
The 2014 Annual Report

of the Columbus City Utilities



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This Annual Report is prepared for the City of Columbus, Bartholomew County, the commissions and boards involved in local land use planning and administration, as well as the following 2014 elected community leaders:

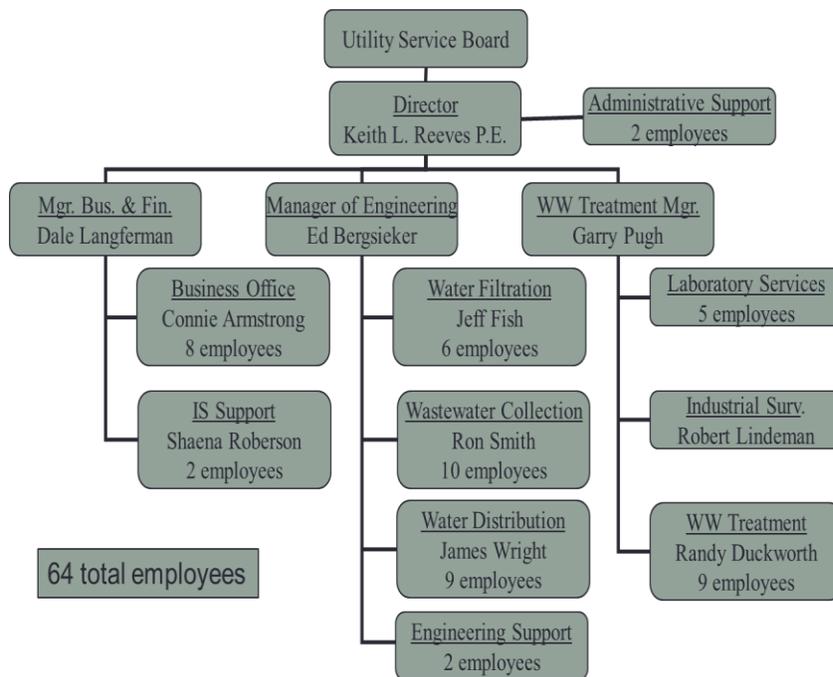
Columbus Mayor:
The Honorable Kristen Brown

Columbus City Council:
*Dascal Bunch
Ryan Brand
Frank Jerome
Frank Miller
Tim Shuffett
Aaron Hankins
Jim Lienhoop*

Utility Service Board:
*Barry Turner
Cheryl McAvoy
Greg Lacy
Clayton Force
Nancy Ann Brown*

Department Overview

The Columbus City Utilities operates under the authority of the Utilities Service Board which consists of five unpaid citizen members, three of whom are appointed by the Mayor and two by the City Council. The Board oversees the operations of both water and wastewater utilities and of the Director specifically. The department consists of 64 skilled individuals with education and talents in engineering, business, accounting, information systems, and laboratory science. A department organizational chart is presented below.



Business and Financial

The department is fully funded from revenues that come from services it supplies to its various customers. Income and expense are related to weather, and the general economic climate. Dry weather increases wear and tear on water supply equipment and increases sales. Wet weather reduces water sales and increases wastewater treatment costs. A growing local economy increases industrial sales and residential customer growth.

Water and wastewater income exceeded predicted levels during 2014. Both utilities continue to show a decline in total income, but the

fact that 2014's drop was 1% smaller than what was predicted is cause for some optimism.

	<u>2012</u>	<u>2013</u>	<u>2014</u>
Water Income	4,964,392	4,713,431	4,673,795
Wastewater Income	11,292,325	11,292,325	11,085,449

Water expenses were 6.9% over 2013 levels and greater than projected levels by a similar amount. Wastewater expenses were 0.5% greater than the previous year.

	<u>2012</u>	<u>2013</u>	<u>2014</u>
Water Expenses	4,397,949	4,436,250	4,743,606
Wastewater Expenses	9,590,678	9,531,270	9,575,676

Because the expense budget does not include capital expenditures and principal payments, the primary financial indicator is cash balance. Water cash increased slightly during 2013. Wastewater cash decreased as we continued to adapt to operations at the new wastewater plant and made debt payments on the capital projects that were completed over the last couple of years.

