This report summarizes my nine-month internship with the Communications Department of the Metropolitan Sewer District of Greater Cincinnati (MSD). My primary responsibilities included internal and external communications. The main mechanism for internal communications included an employee newsletter and a safety newsletter. These both helped to strengthen communications within MSD by establishing trust through transparent communication, creating a sense of inclusion through workplace updates, and increasing morale through employee recognition. My role with external communications revolved significantly around Project Groundwork, a $3.3 billion initiative designed to reduce the amount of sewage overflows discharged into local water bodies and promote community revitalization. Community engagement played a vital role in the development of Project Groundwork and is an ongoing asset throughout project implementation. This report explains how the key mechanisms we used to inform the community (public meetings, construction notices, fact sheets, press releases, and social media) provided a comprehensive approach to sharing important information with the community. Ultimately this report will analyze the role of community engagement in successfully implementing a sewer infrastructure project.
COMMUNICATIONS CO-OP INTERNSHIP WITH THE METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI

Internship Report

Submitted to the
Faculty of Miami University
in partial fulfillment of
the requirements for the degree of
Masters of Environmental Science
by
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Miami University
Oxford, Ohio
2017

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Reader: Bartosz Grudzinski, PhD
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This internship report titled

COMMUNICATIONS CO-OP INTERNSHIP WITH THE
METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI

by

Kathleen Eleanor Jordan

has been approved for publication by

College of Arts and Sciences

and

Institute for the Environment and Sustainability (IES)

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Acknowledgements

First and foremost, I would like to thank my committee, Suzanne Zazycki, Bartosz Grudzinski, and Michele Simmons, for their time, support, and thoughtful comments. I would like to give special thanks to my advisor, Suzanne Zazycki, for her extensive feedback and dedication throughout the process of developing this report. Her guidance throughout the M.En. program was invaluable, encouraging everyone around her to think more deeply about things and bringing life to words.

I would also like to thank IES Director, Dr. Jonathan Levy, for the opportunity to conduct research with him in Zambia, Africa and introducing me to the prevalence of urban water issues. Despite not having an environmental background, I was embraced by an interdisciplinary team of scientists that supported me with the utmost patience and taught me more than I could have ever hoped for. This experience made me realize my interest in pursuing a career in environmental communications focusing on water quality and public health. It is because of Dr. Levy’s selflessness that I was encouraged to pursue an internship in order to gain more hands-on experience, as opposed to completing a practicum on our research.

Lastly, I would like to thank my supervisor, Deb Leonard, for the opportunity to work under her as communications co-op at the Metropolitan Sewer District of Greater Cincinnati. It is because of this opportunity that this report came to fruition and that I am able to graduate from the M.En program. Having met Deb at a Miami career panel, she is living proof that networking plays a vital role in the professional world and that first impressions count. From my very first day to my very last, Deb used every possible opportunity to teach me about the everyday life of a communications manager; the good and the bad. Not only was I given trust and discretion to complete the work provided to me, I was embraced as a member of the communications team and was always made to feel included. Being given first-hand experience in a role related to water quality and public health further solidified my desired career path and allowed me to broaden my communications skillset.
Abbreviations

- CDW1 Community Design Workshop #1
- CDW2 Community Design Workshop #2
- CDW3 Community Design Workshop #3
- CFAC Communities of the Future Advisory Committee
- CSO Combined Sewer Overflow
- CSS Combined Sewer System
- CWA Clean Water Act
- EHRT Enhance High Rate Treatment
- EMHSA Emergency Management and Homeland Security Agency
- ESA Endangered Species Act
- FWPCA Federal Water Pollution Control Act
- GCD Global Consent Decree
- IPCD Interim Partial Consent Decree
- LMCPR Lower Mill Creek Partial Remedy
- MSD Metropolitan Sewer District of Greater Cincinnati
- NCC Northside Community Council
- NPDES National Pollutant Discharge Elimination System
- OACGC Outdoor Adventure Clubs of Greater Cincinnati
- OEPA Ohio Environmental Protection Agency
- OOD Office of the Director
- OSHA Occupational Safety and Health Administration
- SFCC South Fairmount Community Council
- SSO Sanitary Sewer Overflow
- SSS Separate Sewer System
- USEPA United States Environmental Protection Agency
- U.S. United States
- WQS Water Quality Standards
- WWIP Wet Weather Improvement Plan
SECTION 1: BACKGROUND

MSD Background

One of the requirements for Miami University’s Master of Environmental Science (M.En.) degree is to fulfill a professional experience. I fulfilled this requirement by completing an internship with the Metropolitan Sewer District of Greater Cincinnati (MSD) from February-October 2017.

MSD provides wastewater collection and treatment services to 43 of the 49 subdivisions in Hamilton County and parts of Butler, Clermont and Warren counties (Figure 1) (MSDGC, 2017a). MSD has nine divisions that work together to provide exceptional service to the community by protecting public health and the environment, including providing sustainable water reclamation and watershed management (Table 1) (MSDGC, 2017a). MSD accomplishes their mission through safe and efficient collection and treatment of wastewater and a commitment to a diverse, high-performing, and inspired workforce. MSD employees embrace a set of core values including: trust, integrity, transparency, dedication, innovation, leadership, environmental and financial stewardship, and service (MSDGC, 2017a).

![Figure 1: Map of the Cincinnati Metropolitan Area (Xavier University, 2017).](image)

<table>
<thead>
<tr>
<th>Division</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office of the Director</td>
<td>Overall leadership, utility management, legislation/governance, legal services, public record requests, communications, special projects, &amp; budget.</td>
</tr>
<tr>
<td>Engineering</td>
<td>Planning, design, right-of-ways, construction, project/quality/document controls</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Administration, Human Resources (HR), &amp; training.</td>
</tr>
<tr>
<td>Information Technology</td>
<td>Computer operations, network infrastructure, business system technologies, Help Desk.</td>
</tr>
<tr>
<td>Finance/Accounting</td>
<td>Financial accounting, budget monitoring, payroll, stores, Small Business Enterprise</td>
</tr>
<tr>
<td>Wastewater Treatment</td>
<td>Operating/maintaining MSD’s 7 treatment plants, 100+ pump stations, two package treatment plants, &amp; several high-rate treatment facilities.</td>
</tr>
<tr>
<td>Wastewater Collection</td>
<td>Operating/maintaining MSD’s sewer collection system, the Sewer Backup (SBU) Program, &amp; 24/7 customer call center.</td>
</tr>
<tr>
<td>Regulatory Compliance &amp; Safety</td>
<td>Monitoring/regulating industrial &amp; commercial customers, ensuring regulatory compliance, providing laboratory analysis, ensuring safety/security of MSD employees/facilities.</td>
</tr>
<tr>
<td>Watershed Operations</td>
<td>Remote monitoring, modeling, wet weather assets, green infrastructure program, and optimization of conveyance/treatment of wastewater during wet weather.</td>
</tr>
</tbody>
</table>
At MSD, I worked under the Office of the Director (OOD) in the Communications Division, which serves as the face of MSD through strategic communications. Strategic communication is defined as intentional use of communication methods by an organization to further its mission (Hallahan, Holtzhausen, Ruler, Vercic, & Sriramesh 2007). Prior to the 21st century, organizational communication was a one-way system meant to exert power and disseminate information from top executives to employees. Communication disciplines such as management communication, marketing communication, public relations, and political communication were all separate entities within an organization. However, at the beginning of the 21st century, organizations began to realize that these separate internal (within an organization) and external (stakeholders & general public) communication disciplines shared common goals and objectives.

This realization led to a trend of combining these disciplines into one communications department. Additionally, technological advancements and increasing numbers of media venues (i.e. social media) made it increasingly important for organizations to distinguish themselves through deliberate and thoughtful communications. In today’s society, people have unlimited options for almost everything, so organizations must compete for attention, support, and loyalty from constituents and employees. Strategic communication is a modern, two-way approach to communications that integrates feedback and allows an organization to make intentional, strategic decisions regarding how it presents and promotes itself (Hallahan et al., 2007).

MSD’s communication division was formally established in 2009 with the hiring of a new MSD director, Gérald Checco. Previously, MSD relied heavily on consultants for their communication needs. However, an employee survey conducted at the beginning of the new administration indicated low morale and trust as well as a desire for improved communications across MSD divisions. This resulted in a communication plan, which divided the tasks of internal and external communications between two people and established goals and objectives for each (Table 2).

