year, 2015**

### BACKGROUND:

Wayne Farms, LLC operated a single tank sequencing batch reactor (SBR) treatment system with discharge to an onsite land application system (LAS). Due to issues associated with limitations to land application of the treated wastewater, Wayne Farms received an NPDES permit for direct discharge. Also, in looking ahead at potential water issues, Wayne Farms wanted the ability to recycle wastewater in the future.

The upgraded MBR system integrated/adapted the existing bioreactor tank and lagoons to work with the new ultrafilter membranes. As a result, the upgraded system effluent meets NPDES discharge requirements for direct discharge and the USDA FSIS requirements of reuse water in poultry plants.



### PROJECT REQUIREMENTS:

- Design/build of an upgraded system to meet NPDES discharge limits in accordance with the new permit
- Meet or exceed USDA standards for reuse water at poultry processing plants
- Reduction of nitrogen, phosphorus, BOD, and TSS
- Utilize as much of the existing system as possible and practical

### SYSTEM COMPONENTS:

- Phosphorus removal ponds
- Anoxic Pond (De-nitrification)
- Bioreactor with membrane separation (MBR System)
- Ultra-violet disinfection
- Effluent monitoring with cascade aeration
- Reuse water tank
- Biosolids storage ponds



**CLIENT:** Snyder's-Lance, Inc., Hyannis, Massachusetts  
Wastewater MBR System

**PMMI Sustainability Excellence in Manufacturing Award,  
3rd Place in the Project Category, 2015**



**BACKGROUND:**

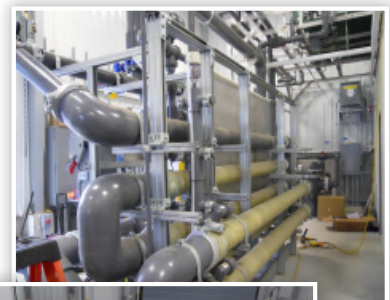
Established in a small storefront in Hyannis in 1980, Cape Cod Potato Chips has grown to be one of the country's most popular brands. Lance Inc. purchased the company in 1999, which merged with Snyder's of Hanover in 2010, to become Snyder's-Lance, Inc.

Cape Cod Potato Chips are still batch cooked in kettles to maintain their distinctive flavor and crunch. Facility tours, established in 1985, have become one of the area's top attractions with over 250,000 visitors annually.



**PROJECT REQUIREMENTS:**

- Production facility is situated on a very small lot. Pretreatment system had to have a small footprint.
- Design/build pretreatment facility for fats, oil, greases, starches, and suspended solids
- Needed storage capacity for high pH wastewater generated over the weekend and process it during the coming week
- Unobtrusive treatment facility with little impact on the tourists or parking lot.



**SYSTEM COMPONENTS:**

- Lined lift stations
- Flow equalization with aeration
- Neutralization/coagulation/flocculation
- Dissolved air flotation
- Bioreactor with membrane separation (MBR System)
- Effluent monitoring



**CLIENT:** General Mills Incorporated - Murfreesboro, TN  
Rail Yard Improvements 2016



GENERAL MILLS

## BACKGROUND:

The General Mills Pillsbury plant in Murfreesboro, Tennessee, produces dough products (biscuits, croissants, cookies, turnovers) for consumer baking. An expansion of this plant created the need to double the amount of flour required, on a daily basis, from 2.2 million pounds/day to 4.4 million pounds/day. The existing indoor off loading facilities were adequate for unloading but the existing rail facilities were not capable of supporting the number of rail movements needed to supply the process. Both truck and rail traffic required access to the unloading facilities.



## PROJECT REQUIREMENTS:

- Provide rail yard and mainline access to receive and unload flour from 22 rail cars per day to feed GMI bakery products plant.
- Receive and store 90 rail cars.
- Provide yard switching movements for full and empty cars.
- Double ended 3 track ladder tracks and 3 track stub end yard.

## SYSTEM COMPONENTS:

- Dual track rail feed into existing building for offloading flour.
- Slab track with switch in the slab track for full truck access across slab track.
- Private yard switcher locomotive storage area.
- Railroad Permitting.
- Local Land Disturbance Permit
- Resolution of FEMA flood plain impacts.
- Important property restraints.
- Fire, storm, and sanitary utility relocations.
- Fiber optic trunk line permitting, relocation, and protection.
- Important considerations included protection of the adjacent river, erosion, impacts to the neighbors.
- Extremely tight schedule constraints.