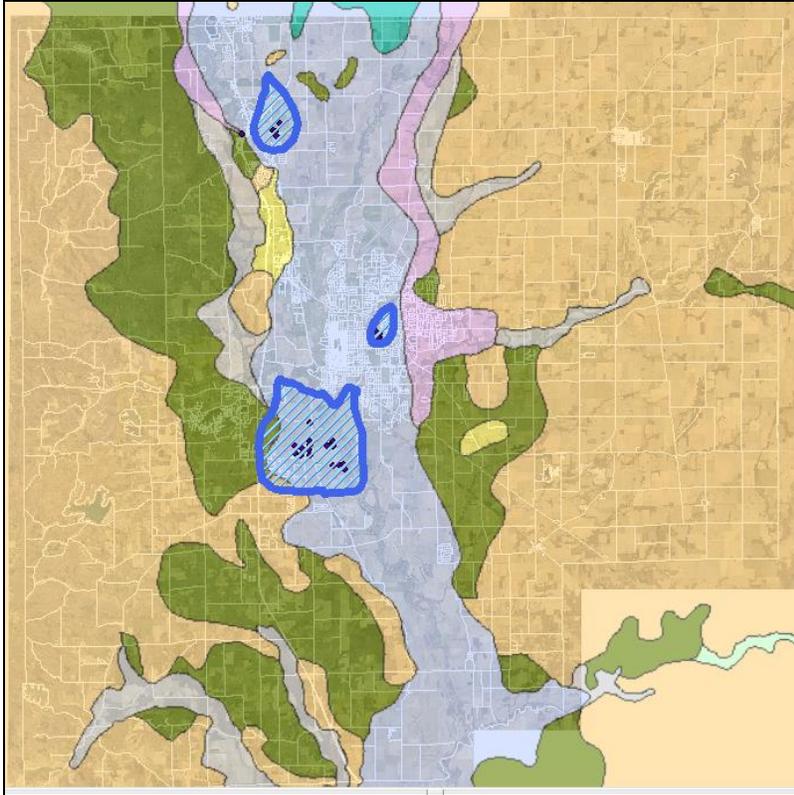
	<u>2012</u>	<u>2013</u>	<u>2014</u>
Water Cash	4,084,750	4,143,121	4,678,877
Wastewater Cash	18,510,044	18,329,253	17,555,491

Water Supply

The center portion of Bartholomew County holds an abundant aquifer that is the source of most public water systems locally, including Columbus. The system, known as the "White River Tributaries Outwash Aquifer" (shown as light blue in the graphic below) is characterized by very porous and open sands and gravel deposits underlain by an impervious shale layer that prevents the water from sinking deeper.

The CCU draws water from two primary places in the aquifer, the northern or "Lincoln Park" zone and the southern or "Fairgrounds" area. The CCU maintains several monitoring wells outside and within both

well zones. The data collected from these wells shows that the local aquifer has completely recovered from the drought conditions of 2012.



Unconsolidated Aquifers of Bartholomew County

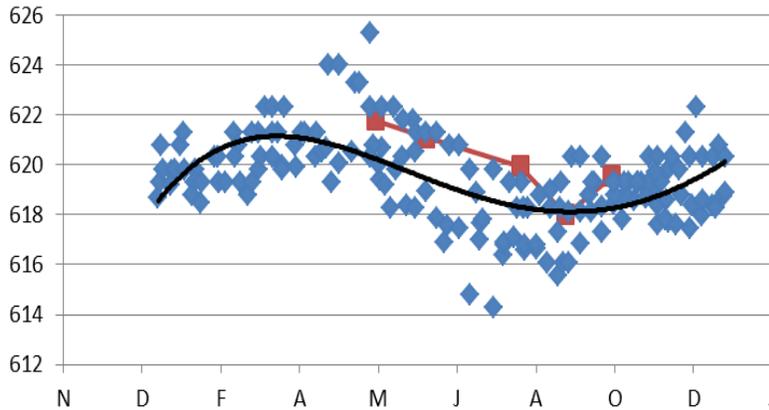
Light blue area in the center of the county shows the most abundant formation. Yellow and green areas represent shallower rock levels and more clay-like soils.