<table>
<thead>
<tr>
<th>Internal Communications</th>
<th>External Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal:</strong> Improve employee morale &amp; increase understanding of internal and external issues</td>
<td><strong>Goal:</strong> Improve MSD’s image and educate customers about our challenges and our opportunities.</td>
</tr>
<tr>
<td><strong>Objective:</strong> Utilize employee surveys and present results in employee meetings.</td>
<td><strong>Objective:</strong> Increase stakeholder communication through a variety of methods.</td>
</tr>
<tr>
<td><strong>Objective:</strong> Increase communication between management and employees via various methods.</td>
<td><strong>Objective:</strong> Maintain project communications by regularly communicating to ratepayers.</td>
</tr>
<tr>
<td><strong>Objective:</strong> Director meets biweekly with core management team and started monthly communications work group meetings</td>
<td><strong>Objective:</strong> Improve media relations by maintaining four websites and regularly sending out press releases and archiving them on the primary MSD website.</td>
</tr>
<tr>
<td><strong>Objective:</strong> Other strategies include “debunk the rumor” and regular emails addressing timely issues</td>
<td><strong>Objective:</strong> Maintain social networks by regularly posting to Facebook, Twitter and YouTube.</td>
</tr>
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</table>

A primary responsibility of the OOD is to enhance communication between MSD’s nine divisions and seven treatment plants. To help ensure this is done, the OOD established an interdisciplinary communications team comprised of a communications manager, government affairs & policy manager, and graphic designer (Table 3) (MSDGC, 2017a). My position was
Communications Co-op and my work was supervised by Communications Manager, Deb Leonard. I worked closely with my team to help promote both internal and external communications on MSD’s behalf. My responsibilities ranged from creating electronic newsletters (eNewsletters) and press releases to posting on social media and promoting community outreach.

<table>
<thead>
<tr>
<th>Table 3: Responsibilities of MSD’s Communications Team (MSDGC, 2017a).</th>
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<tbody>
<tr>
<td><strong>Job Title</strong></td>
</tr>
<tr>
<td>Communications Manager</td>
</tr>
<tr>
<td>Government Affairs &amp; Policy Manager</td>
</tr>
<tr>
<td>Graphic Designer</td>
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</table>

**Internship-Internal Communication Duties & Responsibilities**

My main internal communication duties revolved around writing and designing electronic newsletters (eNewsletters) to share with MSD employees. Transparency is a part of MSD’s mission and studies have shown that the sharing of information is an effective method for creating trust through open and honest communications (McKnight, 1998). Additionally, researchers have found that employee engagement has been linked to higher levels of performance and commitment (Bin Shmailan, 2016).

One way that MSD promotes employee engagement is through their monthly employee eNewsletter, The Inside Story (Figure 2). Articles for The Inside Story range from project updates and descriptions of
community outreach events to human interest stories about MSD employees and spotlights on new MSD co-ops. Additionally, managers and supervisors are encouraged to send in “Kudos” for employees they feel deserve recognition for exceptional work. MSD also hosts an Employee of the Year event and all departmental winners are included in that month’s issue.

As outlined in the communications plan, there is a monthly communications work group comprised of representatives from MSD’s nine divisions. The work group discusses ideas to improve the *The Inside Story*, discuss issues happening across divisions, and share ideas for the next issue. I attended these meetings each month and even had the opportunity to run a few of them. In addition to attending meetings, I wrote 30 articles for nine issues of *The Inside Story* (February-October). These included six human interest stories, five co-op/intern spotlights, two Kudos, one article on 2016 employees of the year, and various others. This required me to set up appointments, conduct interviews, and verify final content with interviewees to ensure that all information was correct. An example of one of the newsletters with articles I wrote can be found in Appendix A.

Another monthly eNewsletter distributed to MSD employees is the safety eNewsletter from MSD’s Regulatory Compliance and Safety (RCS) Department (Figure 3). In 1970 Congress passed the Occupational Safety and Health Act, which created the Occupational Safety and Health Administration (OSHA). Its job is to ensure safe and healthy work conditions by setting and enforcing standards and providing training, outreach, education, and assistance (29 U.S.C. § 651). OSHA provides a checklist for essential tasks, one of which recommends that employers inform employees of safety and health activities and conditions (USDOL, 2008).

MSD’s RCS Safety Team (Safety Team) accomplishes this task via their monthly safety eNewsletter. Its content is created by the Safety Team and sent to the communications department to be formatted. During my time at MSD I designed six safety eNewsletters (June-November) using an email marketing tool called ConstantContact. This required familiarizing myself with ConstantContact...
and communicating with my supervisor and the Safety Team to verify final format. An example of one of the Safety eNewsletters I created can be found in Appendix B.

In conducting research for this report, I found that MSD’s newsletters utilize several best practices for healthy employee communication. For example, research has shown that managers and supervisors can increase employee motivation by seeking employee input on decisions and promoting employee appreciation (Spreitzer & Mishra, 1999). Additionally, results from a survey conducted in 2004 indicated approximately 92% of respondents felt that employee recognition improves morale, sense of belonging, and retention and increases commitment and satisfaction (Saunderson, 2004).

**Internship-External Communication Duties & Responsibilities**

Throughout my internship I was also responsible for several forms of external communications. MSD regularly posts on Facebook, Twitter, and YouTube (Figure 4). Even though there is no official handbook on how an organization should manage their social media presence, studies indicate that active participation on social media venues provides innovative ways for an organization to interact with its stakeholders (Waters, 2010). A part of MSD’s mission is to promote innovation, therefore one of my responsibilities was to create messages and post them to MSD’s Facebook or Twitter sites. An example of this is when I coordinated with the Hamilton County Emergency Management and Homeland Security Agency (EMHSA) to develop a joint flood awareness campaign.

On August 28, 2016, several areas of Hamilton County experienced a catastrophic, 100-year rain storm. An average 100-year storm is one that should, statistically, only occur once every 100 years. In other words, major flooding events should only have a 1% chance of occurring each year (USGS, 2016a). Despite this, the August 28 storm was followed by multiple 50-100 year storms in the following months, causing sewer back-ups, in-home flooding, and severe property damage. After these events, a
representative from EMHSA reached out to MSD in hopes of working together to engage, educate, and better prepare Hamilton County residents for flooding events. This is especially important since the United States Environmental Protection Agency (USEPA) predicts rainstorms are likely to intensify and will likely continue to increase the frequency of floods in Ohio (USEPA, 2016a).

Our combined efforts resulted in a MSD/Hamilton County EMHSA joint flood awareness campaign called “Are You Flood Aware?” I served on a planning team made of up three representatives from MSD Communications and Hamilton County EMHSA’s Community Outreach Specialist. We developed a slogan “Floods Destroy: Prevent, Protect, Respond” and an official logo (Figure 5). We also developed a flowchart to help residents determine whether their flooding was caused by overland flooding or sewer back-ups. The campaign, which began on June 19, 2017, included a three-week social media blast, but was designed to continue indefinitely. The campaign provided tips and mitigation techniques on how to prevent floods and sewer backups, protect your property and belongings, and respond if an event occurs (MSDGC, 2017b). The flowchart and press release can be found in Appendix C.

Throughout the process of planning the flood campaign I learned how to use a social media management tool called Hootsuite, which allows you to manage all of your social networks in one place and schedule posts as far in advance as you would like (Figure 6). Based on my suggestion, MSD obtained a license to use Hootsuite, which allowed us to more effectively increase our community outreach efforts and meet the goals established in the communication plan. I used Hootsuite to schedule all social media posts for the joint flood campaign and create a social media schedule for the remainder of 2017. The schedule was created using Excel and included date and time of posts, indicated what venue to post on (Facebook, Twitter, or both), and included post content (i.e. messages, pictures, links).

![Figure 6: Example of Hootsuite Interface from MSD’s Hootsuite Account (Hootsuite, 2017).](image-url)
Another way MSD engages with the community and disseminates information is by regularly participating in local campaigns and festivals. Research has shown that interactive forms of communication are often viewed as more useful for adult learners, as opposed to one-way communications such as brochures, television and radio ads (Toman, Shindler, & Brunson, 2004). Additionally, research suggests that organizations that are actively involved with the community demonstrate a sense of social responsibility. This can create a positive public perception of that organization (Brown & Dacin, 2013). During my time at MSD I was responsible for MSD’s involvement in three community outreach events: ArtsWave 2017, Earth Jam 2017, and the Ohio River Paddlefest 2017.

ArtsWave is Cincinnati’s local arts agency and is also the nation’s largest community campaign for the arts (Figure 7). It uses donations to support over 100 arts and community organizations that help communities become a more vibrant and enjoyable place to live (ArtsWave, 2014). My role was to promote the 2017 campaign throughout all MSD divisions via an email campaign. This entailed composing and sending out regular reminders to potential donors describing the importance of the campaign and how their donations would benefit the community. I was also responsible for collecting and tracking donations and delivering them to ArtsWave coordinators on a weekly basis.

Earth Jam is an environmental awareness event held by Cincinnati State each spring. It is held during Earth Week, which includes the nationally recognized Earth Day Celebration. At Earth Jam representatives from local organizations set-up informational booths and conduct hands-on activities focusing on local environmental issues and solutions (Cincinnati State, 2015). MSD participates each year, teaching visitors what should and should not be flushed down the toilet. Sewer systems around the world suffer from “fatbergs,” which are giant masses of fats, oils, and grease that block toilets, break pipes, and cost millions in repairs (Figure 8).
While restaurants and various industries are primarily responsible for the large amounts of grease that get flushed into sewers, they are only part of the problem. Flushing household items such as wet wipes and feminine hygiene products, which are marketed as flushable but do not disintegrate, significantly worsens the problem. These items are perfect building blocks for fatbergs and are removed from sewers by the ton (Curran, 2015). Research shows that people support ideas more when they are told what actions they can take to improve the situation (Newton, 2001).