**CLIENT:** Southern Company



## BACKGROUND:

Southern Company provides electrical power across the southeast. Many of these plants are located in rural areas with no public sanitary sewage or potable water utilities, with many installed in the 1960s and 1970s. The majority of the sewage treatment plants (STP) were installed in-ground, making them susceptible to corrosion and deterioration. CWS replaced many of these with aboveground STPs and the old STPs were decommissioned, filled-in, and capped with concrete slabs.

## PROJECTS:

CWS has assisted Southern Company with the following design/build water and wastewater projects. Every project was completed with no change-orders, on-time, and within budget:

Plant Bowen (Georgia Power Company) – Cartersville, GA, is a coal fired plant capable of supplying electrical power to more than 1.9 million homes. CWS completed the following upgrades for Plant Bowen:

- In 2006, CWS replaced the existing 15,000 gpd in-ground STP with 30,000 gpd aboveground STP
  - o Replaced two outdated feeder lift stations with new wet wells, controls, and duplex grinder pumps
  - o Installed new influent lift station in place of the abandoned in-ground STP
- In 2013, CWS installed a specialized lift station to support the Water Research Center
  - o Wastewater high in dissolved solids and low in pH
  - o Very corrosive to conventional pumping systems



Wallace Dam Hydroelectric Power Plant (Georgia Power Company) – Hancock County, GA, is located on Lake Oconee. In 2007, CWS assisted Wallace Dam with replacing the existing treatment plant that discharged to the Oconee River under an NPDES permit. Due to the small number of employees (15), CWS recommended replacing the treatment plant with a passive septic system.

- CWS installed a septic tank system including 2,000-gallon septic tank, dosing system, and Infiltrator® chamber drain field
- Installed new lift station from Administration Building
- Used existing force main as gravity sewer saving costs and excavation of roadway
- Replaced three obsolete air-lift ejector pumping stations located within the dam
  - o Each ejector station served a single restroom and was susceptible to blowback into restroom



- o Replaced with fiberglass package pumping system with grinder pumps and new controls

Plant Branch (Georgia Power Company) - Milledgeville, GA, was located on Lake Sinclair. The existing, in-ground 13,000 gpd STP was located adjacent to the lake. Due to limited space and difficult working conditions, it was decided to relocate the new STP across the plant site to an abandoned tank farm. In 2008, CWS replaced the existing STP as follows:

- Installed new 14,000 gpd STP in reconditioned existing ICOP tank farm
- Installed new duplex pumplift station adjacent to existing STP at the lake
- Used approximately 1,000 feet of an existing, abandoned force main that ran across the front of the administration building and then to the existing STP
  - o Saved costs and disruptions associated with the installation of a new force main across the front of administration building
  - o Used jack and bore to install 200 feet of new force main



Plant Wansley (Georgia Power Company) – Carrollton GA, is a fossil-fuel electric power generating plant with three separate STPs, in addition to several lift stations. CWS completed the following upgrades:

- In 2008, CWS replaced the existing in-ground Service Building STP with a new 10,000 gpd aboveground STP. Upgraded existing air-lift station with duplex grinder pumps and control system and took a second lift station out of service
- In 2009, CWS replaced the existing obsolete Dog Shack lift station with a new lift station including a fiberglass wet-well, duplex grinder pumps, and controls
- In 2013, CWS replaced the Fossil Fuels Tractor House STP with a new, aboveground 2,000 gpd STP. A new influent duplex lift station was installed at the head of the new STP
- In 2016 and 2017, CWS replaced the existing 5,000 gpd aboveground STP with a 7,500 gpd aboveground STP.



Plant Franklin (Southern Power Company) – Smiths, AL, is a combined-cycle and combustion-turbine natural gas power plant. The existing water treatment sludge filter press was obsolete and in poor condition. In 2014, CWS replaced this press with a new press and access platform. The press was elevated to accommodate a roll-off box and located under a new shed.

Plant Harris (Southern Power Company) – Prattville, AL, is a combined-cycle and combustion-turbine natural gas power plant. The existing water treatment sludge filter press was obsolete and in poor condition. In 2016, CWS replaced this press with a new press and platform. The press was elevated to accommodate a roll-off box. In addition, a second conditioning tank was installed to allow alternating press runs from each conditioning tank without interruption in press runs.



**CLIENT:** Luxottica Group, McDonough, GA  
Operations - Industrial Wastewater  
Pretreatment System



## BACKGROUND:

Luxottica Group is a worldwide leader in the design and distribution of fashion, sports, and performance eyewear. Luxottica initiated a vertically integrated business model in the 1970s. Over the years, this has given Luxottica a competitive advantage, covering the entire value chain: design, product development, manufacturing, logistics and distribution. Its global wholesale network covers over 150 countries.