Dark blue outlines represent well head protection zones of the Columbus Utilities as well as the Eastern Bartholomew Rural Water Corp (top left).

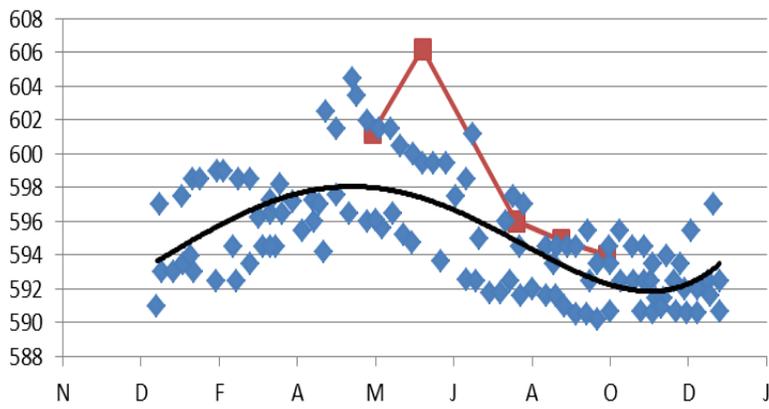
Observed water levels were consistently above the five year average levels in both locations.

While high ground water levels are a good thing for the local water supply, we also monitor these levels because there have been instances in the past where high natural ground water levels have caused basement flooding in private homes and commercial/public facilities. Levels observed in 2014 were not high enough to have caused any difficulties, but we will continue to monitor to see if the average levels continue to rise.

Lincoln Park Observation Well 2014 Levels and Historic Data



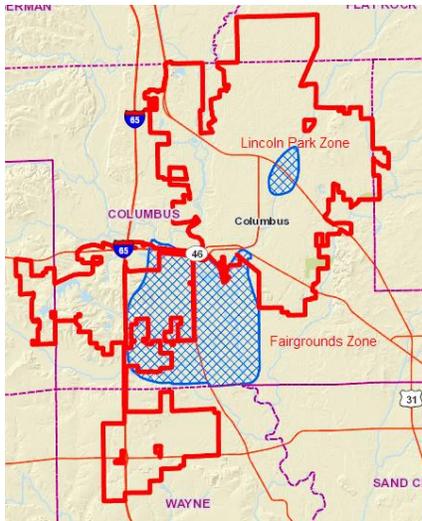
Fairgrounds Observation Well 2014 Levels and Historic Data



Ground Water Levels

Red lines indicate 2014 water levels in the observation wells, while the blue dots represent readings taken over the previous five years and the black line represents the average curve generated from these readings.

The porous natures of the local soils make the local water supply abundant and easy to acquire. This same feature makes it vulnerable to contamination. The CCU has established a well head protection program that involves a diverse cross section of the community to assist the department in the continuing education and monitoring of local issues that could potentially affect water quality. A zoning overlay layer has been previously established that will assure that water quality is adequately protected for future developments



The Columbus Wellhead Protection Committee met twice in 2014. Programs included presentations on hazardous material emergency spill response, statewide water shortage issues as well as updates on new developments within the protection areas and their potential impact.

The department was also asked to present to the county level committee studying confined animal feeding practices (CAFO) to consider possible impact on public and private wells.

The department also addressed a proposed increase in public use at the County Dunn Stadium, located at Spear Drive and Jonesville Road. The stadium is located within the one year time of travel for two different production wells and increased popularity of the park has necessitated the construction of new restroom facilities that would have required an expansion of the existing on-site waste disposal system. Rather than accept this increased risk of contamination, the CCU installed a sewage pumping station sufficient to handle current and proposed loadings and a connection to the public sewer system that reduced the existing risk of aquifer contamination rather than increase it.