To help convey information about how residents can prevent fatbergs, MSD uses an interactive toilet paper tossing game called “Nothing but Toilet Paper Goes in the Dumper” (Figure 9). Participants toss toilet paper rolls into a platform designed with three toilet seats. Winners are given prizes and information about why only toilet paper should be flushed down the toilet as well as facts about other things that should and should not be put down drains.

My role during this event was to run MSD’s booth and encourage people to play, enticing them with prizes but also sending them away with helpful information. During the Ohio River Paddlefest, people are encouraged to canoe, kayak or paddleboard down a nine-mile stretch of the Ohio River (Figure 10). It is one of the largest paddling events in the United States (U.S.) and the proceeds benefit the Outdoor Adventure Clubs of Greater Cincinnati (OACGC), an organization connecting urban teens to nature and the outdoors (Ohio River Paddlefest, 2017). The 2017 Paddlefest expanded beyond the Ohio River allowing people to paddle Mill Creek, one of the tributaries of the Ohio River. MSD is located along Mill Creek, a little over half a mile from the Ohio River, which is why that particular MSD treatment plant is called Mill Creek Treatment Plant (Figure 11). MSD wanted representatives of MSD along the creek to cheer on the paddlers.
My job was to coordinate with MSD’s operations group in Wastewater Treatment to choose a location along the creek and make sure it was cleared of weeds and debris. I was also responsible for coordinating with our graphic designer to design, print, and hang an official MSD Paddlefest banner at that location. On the day of the event, myself and another MSD Co-op greeted roughly 350 paddlers, handed out MSD keychains, and provided fun facts regarding the improved health of the creek over the years. These facts revolved around two studies done by MSD in 2011 and 2016. The 2016 study showed how some tributaries that had only “marginally good” water quality in 2011 had improved to “good” or “exceptional” in 2016. The 2016 study also found that nine new fish species were present in Mill Creek (MSDGC, 2016). The event received extensive media coverage including WCPO, Cincinnati Enquirer, Local 12, Fox 19, and Channel 5 and a paddler posted on the official Ohio River Paddlefest Facebook page praising the history lesson given on Mill Creek (Figure 12).

**Internship-Project Groundwork Responsibilities**

In addition to the responsibilities mentioned above, I also had significant responsibilities working with Project Groundwork, a $3.3 billion initiative designed to reduce contaminated discharge into local water bodies and promote community revitalization (MSDGC, 2017c). One of the subcomponents of Project Groundwork focuses specifically on the Lower Mill Creek and is designed to eliminate the largest amount of polluted discharges. The remainder of this report will explain the issues that led to Project Groundwork, and then explain the projects and mechanisms the MSD communications and design team used to help make Project Groundwork a success.
SECTION 2: HISTORY OF SEWAGE SYSTEMS AND WATER POLLUTION CONTROL

What is a Sewage System?

A sewage system is a network of pipes, pumps, and pressure devices that collect wastewater from homes, businesses, and industries. These systems then convey wastewater to treatment plants, where it is treated and returned back into water bodies or re-used (USEPA, 2016b). Wastewater is water that has been used for various everyday processes, such as bathing, toilet flushing, laundry, and dishwashing as well as polluted stormwater runoff. The collection and treatment of wastewater is important because if water is not properly cleaned, it can carry diseases that negatively affect both the environment and public health. Some negative effects of wastewater pollution include contaminated drinking water, harm to fish and wildlife, and restrictions on recreational activities and shellfish collection and consumption. Wastewater treatment removes as many suspended solids as possible before returning the remaining water, the effluent, back into surrounding water bodies (USGS, 2016b).

Classifications of Sewage Systems

There are three main classifications for sewage systems: separate sanitary sewers (SSSs), partially separated sewer systems (PSSs), and combined sewer systems (CSSs) (USEPA, 1999). The SSSs carry wastewater from homes, businesses, and industries (sanitary sewage) and stormwater in two separate systems (Figure 13).

Only wastewater is carried to treatment plants while stormwater is diverted directly into surrounding waterbodies through stormwater drains and pipes (stormwater systems) (USEPA, 2016b). The PSSs also collect sanitary sewage and stormwater separately, but to prevent flooding during rainfall and snowmelt (wet weather events) portions of stormwater combine with sanitary sewage (combined wastewater) and is diverted to a wastewater treatment plant. The remaining stormwater is diverted to surrounding water bodies through stormwater systems (Butler & Davies, 2015). The CSSs collect sanitary sewage and stormwater all in one.
system (Figure 14) (MSDGC, 2017d). Unlike PSSs, CSSs take on all stormwater instead of just portions of it from stormwater systems. During dry weather, CSSs transport sanitary sewage to a treatment plant, but during wet weather events, CSSs fill up with stormwater combined with wastewater. If the wastewater treatment plant reaches capacity, the CSS is designed with overflow pipes which direct untreated, combined wastewater to overflow into local water bodies, preventing it from backing up into buildings (Tibbetts, 2005). These are called Combined Sewer Overflows (CSOs) (OEPA, 2017).

Early Sewage Systems in the United States

Prior to the 1800s, wastewater management in the U.S. was primarily carried out by decentralized, latrine-cesspool systems. Latrines were connected to cesspools, which are temporary underground storage tanks that stored waste until it was absorbed into the ground or was manually removed and disposed of (Nakagawa, 2013). Early attempts towards a centralized wastewater management system occurred in the early-1800s via underground conduits and aboveground open-channels. These conduits and open-channel sewer systems ran along the centers and sides of streets and served primarily to divert stormwater into local waterbodies. (Burian, Nix, Pitt & Durrans, 2000). When it rained, sewage would overflow from cesspools and combine with stormwater. This combined wastewater and other contaminates (e.g. manure, rotting food, trash) flooded into conduits and open-channels, ending up in local water bodies and sometimes overflowing into city streets and yards (Tarr, 1979).

The urban population of the U.S. increased nearly 40% from 1850-1920. Negative effects of not having a centralized wastewater system were intensified by urban population growth. Approximately 95% of wastewater entered waterways without any treatment. Population increases coupled with the flush-toilet becoming more common during the mid-1800s led to increased quantities of combined wastewater entering conduits and channels. Subsequently, more combined wastewater was flowing throughout cities and into local waterways. Poor wastewater handling in the U.S. resulted in outbreaks of cholera in 1832, 1849, and 1866 and a typhoid outbreak in 1848 (Burian et al., 2000).

Public health crises made clear that an efficient wastewater management system was needed to protect public health and safety, ultimately leading to the introduction of SSSs, PSSs, and CSSs in the 1850s. Originally, only SSSs diverted sewage to treatment plants, while CSSs diverted all combined wastewater to nearby waterbodies. Despite not being able to treat wastewater, CSSs were generally the preferred system in larger cities for several reasons including perceived lower costs and the belief that CSSs were best suited to handle the rapid population growth and prevent flooding in urban areas. More extensive construction of municipal sewer systems occurred in the 1880s and by 1900 most major U.S. cities had some form of sewer system in place. Since CSSs were more common, this increased the amount of combined wastewater diverted into local water bodies (Burian et al., 2000).

Development of the Clean Water Act

Initially CSSs were an acceptable solution for controlling excess flows (MSDGC, 2017d). However, by the mid-20th century they were considered inadequate because of the large amounts
of raw sewage flowing into local water bodies each year from CSOs (USEPA, 2011). The first major water pollution control statute in the U.S. was the 1948 Federal Water Pollution Control Act (FWPCA) (USEPA, 2010). From that point on and over the course of the next 20 years, the federal government became increasingly interested in and involved with the issue of water quality degradation. This spurred the FWPCA Amendments of 1956 and 1961, which addressed funding for the construction of municipal wastewater treatment plants. Increased interest in public health protection led to creation of the USEPA in 1970 to enforce compliance with environmental legislation (USEPA, 2010). The FWPCA was amended in 1972, and became known as Clean Water Act (CWA), which is still considered the primary Federal statute protecting our nation’s waters (USEPA, 2017a).

**Introduction of the NPDES Program**

Section 101 of the CWA states that the purpose of the act is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters (33 U.S.C. §1251). The USEPA is authorized under Section 309 of the CWA to enforce compliance and issue penalties for specified CWA sections (USEPA, 2017a) (33 U.S.C. §1251). One of the most notable developments under the CWA was the National Pollutant Discharge Elimination System (NPDES), which prohibits discharges of pollutants from point sources into U.S. waters with the exception of those allowed under an NPDES permit (USEPA, 2017b). Point source pollution is defined as any single identifiable source of pollution from which pollutants are discharged. Examples of point source pollution include: pipes, ditches, channels, and conduits (USEPA, 2016c). The NPDES permit program issues a permit to all municipal, industrial, and commercial facilities that discharge wastewater from a point source into a waterbody (USEPA, 2016d). Under Section 404 of the CWA, the NPDES permit program established discharge limits and conditions for municipal wastewater treatment facilities (USEPA, 2016d) (33 U.S.C. §1251).