Luxottica has a physical/chemical pretreatment system designed to remove Total Suspended Solids (TSS) and metals.

## PROJECT REQUIREMENTS:

- CWS provides certified operators and staff
  - System is operated 2 shifts per day;  
7 days per week.
  - Monthly compliance sampling to support reporting
- CWS has provided upgrades to enhance system performance
  - Additional EQ Tank
  - Larger clarifier
  - Segregation and pretreatment of certain process wastewaters
  - Post filtration



**CLIENT:**      **AW North Carolina, Inc.**  
                     **Durham, North Carolina**  
                     **Wastewater Pretreatment System Upgrade**



### BACKGROUND:

AWNC is a world leader in the manufacture of automatic transmissions. Generated process wastewater is high in oily solids and metals. CWS replaced a vacuum compression evaporator with duplex, ultrafiltration skids. UF is a proven technology for handling metalworking oily waste streams, and our team has extensive experience in this application.

### PROJECT REQUIREMENTS:

- Reuse as much of the existing equipment as possible
- New membrane system had to fit in the space of the former evaporator unit
- Upgrade the existing system for improved efficiency and performance
  - o Rearranged existing equipment for a more streamlined treatment train
  - o Added specific components to enhance existing processes
- Upgraded the outdated control system



### SYSTEM COMPONENTS:

- Equalization
- Oil/water separation
- pH Adjustment
- Metals precipitation
- UF membrane separation
- Flow monitoring
- Sludge storage



**CLIENT:** Exal Madryn S.A.,  
Puerto Madryn, Argentina  
Water Treatment System  
Closed Loop Cooling Towers



### BACKGROUND:

Exal is the world's largest manufacturer of impact extruded aluminum containers. Markets include beverage, pharmaceuticals, beauty and personal care, food and home care. Exal Madryn is an aluminum slug manufacturing plant. The slugs are further processed using impact extrusion into aerosol cans, aluminum bottles, aluminum tubes, as well as other technical parts. CWS completed a design/build of the water system to support the new facility.

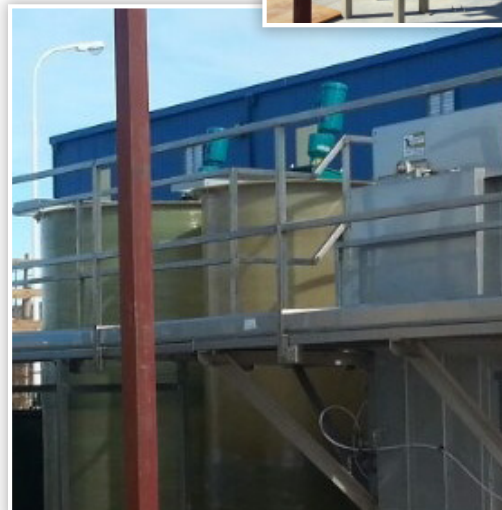


### PROJECT REQUIREMENTS:

- Complete closed loop cooling tower system
- Complete water treatment system
- Logistics such that all equipment had to be shipped at one time

### SYSTEM COMPONENTS:

- Cooling tower; automatic filtration; heat exchanger; chemical dosing skids; softener; reverse osmosis
- Equalization; pH Adjustment; coagulation/flocculation; dissolved air flotation; sand and carbon filtration; sludge dewatering



**CLIENT:** Toyota Industries Compressor Parts  
of America, Co. (TICA)  
Pendergrass, Georgia  
Wastewater Pretreatment System Upgrade



### BACKGROUND:

TICA manufactures automotive air-conditioning compressor parts and generates several types of process wastewaters. CWS upgraded the system by replacing dissolved air flotation with ultrafiltration. UF is a proven technology for handling metalworking oily coolant waste streams. Wastewater streams were rerouted to utilize existing tanks for additional equalization capacity, and an upgraded pH adjustment system using carbon dioxide was installed.

### PROJECT REQUIREMENTS:

- Reused as much of the existing equipment as possible
- Replaced coalescing oil/water separator with standard separator
- Replaced dissolved air flotation unit with a UF membrane system
- Increased pump capacity
- Installed flow monitoring and sampling station
- Upgraded the control system



### SYSTEM COMPONENTS:

- Equalization
- Oil/water separation
- pH Adjustment
- UF membrane separation
- Flow monitoring