Water Production

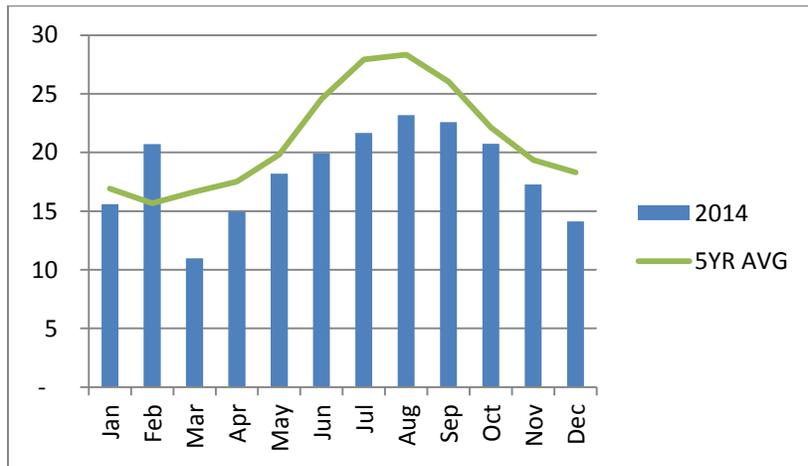
Columbus operates 27 gravel packed wells in four distinct properties around the community. The wells extend through the outwash sands and gravels down to the bedrock (appx, 80 – 85 feet). The well casing is surrounded by a specific gradation of gravel that serves as the initial filter for the withdrawn water. Over time, deposits accumulate on these gravels and the well capacity is diminished. There are a number

of techniques and processes that can, with varying degrees of success, chemically remove much of these

deposits and restore much of the wells lost capacity. Through an outside contractor, the CCU restored six wells that had lost 30% or more of their original capacity in 2014. Even with regular cleaning, wells do have a finite lifespan. Eventually, the deposits form beyond any area that is able to be influenced through normal cleaning operations and will have to be replaced. Siting new wells in increasingly congested areas (especially Lincoln Park) is going to be one of the larger challenges facing the water utility in the future.

Control valving for the second half the filter banks at the fairgrounds filtration facility were replaced and updated using CCU personnel. These valves control the backwashing and cleaning parts of the filtration process and are a critical component to the facility's operation. The project was split into two parts (with the first part completed in 2013) to allow the plant to operate at half capacity during the winter months when demand is at a minimum and to be fully available when warmer weather triggers increased demand.

In 2014, water usage followed very typical seasonal fluctuations, but overall water usage was consistently below average usage. 2014 rainfall data showed consistently higher monthly totals than average, also which no doubt lead to reduced irrigation demand.



Water Demand

Water demand varies throughout the year as shown to the left. 2014 demand was consistently less than the 5 yr average monthly demand.

Water Distribution

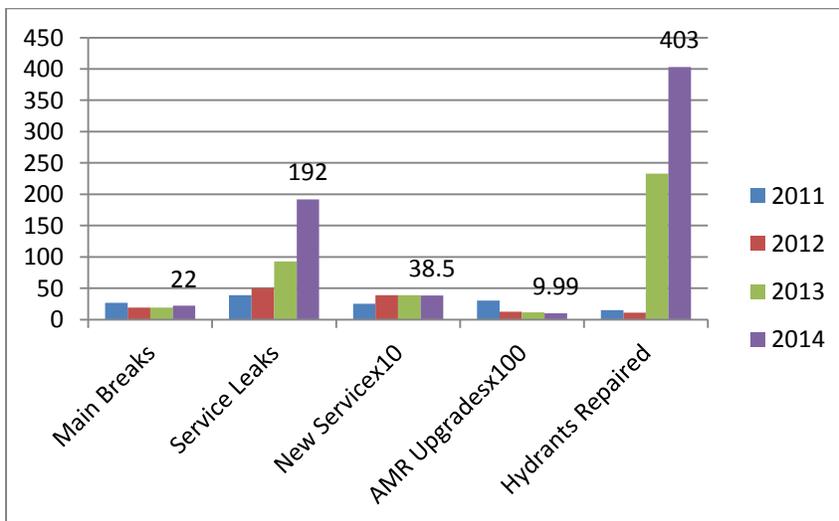
The water distribution section continued to improve its customer response and pro-active system maintenance. The fire hydrant initiative that was started in 2013 set new standards by servicing and painting over 400 fire hydrants in 2014. The long term goal is to have all fire

hydrants in the system serviced and painted (if needed) on a five year rotation.