Municipal NPDES permits can be issued by the USEPA, however they are usually issued by states that are authorized by the USEPA to enforce one or more components of the NPDES program (Figure 15). For new or renewed permits, operators of a facility will fill out an individual permit application and submit it to their permitting authority for review. After a public comment period, the permitting authority determines whether or not to approve and issue the permit (USEPA, 2013).

**Figure 15: NPDES Authorized States as of July 2015 (USEPA, 2013).**
In 1989 the USEPA addressed CSOs with the issuance of the National CSO Control Strategy, which qualified CSOs as point source pollution subject to NPDES permit requirements under the CWA. The National CSO Strategy identified three objectives:

1. Ensure that if CSOs occur, they are only as a result of wet weather;
2. Bring all wet weather CSO discharge points into compliance with the technology-based requirements of the CWA; and
3. Minimize the impacts of CSOs on water quality, aquatic biota, and human health (USEPA, 1997).

While the National CSO Control Policy increased attention on the issue of CSOs, it lacked fundamental aspects, such as overall guidance to permittees with CSOs and endorsement of public involvement (USEPA, 1997). In 1994, the CSO Control Policy was improved to do the following:

1. Provide guidance to permittees with CSOs, NPDES permitting and enforcement authorities, and State water quality standards (WQS) authorities;
2. Ensure coordination among the appropriate parties in planning, selecting, designing, and implementing CSO management practices and controls to meet the requirements of the CWA; and
3. Ensure public involvement during the decision-making process (USEPA, 1997).

The CSO Control Policy established a consistent national approach for controlling discharges from CSOs into U.S. waters through the NPDES permit program (USEPA, 1994). It provided guidance for developing site specific NPDES permit requirements for all CSSs that experience CSOs due to wet weather events. Four key principles guided the CSO Control Policy in creating cost-effective policy that met CWA requirements:

1. Providing clear levels of control that would be presumed to meet appropriate health and environmental objectives;
2. Providing sufficient flexibility to municipalities, especially those that are financially disadvantaged, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants while meeting CWA objectives and requirements;
3. Allowing a phased approach for implementation of CSO controls considering a community’s financial capability; and
4. Reviewing and revising WQS and their implementation procedures when developing long-term CSO control plans to reflect the site-specific wet weather impacts of CSOs (USEPA, 1995).
SECTION 3: MSD CONSENT DECREES

Flexibility of the CWA

Even though the main components of the USEPA’s CSO Control Policy entail meeting CWA requirements, it does provide flexibility with regards to site-specific approaches to addressing CSOs. The policy recognizes the site-specific nature of CSOs and their varying levels of impact, therefore allowing municipalities to tailor CSO controls to their local situations (USEPA, 1994). The USEPA also acknowledges that individual municipalities undergo different stressors, such as population growth or decline, aging infrastructure, complex water quality issues, limited resources, and other economic challenges (USEPA, 2016d). Collectively, this flexibility provided by the CSO Control Policy allows municipalities to work side-by-side with local agencies, organizations, residents, businesses, and stakeholders in a way that makes the consent decrees less of a burden and more of a community asset (MSDGC, 2012).

Storm Sewers in Cincinnati, OH

As of April 2017, approximately 772 U.S. cities were still served by CSSs (USEPA, 2017d). Cincinnati is one of these cities, with approximately 40% of its region still utilizing CSSs. This includes Hamilton County, which ranks as one of the top five locations in the U.S. for CSO occurrences (MSDGC, 2012). Annually, Hamilton County CSSs are responsible for roughly 14 billion gallons of CSO discharges a year into local waterways.

Project Groundwork

In 1999, MSD began working with the USEPA, Department of Justice (DOJ), and the State of Ohio to establish a formal remediation program in compliance with the CWA. These negotiations resulted in two consent decrees. The first consent decree was the Interim Partial Consent Decree (IPCD), approved in 2002, which addresses Sanitary Sewer Overflows (SSOs) (MSDGC, 2017e). Just as CSOs are overflows from CSSs, SSOs are overflows from SSSs (Figure 14) (USEPA, 2016e). Unlike CSOs that are diluted by stormwater, SSOs are highly concentrated, raw sewage and are indicative of improper system maintenance. While CSOs are more common, SSOs pose a greater risk, so they are also regulated by the CWA and prohibited unless authorized by an NPDES permit (USEPA, 2016d). MSD’s SSSs are responsible for roughly 100 million gallons of SSO discharges into local waterways each year. The IPCD requires the development of a computer-based model of MSD’s sewer system, the construction of a temporary treatment facility to reduce SSO discharges until a permanent solution is implemented, and the development of a collection, treatment, and industrial operating and maintenance programs (MSDGC, 2017e).

The second consent decree, called the Global Consent Decree (GCC), was approved in 2006. It addresses CSOs, the implementation of the SSO correction plan from the IPCD, a Water-in-Basement Program, and Wastewater Treatment Plant capacity issues (MSDGC, 2017e). The GCC requires a wide variety of projects for eliminating unpermitted CSOs, maximizing high-rate treatment, updating water quality testing and monitoring, enhancing CSO controls, responses and public notifications, conducting cost-benefit studies, paying fines to Federal and State agencies, and investing in local environmental enhancement projects (MSDGC, 2017e). These efforts also
resulted in a Wet Weather Improvement Plan (WWIP) and the Lower Mill Creek Partial Remedy (LMCPR), which were combined into one large effort called Project Groundwork. Under the consent decrees, MSD is required to eliminate all Hamilton County SSOs (100 million gallons), and reduce 85% of Hamilton County annual CSO discharges (12 billion gallons) (Table 4) (MSDGC, 2017e).

Project Groundwork is a $3.3 billion public works initiative designed to achieve compliance with the consent decrees and promote neighborhood revitalization through various green and gray infrastructure projects. It consists of five major projects: Ault Park Stream Restoration, Upper Duck All Bundle Sewer Improvements, Werk & Westbourne Enhanced High Rate Treatment Facility (EHRT), CSO/SSO #700 Integrated Watershed Action Plan, and the LMCPR. Project Groundwork is occurring in two phases: Phase 1, with a total of 114 projects, is currently in progress and projected to be completed by 2018. Phase 2, with a total of 256 projects, is under development and will occur sometime post-2018. Phase 1 is roughly 89% complete, but one of the projects still in progress is the LMCPR (MSDGC, 2017e).

### Focusing on the Lower Mill Creek Watershed

The Lower Mill Creek Watershed is located in the heart of Hamilton County, covering about 62.5 square miles, and is responsible for approximately seven billion (50%) of Hamilton County’s 14 billion annual CSO discharges (Figure 16). MSD’s consent decrees mandated that a plan be developed for eliminating approximately two billion gallons of annual CSO discharges from this watershed by 2018 via the LMCPR (MSDGC, 2017f).

There are several smaller, sub-watersheds within the Lower Mill Creek Watershed (Figure 17). Four of these sub-watersheds, Bloody Run, Kings Run, West Fork, and Lick Run, are significant because together they contribute approximately two billion gallons of CSO discharges annually (MSDGC, 2017g):

- The Bloody Run Watershed is responsible for approximately 600 million gallons of CSO discharges into Mill Creek each year (MSDGC, 2017h).

<table>
<thead>
<tr>
<th>Sewer System/Overflow Type</th>
<th>Annual Discharges in Hamilton County (gallons)</th>
<th>Federally Mandated Reduction Requirements (gallons/percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSSs/CSOs</td>
<td>14 billion gallons</td>
<td>12 billion gallons (85%)</td>
</tr>
<tr>
<td>SSSs/SSOs</td>
<td>100 million gallons</td>
<td>100 million gallons (100%)</td>
</tr>
</tbody>
</table>

![Figure 16: Lower Mill Creek Watershed (MSDGC, 2017f).](image-url)
- The Kings Run Watershed is responsible for approximately 300 million gallons of CSO discharges into Mill Creek and Kings Run Stream each year (MSDGC, 2017i).
- The West Fork Watershed is responsible for approximately 300 million gallons of CSO discharges into Mill Creek and West Fork Channel each year (MSDGC, 2017j).
- The Lick Run Watershed is responsible for approximately 500 million gallons of CSO discharges into Mill Creek each year (MSDGC, 2017k).

The LMCPR projects within these sub-watersheds will remedy portions of the CSO discharges via storage tanks, real-time control systems, stormwater detention basins, bioswales, bio-infiltration gardens, sewer separations, new storm sewers, stream stabilization/restoration, and a mile-long constructed waterway that will mimic a natural stream. Together the LMCPR projects are predicted to reduce CSO discharges by 1.78 billion gallons (17% of required amount) a year (MSDGC, 2017g).

![Figure 17: Smaller Watersheds Within the Lower Mill Creek Watershed (MSDGC, 2017g).](image)
SECTION 4: ROLE OF COMMUNITY ENGAGEMENT IN LMCPR PROJECTS

Overview

When I started my internship, I spent considerable time learning about Project Groundwork, specifically the LMCPR projects. One aspect of the LMCPR projects that was particularly interesting to me, and relevant to my job in the MSD communications department, was the role that community engagement played in the development of the LMCPR projects. In this section I will describe how MSD worked with the community to develop the plan, which took place prior to my time at MSD. Then in Section 5 I will describe the continued community engagement that I helped with during my co-op.

Community Investment

The initial solution in MSD’s GCC for reducing CSOs within the Lower Mill Creek Watershed was a deep, underground storage tunnel and EHRT facility (Figure 18). An EHRT is a facility specifically designed to treat wastewater generated by wet weather. Essentially, excess stormwater would be stored underground and then pumped to the EHRT for treatment. However, MSD recognized that any CSO control solutions and subsequent infrastructure would set the stage in Hamilton County for the next 50-100 years. This presented them with the unique opportunity to ensure that the consent decrees were not just seen as sewer projects; rather it was the perfect opportunity for long-term community investment (MSDGC, 2012). Community engagement played a vital role in developing CSO control solutions for all of the LMCPR projects.

In 2010, MSD created a concept called “Communities of the Future,” which refers to the integration of sustainable sewer infrastructure improvements with urban revitalization opportunities. MSD wanted to utilize community input on potential sewer projects across the Lower Mill Creek watershed, so it formed a Community of the Future Advisory Committee (CFAC), which was comprised of representatives from public and private organizations as well as private citizens. The committee was designed to ensure that citizens and stakeholders were involved in the development of the LMCPR projects.

Community Engagement: Lick Run Project

South Fairmount is the primary community within the Lick Run Watershed and reached its economic peak in the early 1920’s. However, due to events such as the Great Depression, Prohibition, the World Wars, and suburbanization, it has been in decline ever since (MSDGC, 2012). South Fairmount’s median household income is currently below the City of Cincinnati average and is home to one of the highest concentrations of Section 8 housing in Hamilton County (City of Cincinnati, 2017a). Section 8 housing is a federally funded program that helps
low-income families pay rent (42 U.S.C. §1437f). Despite studies indicating that Section 8 housing does not negatively impact property values, it can spur “Not in My Backyard” sentiments. These reactions are rooted in fear of adverse impacts on property values, anti-poor sentiments, racial prejudice, perception of crime accompanying affordable housing, a reputation of poor maintenance, and arguments that it is unattractive (Koebel, Land, & Danielsen, 2004) (Belden & Russonello, 2003). These negative perceptions can lead to a mass exodus, which contributes to overall community disinvestment. South Fairmount saw a 27% population decrease from 2000-2010 and experienced a 55% decrease in property values from 2000-2010. In addition to not having a major thoroughfare running through it, in 1970 South Fairmount’s Queen City and Westwood avenues were converted to one-way streets, which further isolated the area (City of Cincinnati, 2017b) (MSDGC, 2012).

The need for revitalization in South Fairmount led MSD and its partners to find an alternative solution that better served the community (MSDGC, 2012). The alternative solution of interest was to use sustainable infrastructure to control stormwater at the source. These are referred to as “source control projects” and include overflow reducing methods such as separating combined sewers, installing stormwater retention basins, and delaying or preventing stormwater drainage from reaching combined sewers. Studies indicate that source control solutions are just as effective as traditional CSO reduction methods, achieve better water quality, and provide potential community benefits. This led to the development of the alternative CSO control approach called the Lick Run Project (MSDGC, 2012).

The Lick Run Project is the primary focus of the LMCPR due to the fact that it is home to MSD’s largest CSO (by volume), CSO #005 (Figure 19). CSO #005 is responsible for all of the Lick Run Watershed’s 500 million gallons of annual CSO discharges (MSDGC, 2012). The Lick Run Project is comprised of 12 smaller projects, the most significant being the mile-long constructed water way that mimics a natural stream known as the Lick Run Greenway. The Lick Run Greenway will be able to handle a 100-year storm and eliminate approximately half of the annual CSO discharges from the Lick Run Watershed (MSDGC, 2012) (MSDGC, 2017l).

After determining that alternative green solutions were feasible, the next step was to develop a master plan. A master plan is a dynamic, long term, comprehensive plan of action that serves as a blueprint for the future growth and development, and is best achieved by gaining public input (Amirtahmasebi, Orloff, Wahba, & Altman, 2016). The role of public engagement in developing the Lick Run Watershed Master Plan revolved around merging community needs, desires, and opportunities with MSD’s CSO reduction objectives.

Based on feedback from CFAC, MSD divided the master planning process into three community design workshops, which would occur over a 6-month period. A mailing list was created for
every address within the Lick Run Watershed and invitations were mailed separately for each workshop (Figure 20). In order to facilitate the understanding of community needs, desires, and opportunities, MSD developed a set of feedback mechanisms. These included a community open house, three design workshops, lick run watershed tours, and meetings with several groups including the South Fairmount Community Council, the South Fairmount Business Association, key stakeholder groups, individual business and property owners, key public agency partners, and key regulators (MSDGC, 2012).

The three community design workshops played a vital role in shaping the Lick Run Greenway Project and characteristics of the final Lick Run Greenway design are a direct result of community engagement. For example:

- Feedback from Community Design Work Shop 1 (CDW1) indicated a preference for:
  - A natural-looking waterway that is fits in an urban setting and encourages interaction;
  - The integration of well-planted, green features to improve water quality as well as water features such as waterfalls, pools, and riffles; and
  - As many interactive elements as possible as well as the creation of an open gathering space that could be used for a wide variety of recreation (MSDGC, 2012).

- Feedback from CDW2 indicated a preference for:
  - The Lick Run Greenway to providing ecological benefits, wildlife habitat, and opportunities for environmental education; and
A more walkable, mixed-use business area with improved pedestrian safety, traffic flow, and parking (MSDGC, 2012).

Feedback from CDW3 indicated:

- That strengths of the Lick Run Greenway included lower, up-front/lifetime costs, potential for urban revitalization, neighborhood beautification, ecological benefits, and attention to historic fabric; and
- That 93% of respondents supported the Lick Run Alternative (MSDGC, 2012).

The final design for the Lick Run Greenway will be an aquatic feature that is ecologically functional and accommodates the distinct hydrological needs of the waterway system (Figure 21). Community benefits include:

- Structures for filtering out sediment and debris before entering the waterway;
- Features that improve water quality by cleaning stormwater runoff before it enters Mill Creek (filtering devices, wetland, riffles, pools, stone, plants, and riparian areas);
- Trails and paths for maintenance, access, and recreation (pedestrian and cyclists);
- Sidewalk improvements including green street features such as stormwater planters and street trees;
- Vehicular bridges across the Lick Run Greenway;
- Educational elements for informing residents about stormwater features, native habitats, and cultural assets (signage, kiosks, and artwork); and
- Various upgrades to South Fairmount’s Recreation Area (MSDGC, 2012).

![Figure 21: Final Design Concept for the Lick Run Greenway in South Fairmount (MSDGC, 2012).](image)

**Community Engagement: Bloody Run, Kings Run, & West Fork**

Even though the Lick Run Project is the main focus of the LMCPR, it is important to note that community engagement played a role in the other LMCPR projects as well. For the Lick Run
Project, MSD used a two-way communications strategy, which included an interchange between MSD and stakeholders, and allowed for changes to the plan based on stakeholder feedback (Morsing & Schultz, 2006). For the other projects, MSD used a different approach – mostly providing stakeholders with information and opportunities to ask questions and request further information. This was more of a one-way communications relationship with stakeholders (Morsing & Schultz, 2006).

The Bloody Run Project is a sewer improvement project that includes the installation of a real-time control facility near MSD’s CSO 181. In February of 2012, MSD hosted an open house in Bond Hill. It consisted of seven information sessions that provided residents with background information on Project Groundwork and LMPCR, educated them on sustainable stormwater management, and introduced details of the Bloody Run Project. Approximately 40 residents attended. In addition to being provided project information, they were given information regarding what they could personally do to improve water quality and keep stormwater out of the CSS (MSDGC, 2017h).

The Kings Run Project is a sewer separation project that involves separating CSSs, installing stormwater detention ponds, and stabilizing the Kings Run stream. MSD hosted three public meetings related to this project: March 2012, when the project was just beginning, July 2014, during the main construction period, and October 2016, when the project was close to completion. The meetings were designed to initially explain the project, then discuss the progress and hear about any challenges the stakeholders were having, then to explain how the completed project will impact the stream (MSDGC, 2017i).