Existing programs regarding backflow prevention were reviewed and renewed with a new vigor. An overall inventory of backflow devices is being developed and programs were set up to ensure that these devices receive the annual inspections required by Indiana law.

A fair portion of the water distribution system in the downtown area is served by pipelines that are over 90 years old. Inspections have shown these pipelines themselves have few issues (as a general rule) and can continue to serve for many more years. The same cannot be said of the control valves that operate these lines. Many are broken and those that are not, often leak whenever they are operated. Replacing these valves is a time consuming project that will take many years. In 2014, two valves were replaced along 5th Street between Lafayette and California. In 2015, a water main replacement project for Fourth Street should replace two more.

In 1995, the CCU began an initiative to replace its older water meters with new technology radio-read meters (AMR) that could be read simply by driving by. The need to open each pit and read each meter (often after pumping out standing water in the pit) would be eliminated. Additionally, meter readings would be available in colder months when snow cover made finding the pits difficult, or extreme cold and the risk of freezing made it unadvisable to open pits. It was determined then to install this upgrade over time, using CCU personnel. In 2014, 1,000 new meters were installed bringing the conversion to 95%.

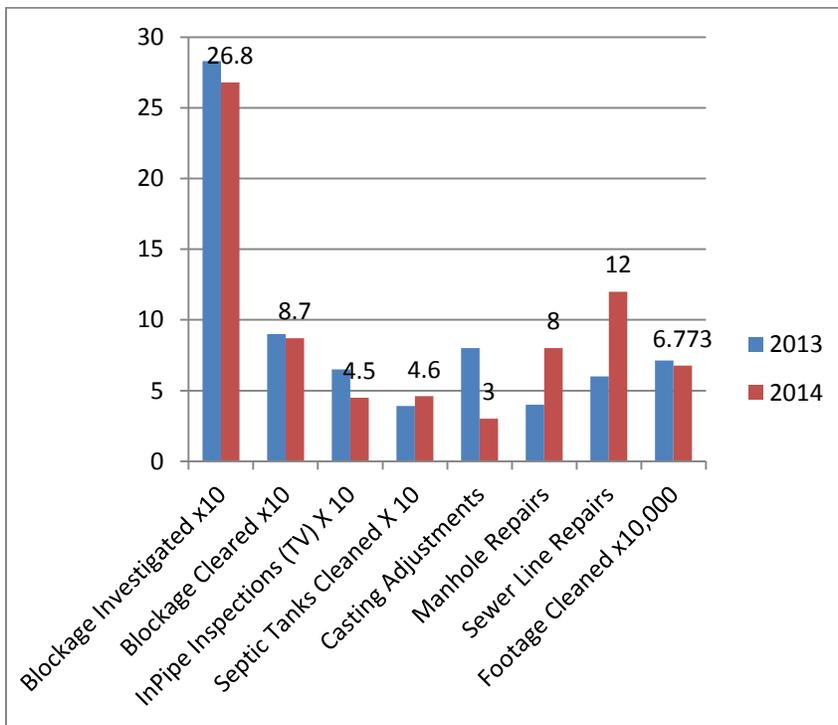


Water Distribution Metrics	
Main Breaks	22
Service Line Leaks	192
New Services Installed	385
Automatic Meter Upgrades	999
Hydrants repaired	403

Wastewater Collection

There are over 250 miles of sanitary and combined sewers serving the City of Columbus. The oldest of these sewers were built in the later part of the 19th century. The older sections of the sewer system (built before 1950) can develop small cracks from small settlements or are deteriorated by long term exposure to corrosive chemicals. Despite an in-house inspection program, the first indication of failure is often a sinkhole appearing at surface level.

Early in 2014, one of these sinkholes appeared in the large diameter sewer paralleling 17th Street near the Haw Creek. The large quantity of sand and gravel damaged pumps in the nearby pumping station and filled the line from the sinkhole to the pumping station. The repairs were made using contractor assistance in construction, cleaning, and bypass pumping. Following the emergency repair, CCU crews determined the extent of the compromised pipeline and plans are set for this section to be rehabilitated with an insitu-liner in early 2015.