The West Fork Project is a sewer project that involves installing new storm sewers to and two stormwater detention basins to reduce CSOs at CSO 127/128 and CSO 125. MSD hosted three public meetings related to this project: January 2012, when the project was just beginning, March 2014, during the main construction period, and August 2016, when the project was close to completion. The meetings were designed to initially explain the project, then discuss the progress and hear about any challenges the stakeholders were having, then to explain how the completed project will impact the stream (MSDGC, 2017j).
SECTION 5: MY ROLE AND RESPONSIBILITIES WITH PROJECT GROUNDWORK

Communication Responsibilities

As mentioned at the beginning of this report, my responsibilities for this internship focused heavily on communications for Project Groundwork, specifically the LMCPR projects (Figure 22). This included creating materials that provided notice when construction was to take place and press releases on project commencement/updates.

![Diagram of Project Groundwork Internship Responsibilities](Excel, 2017)

Notice of Construction

In order to make way for the Lick Run Greenway, MSD had to purchase and demolish a total of 91 buildings, including five historical and/or cultural buildings that were identified during the master planning process (MSDGC, 2017m). Additionally, several of the LMCPR projects required work on private property, which meant that MSD had to acquire easements. Easements are legal rights to someone else’s land, which is granted through eminent domain. Eminent domain is the government’s 5\textsuperscript{th} Amendment right to take private property for public use given that the affected property owner is rightfully compensated (U.S. Const. amend. V). Under the Ohio Revised Code, any municipal corporation can appropriate (seize), enter upon, and own real estate within its corporate limits (7 O.R.C. §719.01). Also under the Ohio Revised Code, before a government agency begins construction or other work on private property, the agency must first send a letter to property owners notifying them that the project is going to begin (33 O.R.C. §3311.04). In addition to notifying directly affected property owners, MSD takes an extra step and aims to notify everyone in the project area that could possibly be affected by construction work in some way. Project impacts can include anything from dust and noise to traffic delays and road closures.

During my time at MSD, I prepared these “notice of construction” materials for three of the four LMP\textsubscript{CR} projects and their smaller, sub-projects including one Bloody Run project, four Kings Run projects, and four Lick Run projects (Table 5). This involved writing letters to affected residents and sending them prior to construction work. These letters told residents when
construction would begin and included fact sheets that provided details of the project. The fact sheets explained the project purpose, provided a project description and a construction schedule, explained construction methods and temporary inconveniences, provided safety tips and a project map. Examples of these materials can be found in Appendix D.

<table>
<thead>
<tr>
<th>LMPCR Projects</th>
<th>Sub-Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloody Run</td>
<td>CSO 181 Real Time Control Project (Bloody Run Project)</td>
</tr>
<tr>
<td>Kings Run</td>
<td>CSO 217/483 Sewer Separation, Phase A-1 (Kings Run Project)</td>
</tr>
<tr>
<td></td>
<td>CSO 217/483 Sewer Separation, Phase A-2 (Kings Run Project)</td>
</tr>
<tr>
<td></td>
<td>CSO 217/483 Sewer Separation, Phase A-3 (Kings Run Project)</td>
</tr>
<tr>
<td>Lick Run</td>
<td>CSO 217/483 Sewer Separation, Phase C (Kings Run Project)</td>
</tr>
<tr>
<td></td>
<td>Quebec Heights Sewer Separation &amp; Sewer Rehabilitation Project (Lick Run Project)</td>
</tr>
<tr>
<td></td>
<td>Queen City &amp; Cora Avenues Sewer Separation &amp; Rehabilitation Project (Lick Run Project)</td>
</tr>
<tr>
<td></td>
<td>Wyoming &amp; Minion Avenues Sewer Separation Project (Lick Run Project)</td>
</tr>
<tr>
<td></td>
<td>Lick Run Greenway Project (Lick Run Project)</td>
</tr>
</tbody>
</table>

**Press Releases**

In addition to giving residents advanced notice of when projects will begin, MSD also sends out a press release the day construction begins. Press releases are formal, official announcements of various things pertaining to an organization (Forbes, 2016). They are important methods of communication due to the fact that they are written in a way that translates complex scientific information into easier to understand news (Woloshin & Schwarz, 2002). Project Groundwork is first and foremost a sewer separation project and entails complex engineering processes that the general public might not be familiar with. Research indicates that one way to bridge the gap between science and the general public is to increase communications, specifically in regards to relatability. Evidence has shown that for many people, the issue of uncertainty as it relates to science stems from an inability to understand how scientific findings are relevant to their everyday lives. This inability has less to do with not understanding science and more to do with a lack of familiarity with scientific methods. Essentially, the more complex something is the more uncertainty it creates, making it harder for the public to relate (Bradshaw & Borchers, 2000).

The press releases, therefore, needed to explain the complex scientific concepts, but also balance several other issues. First, Project Groundwork was not federally funded, rather it was funded by increased sewer rates. Second, MSD wanted to ensure it lived up to its mission to be transparent, and balance this with a desire to soften the impact of rate increases. Therefore, MSD used press releases to educate residents about the sewer system challenges, the plan to overcome the challenges, and how Project Groundwork will affect them personally. The press releases were
essentially condensed versions of the notice of construction letters, and fact sheets, but they also included project costs to promote transparency. During my internship, I wrote three press LMCPR press releases for the Quebec Heights, Queen City & Cora, and Wyoming & Minion projects (Appendix D).

Other Project Related Duties

One of the LMCPR projects that has yet to begin (as of October 2017) is the West Fork Project. The West Fork Project is a sewer installation project that also involves the creation of two stormwater detention basins. As a part of community engagement efforts, MSD hosted a series of public meetings leading up to the construction of the various LMCPR projects. The most recent West Fork Project public meeting was held during my time at MSD in August 2017 and focused on the CSO 125 and West Fork Creek Riparian/Floodplain Restoration projects (MSDGC, 2017j). This provided me with the opportunity to gain insight about public meetings. In preparation for this meeting, I was tasked with creating official invitation letters for both meetings that would be sent out to residents within the West Fork Watershed. Additionally, I was responsible for creating fact sheets, similar to those created for notice of construction letters. These fact sheets were printed and handed out to all meeting attendees (Appendix E).

As a part of MSD’s continued efforts to remain engaged with stakeholders affected by the LMPCR, my supervisor attends as many monthly community council meetings as possible. Community councils are groups of individuals that come together and volunteer their time to promote the well-being of their communities. The official City of Cincinnati Community Councils website states:

Community councils are a crucial link between the City and its many unique neighborhoods. These organizations ensure that neighborhood development responds to the needs and goals of its citizens. The councils are also a vehicle for communication and engagement throughout neighborhoods (City of Cincinnati, 2017c).

During these meetings, representatives from various local agencies and institutions (police, fire, water/sewage, schools, etc.) would update the community on various issues. The most active community councils within the LMCPR project area include the South Fairmount Community Council (SFCC) and the Northside Community Council (NCC). Throughout the course of my internship I attended four community council meetings (two SFCC & two NCC), which involved taking notes on any comments or questions pertaining to MSD. If my supervisor also attended, she would make a presentation on LMCPR project updates and I would take notes to give her afterwards. If my supervisor was not present, a project manager would be in attendance and make the presentation and I would take notes, type them up, and email them to her. These notes were used to relay questions, concerns, and special circumstances to project and construction managers as well as project contractors. I also included names and contact information of individuals who needed additional information. During this time, I realized how important it was that MSD attended these meetings, and that it was critical that I took detailed notes so that MSD could maintain a positive, transparent relationship with the communities.
Example of Work-Quebec Heights Sewer Separation & Rehabilitation Project

One project that I worked on during my internship was the Quebec Heights Sewer Separation & Sewer Rehabilitation Project, which is a green infrastructure project that began in March 2017 (MSDGC, 2017n). The project included installing new storm sewers, restoring a stream, and improving an existing stormwater detention basin. This involved closing off stormwater inlets to the CSS, stabilizing the stream banks with native vegetation to prevent erosion, adding stream features to slow water flow, and improving the stormwater detention basin to slow flow. The project area included several streets in East Price Hill and an existing ravine located behind an old school in Quebec Heights (Figure 23).

I created a mailing list, notice of construction letter, fact sheet, and press release for residents within this project area (Figure 24) (Appendix D). The notice of construction letters always included a brief project description, the date construction would begin, where to find more information, contact information for questions, and the name of the project manager. The fact sheets provided a more in-depth description of the project purpose, schedule, temporary inconveniences, and safety instructions. The press releases included information similar to the notice of construction letters and fact sheets, however their purpose was to announce that construction has begun.
Although the project will not conclude until Spring 2018 after new plants and trees are planted, the stream restoration and stormwater detention basin improvements were completed in October 2017 (Figure 25) (MSDGC, 2017n). Seeing completed portions of a project that I was involved in was a rewarding feeling. Not only was I able to finally visualize the things that I wrote about, but it gave me a sense of pride in the work I did. I believe that an important aspect of any job is feeling as though your work has meaning, which is what seeing the completed stream restoration did for me. Through creating community engagement materials and promoting project support, I helped create a real deliverable, meant to benefit the environment and public health.

Figure 25: Examples of the Quebec Heights Sewer Separation & Sewer Rehabilitation Project Area After Construction (Deb Leonard, 2017).