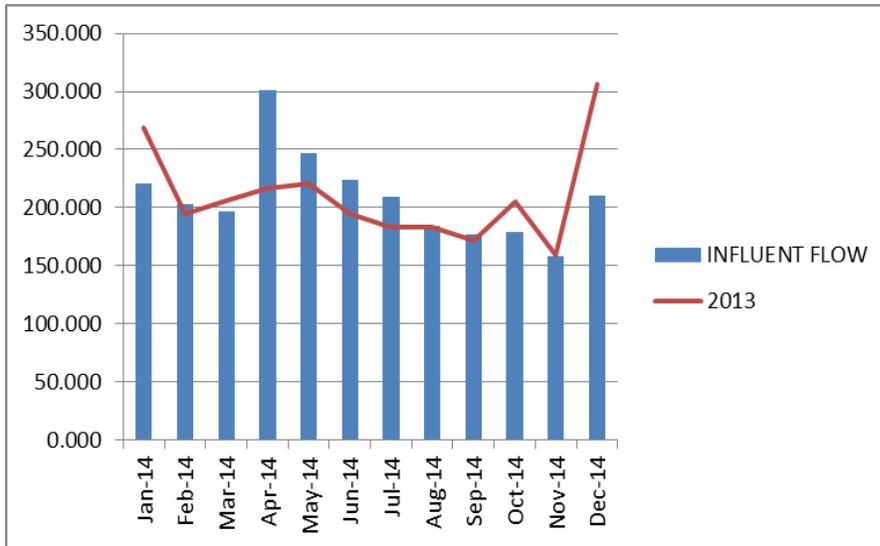
WW Collection Metrics

Blockages Investigated	268
Blockages Cleared	87
In pipe Inspections	45
Septic Tanks Cleaned	46
Casting Adj	3
Manhole Repairs	8
Sewer Line Repairs	12
Total footage cleaned	67,773,000

Wastewater Treatment

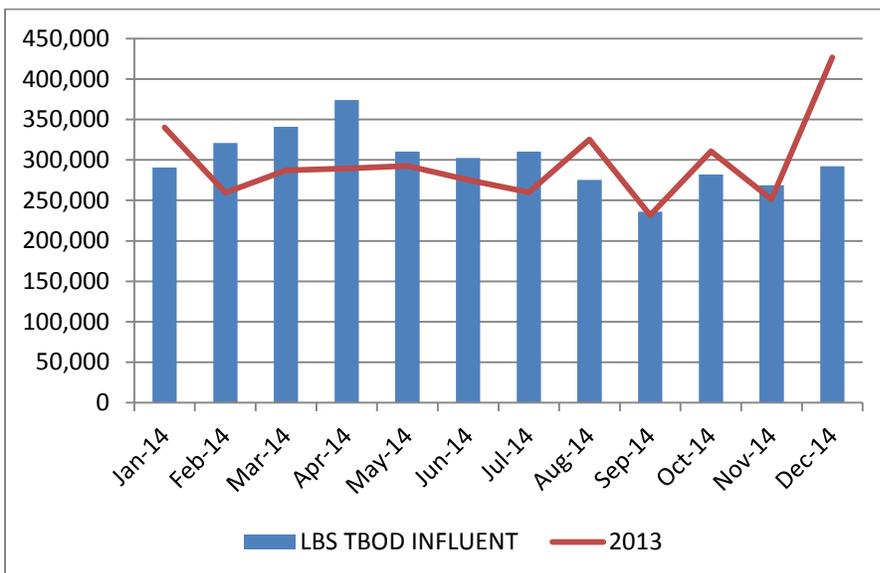
The wastewater treatment plant processed 2,508,177,000 gallons of sewage in 2014, which was 1,318,000 gallons less than it treated in 2013. Since roughly one third of the sewage collection system is of the combined type that collects storm and sanitary wastes, the volumes

and their fluctuations are very dependent upon precipitation values, but how much precipitation makes it to the facility is subject to many variables including the rate of rainfall and the saturation level of the soils before the rain. These factors must account for the apparent inconsistency of having more total rainfall in 2014 compared to 2013 and slightly less flows for treatment.