Overall, Project Groundwork’s Phase 1 is in full compliance with MSD’s consent decree requirements. Phase 1, which began in 2009, is currently 89% complete and expected to be done in 2018 (MSDGC, 2017o). Phase 2 has yet to be approved by the USEPA and the Ohio EPA (OEPA) and will begin no sooner than 2018 (MSDGC, 2017f). Some current accomplishments of Phase 1 as pertaining to this report include:

- Completing 102 of 114 total projects (89%);
- Eliminating 146 of 347 CSOs (42%);
- Eliminating/controlling 43 of 94 SSOs (46%); and
- Reducing 39 of 47 annual SSOs at SSO 700 (MSD's largest SSO) (83%) (MSDGC, 2017o).
SECTION 6: REFLECTION

Internship Relevance

A gap exists between scientists, policy makers, and the general public referred to as the “science-policy” gap. There are many speculations as to why this gap exists, one being the concept of scientific uncertainty (Bradshaw & Borchers, 2000). While scientists are familiar with uncertainty and complexity, the public and policy makers prefer certainty and undeniable solutions. This uncertainty makes translating science into policy a difficult task and puts added pressure on those in the business of communicating scientific material (Bradshaw & Borchers, 2000). My area of concentration for my Master of Environmental Science degree is Public Engagement and Sustainable Development, which means that my curriculum has emphasized the role of communications in scientific settings. I have taken classes on everything from environmental communications and visual rhetoric to environmental law, urban and regional planning, and environmental problem solving, which all came into play during my internship.

Relating Coursework to Internship Experience

Through my environmental communications and visual rhetoric courses I learned various methods for communicating environmental concepts and scientific information verbally, textually, and visually to a wide range of audiences and stakeholders. This included learning different techniques for utilizing social media venues to promote organizational values. My internship at MSD provided me ample opportunity to apply and gain hands on experience with these methods and techniques. From making every day social media posts on a variety of topics to promoting the joint flood campaign with the Hamilton County EMHSA, I was introduced to best management practices utilized by public sector organizations. For example, at the beginning of my internship, MSD was posting on its Twitter and Facebook accounts once or twice a week. While working on the flood campaign with the Hamilton County EMHSA Community Outreach Specialist, she explained how EMHSA handles the organization’s social media accounts. This included lessons on why and how she posts several times a day, what times to post, and what types of information to post. It is through these collaborations that my supervisor and I learned about various research studies examining social media best practices. These studies utilized social media analytic tools to identify when people are most active and how often people post on social media. This information allows an organization to understand best times and how often to post in order to increase the likelihood of being seen. This is when I learned about the social media management tool called Hootsuite, which MSD began using during my internship. While my graduate courses focused on appropriate message content, this additional information about analytic tools and Hootsuite was very valuable on-the-job training. I was able to get six months (May-October) experience utilizing Hootsuite to schedule posts on MSD’s behalf, which allowed me to learn the full extent of the software and become a proficient user. Hootsuite is a tool that I will most definitely promote and utilize in my future career.

My environmental law and urban and regional planning courses introduced me to the history of environmental law, its regulatory agencies, and the regulation of water pollution, hazardous substances, solid waste, and land use. Some of the legislation that the courses focused on included the CWA, the Endangered Species Act (ESA), and land use laws for eminent domain and property easements. Being involved with MSD’s Project Groundwork provided me with real
life examples of how environmental legislation plays a role in everyday life. The federal consent decrees underlying Project Groundwork were spurred by MSD’s violations of the CWA; furthermore, implementation of the project required compliance with the ESA. For example, the Indiana Bat is listed as an endangered species under the ESA due to a loss of available habitat. The majority of Indiana Bat populations are located in Southern Indiana, but can be found over most of the eastern half of the U.S., including Southern Ohio. This means that any projects that could affect Indiana Bat habitat must adhere to the U.S. Fish and Wildlife Service’s Indiana Bat Conservation Plan. This includes only cutting trees during certain times in order to limit disturbances to their habitat throughout their annual migration cycles. With regards to disturbances of their summer habitat, trees can only be cut between November 15 and March 31 (USFWS, 2011). One project that I worked on, the Queen City and Cora Avenues Project, was delayed due to the fact that tree clearing did not get done before the deadline of March 31.

Additionally, several of the LMCPR projects required work on private property, specifically the Lick Run Greenway. MSD used eminent domain to acquire the property needed to construct the Lick Run Greenway, which resulted in 127 acquisitions. These included 91 full takes, 4 partial takes, 6 city-owned sites, and 26 easements (MSDGC, 2017p). The seizing and demolishing of local homes, businesses and identified historical/cultural buildings did not sit well with many community members. This presented the communications team with the challenge of relaying this sensitive information throughout the demolition process. This included reassuring community members of all mitigation efforts MSD was taking to preserve historical/cultural buildings of interest. My courses helped me understand the basic concepts, and the internship showed me the communications challenges involved.

In my courses, I also learned about several federal and state regulatory agencies including the USEPA, United States Army Corps of Engineers, Federal Highway Administration, Federal Emergency Management Agency, Ohio Department of Transportation, Ohio Department of Natural Resources, and OEPA. All of these regulatory agencies plus several local regulatory agencies were involved in the permitting process for Project Groundwork. Seeing environmental policy in action was a new experience for me and highlighted the importance of collaboration between federal, state, and local agencies.

IES Problem Solving Process

![IES Problem Solving Process-Willeke Wheel](Jonathan Levy, 2017)
During my environmental problem solving course I was introduced to different methods for solving environmental problems. The course emphasized problem definitions and scoping, stakeholder involvement, developing and analyzing alternatives, and implementing solutions. While I was not personally involved in the earlier stages of the problem solving process for Project Groundwork, I was involved in the implementation phase and efforts for ongoing stakeholder involvement. Being a part of this process and utilizing information from the earlier planning processes highlighted that the process by which MSD approached planning for Project Groundwork is a perfect example of the problem solving process taught in IES (Figure 26). An example of this can be found in the Lick Run Watershed Master Plan, which emphasizes input from communities within the Lick Run Watershed and other regional communities. This input helped establish the scope, goals, objectives, study design, and alternatives for the Lick Run Project (MSDGC, 2012).

Lessons Learned

With regards to learning social media best practices, I learned some through research and others through experience, specifically with regards to post content. One of my responsibilities during my internship was to create and schedule social media posts for the remainder of 2017. In October of 2017 the City of Cincinnati Manager’s Office complimented MSD on their increased social media presence, but suggested that some of MSD’s posts were not aligned with its mission.

After the joint flood campaign, I was in the habit of posting information directly related to the campaign. While some of these related to MSD’s mission, such as disaster preparedness, many focused on fire safety, crime prevention, and health related topics. Until this was brought to my attention, I had not considered creating posts specifically tailored to MSD’s mission. This resulted in a conscious effort to ensure all subsequent MSD posts revolved around health and safety as related to water quality, disaster preparedness, investment in sewer and water infrastructure, and fun facts about things like sewage and toilets.

Constructive criticism is a vital part to growth and I was grateful for the respectful nature in which the situation was addressed. Before being asked to do something differently, I was complimented for the efforts I was making. For me this was a real-life example of what I was taught in my classes regarding communicating to different audiences. In this instance MSD’s audience is its ratepayers, who are interested in hearing about what their money is being used for and how it benefits them. This lesson definitely shaped how I will approach organizational communications in my future career, as I will know to prioritize the organization’s mission and consider its audience from the start.

With regards to community engagement, the work I did for the LMCPR projects was a reflection of a 9-year relationship with the communities in those watersheds. MSD has set a precedent for transparency with their mission statement, which extends to the communities affected by these projects. Without cooperation from these communities, revitalization may have never been imagined, rendering the projects ineffective. On the occasions when I accompanied or stood in for my supervisor at community meetings, I saw how MSD took every opportunity to provide project updates and make themselves available to anyone with questions or concerns.
I gained a lot of insight at these meetings, including sobering examples regarding the importance of stakeholder feedback when planning and creating a deliverable. My first community meeting was at a local South Fairmount church to provide updates on the Lick Run Greenway Project. This particular church was the only church remaining in the area with a soup kitchen to feed the homeless. In order to make way for the Lick Run Greenway, MSD obtained and demolished buildings on several properties, including fast food restaurants and the local dollar store. Despite these businesses being compensated and relocated, members of the church council were still upset and one member began to cry. While MSD and other community groups focused on long term benefits, the church has immediate concerns about South Fairmount’s homeless population, especially during the winter months.

The fast food restaurants, dollar store, and the church’s soup kitchen were the only means by which South Fairmount’s homeless ate and the project had taken that away. In addition to their empathy for the homeless population, they felt an extra burden on themselves regarding maintaining and/or enhancing their soup kitchen. Having a better understanding of these concerns prompted me to pay extra attention to how my supervisor responded and handled the situation. She was able to shift the meeting in a positive direction by providing advice on what they could personally do, including inviting food trucks to the area and attending local community council meetings to gain more support. This experience opened my mind to the fact that when planning, objectives cannot only revolve around long-term results, but must also consider any immediate effects a project may have.