Wastewater Treated
Monthly total flow in millions of gallons

Wastewater strength is measured as its Total Biological Oxygen Demand (TBOD). This value represents the pounds of pollutants that must be removed from wastewater. As one might expect, as the pounds removed increase, the pounds of biosolids wasted from the facility also increases.



Biological Loading
Total biological loading for each month as measured in pounds of Biological Oxygen Demand (BOD)

Despite the lower flow total 2014 represented a 2% increase in biological solids entering the plant. This increased operations costs and most significantly biosolids dewatering and disposal costs for the year. The department worked with local farmers throughout the year in developing a land application program for the treatment biosolids. The program was relatively successful, but issues did arise concerning odors associated with summertime applications that may limit future programs.

Other Programs

Facility Closure – The wastewater treatment plant located on Water Street in the southern most portion of downtown Columbus served the community continuously from 1953 through 2012 when the influent flow was diverted to our new facility on south Jonesville Road. The original tankage was doubled in size in the 1960's and the facility was converted to what was then a new and innovative treatment process in the 1970's. In 2014, the site was officially closed and the site was restored.

Contractors and salvage crews dismantled what could be dismantled and the most of the material was recycled. Most notably, the 80, ten foot diameter, 12 foot long, plastic media packs that made up the secondary treatment process were salvaged, shredded and reused off site at no cost to the CCU. Residual sludge left in the tanks was pumped out and disposed of and the tanks were demolished in accordance with state procedures. Many tons of fill material were brought in to complete the backfilling process and the final product is a vacant grassy property.

Third Street Pumping Station – This station's location is more accurately described as being on the east side of Central Avenue at the intersection with State Street. The site is recognizable as small beige colored brick building. The pump station serves a large portion of the east side of the community and has reached the point that it must be replaced and upgraded. GRW Engineers was hired to study alternative sites for the relocation of this vital pumping station. Their report concluded that the optimum site for the station was on a property located south of Indiana Avenue at Stadler Drive. GRW was then contracted to begin the final design plans for the new pumping station. The CCU plans to advertise for public bids to complete this project in early 2015.

Indiana Avenue Reconnaissance - The City Engineer's office has been working toward a total reconstruction of Indiana Avenue from its eastern

end to State Street since the mid 1990's and is now ready to begin construction. In the early parts of the project planning we worked with the City Engineer and the design firm to place facilities for our Clifty pumping station project so as to not interfere with the eventual placement of the large diameter storm sewer planned as part of this road project. With the project nearing its fruition, staff members made firm locations of all CCU facilities and conducted a full video inventory of all the sanitary sewer lines. A full review of the construction plans was also conducted to verify that none of our facilities would require relocation prior to construction. The contract has been awarded to Milestone LLC and our crews will be working alongside them to restore services that will require removal following the storm sewer installation

Non Recurring Fees Updated – Non recurring fees are the fees charged for new services, disconnects and non-payments and the like. They are the charges associated with special services or tasks that are considered beyond the routine delivery of water and sewer service. These fees had not been reviewed for several years and some of the adjustments were considerable. The approval process involved the staff, the Utility Service Board and the City Council. For some of the water fees, approval from the Indiana Utility Regulatory Commission was also involved.

Payment Portal Upgrade – The CCU has been offering automatic payment options since 2006 and has offered online payment since 2011, but these options were cumbersome and limited compared to customer's modern expectations. In 2014, after reviewing a number of options, the department chose to enter into a contract with the Invoice Cloud Company. Under this new arrangement customers can sign up online for paperless billing and automatic payment options. They can also use the "one time pay" option to pay by credit card or automatic withdrawal (previously, only credit card payments could be accepted). Registered users can view older bills and payment history online. In addition there is a new automated payment phone line where customers may call a toll free number and make an immediate payment with their credit card. Internally, the new system updates every fifteen minutes as opposed to the daily update we had before, so a customer's online payment is very quickly recorded reducing the chance of erroneously discontinuing service for a perceived non-payment.