In addition to community meetings, attending pre-construction meetings, as well as all other project related meetings, served as great learning opportunities. These meetings ranged from construction bidding and pre-construction planning to budget updates and project roadblocks. These meetings varied on a daily basis, some were planned, some impromptu, but they were all attended by an interdisciplinary group of individuals. For example, in addition to project managers and construction managers, pre-construction meetings always had a representative from several MSD departments. This included communications, safety, right-of-way, document control, regulatory compliance and environmental management, and administration and financial management. Attending these meetings provided me with insight regarding the extensive nature of planning and implementing a project. As a graduate student, part of my curriculum involved completing a year-long professional service project, which entailed creating a deliverable for a client. After that experience, I felt as though I had a good grasp on how the planning process worked, however this internship taught me that planning is not an interchangeable process. A planning process that worked well for one deliverable will not automatically work well for a different deliverable. Every aspect of a project comes with unique variables to consider; and I have a newfound appreciation for the time and considerations it takes.

From my supervisor, I have also learned the value of transparency, consistency, and availability. In my time at MSD I attended several stakeholder meetings. Sometimes residents would ask questions that I knew they would not like the answer to, but my supervisor never hesitated in being 100% honest. Instead of having a “tough luck” attitude, she always provided any information she could to ease minds and spent time discussing long-term benefits for the community. For example, many people were upset about trees being cut down, but she always
had statistics regarding how many trees and other plants were going to be replanted after project completion. Another example is with existing recreational equipment that had to be taken down. Residents were concerned and she explained which amenities would be replaced or improved, which ones would be gone permanently, and the reasoning behind those decisions. She exemplified the utmost patience and transparency during every interaction, which I feel helped maintain trusting community relationships. Other important skills I learned were consistency and availability. In my 9 months at MSD, I saw several project managers and construction managers come and go and others get transferred around from project to project. These changes are evident to residents when reading any materials sent to them by MSD, which always stated who the project managers are. This can be confusing and frustrating for residents if they feel they do not know who to contact. My supervisor was aware of this and therefore always included her name on all the documents so residents always saw a familiar name. Communications is not always a 9-5 job, as most community meetings take place after normal work hours. No day is ever the same, with impromptu meetings, house calls, and unplanned occurrences, such as weather events and project delays. A project as big as the Lick Run Project affects many people and is bound to have some hiccups along the way, but I have learned that being available during those times creates a better platform for community relationships.
REFERENCES


APPENDICES

Appendix A: March Issue of MSD’s Employee eNewsletter

News You Can Use
Need to know for those on the go.

**Hoxworth Blood Drive May 4**
(300 x 234 to 600 x 400)

MSD is hosting a blood drive for the Hoxworth Blood Center from 8:30 a.m. to 2:30 p.m. on Thursday, May 4 at the MSD Administration Building, Room 104-106. To schedule your appointment, please visit www.hoxworth.org/groups/msd.html. Walk-in donors are also welcome, but priority will be given to donors with appointments. The process of giving blood takes 30 minutes to 1 hour and is considered part of your regular work day (with the approval of your supervisor). If you have questions, please contact Cassandra Hillary, OOD, at 244-5133.

**DROP Program**
Interested in the voluntary Deferred Retirement Option Plan (DROP) program? You must be an active member of the Cincinnati Retirement System and have at least 30 years of City service. The program allows eligible participants to accumulate a lump-sum cash amount for retirement while continuing to work and contribute a percentage of your salary to pension. You must retire within 5 years of entering the DROP program. To apply, please speak with your MSD HR liaison. For more information, please view the information presentation or visit the Retirement webpage.

**Ch-Ch-Ch-Ch-Changes: Kronos Timekeeping System**

Over the next year, all MSD employees will start using Kronos to log and track work hours instead of other timekeeping systems or a paper timesheet.

**What is Kronos?**
Kronos is an electronic timekeeping system that can be accessed at a wall-mounted terminal, on your computer and even via your Smartphone!

This new system will provide one consistent timekeeping method at MSD, help promote transparency by functioning in “real time,” and streamline the timekeeping and payroll processes.

The data collected in Kronos will ultimately be submitted to CHRIS for payroll processing.

Kronos is not a “one size fits all” system. Instead, it will be tailored to meet the specific needs of employees and divisions at MSD, including those who work in the field or outside normal working hours.

**Why the switch?**
Standardization of MSD’s timekeeping system was one of the recommendations in the recent Performance Audit published by the State Auditor’s Office.

MSD does not have a single, standardized process for logging hours and reviewing payroll. The WWT division uses Maximo, and WWC uses Kronos. The rest of the divisions use a mix of paper and electronic CHRIS timesheets. Leave and overtime requests are also done electronically or by paper.

(continued on page 4)

Kronos wall-mounted terminal for ID badge and finger-swiping.
KUDOS

Achal Garg, RCS, a senior chemist at MSD, was recently awarded a Water Environment Federation (WEF) scholarship called Scholarship Exchange Experience for Innovation and Technology (SEE IT). This is the first year the scholarship has been awarded, and Achal is one of the first to receive it!

Achal will be traveling to the Grand Rapids-Wastewater Treatment Plant in Michigan for four days in June to look at a technology known as Zero Angle Photo Spectrometry (ZAPS). The technology can measure about 30 water parameters in real time, including E. coli bacteria. The information is sent to the plant’s SCADA system, allowing operators to review the data and make immediate adjustments to the treatment process. ZAPS has helped Grand Rapids adjust their ultraviolet (UV) disinfection doses and save about 50% in energy costs.

Achal will be conducting a pilot study this summer and fall at MSD treatment plants to compare the effectiveness of various wastewater disinfection methods in combination with the ZAPS technology, including UV, peracetic acid and sodium hypochlorite.

In addition to the scholarship, Achal will be presenting a paper on “Evaluation of Peroxidative Acid as Wastewater Disinfectant” at the 2017 Ohio Water Environment Association (OWEAA) Technical Conference, planned for June in Cincinnati.

He will also present the paper at the Southwest Ohio Water Environment Association (SWOWEAA) conference in June in Xenia.

Major props to Achal for all his hard work and dedication to innovation!

Debunk The Rumor Survey Results

More than 250 employees have shared their thoughts about the Debunk the Rumor communications tool by participating in our survey.

Here are the results:

- 71% would like to see Debunk the Rumor continue.
- 82% support rules for submitting rumors, if Debunk the Rumor is reinstated.
- Some suggestions for rules include:
  - Encourage submitters to use spell check.
  - The answers shouldn’t side step the issue.
  - Address the rumors in the newsletter rather than by email.
- 56% do not want the Director to summarize the rumor. They want to see actual rumor, written as is.

Calling for Employee of the Year Nominations

One employee from each MSD division is honored annually as an “Employee of the Year.”

MSD is calling for nominations of employees who made exceptional contributions to the organization in 2016. All MSD employees are encouraged to nominate a co-worker, boss or even themselves!

The deadline for nominations is April 5th. The nomination form, which is located on MyMSD under WWA/Learning & Development, should be submitted to the superintendent or manager of the division for whom the nominee works.

The selected employee will be honored at an awards ceremony from 9–10:30 a.m. on Tuesday, May 9, 2017 in the MSD Administration Building, Rooms 104-106.

If you have questions, please contact Gina Ruffin Moore, WWA HR, at 557-7150 or via email.

MSD Divisions and Points of Contact:
- Pat Arnette, EM
- Gérard Checco, OOD
- Bev Engram, F&A
- Melissa Gatterdam, WO
- Mike Pitzinger, WWC
- Jenny Richmond, RCS
- Don Sander, IT
- Vanessa Smedley, WWT
- Jerry Wilkerson, WWA

EMPLOYEE of the YEAR

Click Here to download the form

Deadline April 5
2016 Service Awards

20 Years of Service
Gary Billing
Heide Cooper
Michael Davis
Michael Ellis
Achal Garg
Bill Holhaus

Molly Hoffman
Steven Jones
Robert Keller
Eingedi Moshe
Scott Neuhaus
Bruce Palmer
Michael Rittinger
Bryan Royce
Robert Smith
Mark Taylor
Rahn Wuest
Thomas Zompero

25 Years of Service
Kevin Bennett
Jeffrey Burgess
Gérald Chiecco
James Christian
Greg Collins
Kimberly Francis
Karen Goodman
Thomas Hamburg
Donte Hankerson
Keith Heffner

30 Years of Service
Rodney Gray
Carol Mohamed
Michael Scalf
Joseph Terry

MSD Divisions (continued): WWA=Administration, WWC=Wastewater Collection, WO=Watershed Operations, and WWT=Wastewater Treatment.
MSD Gets Lean with Construction Inspectors

MSD is reducing its reliance on paper, increasing efficiency and ensuring high quality daily reports from its construction inspectors by using a new mobile reporting app in the field.

MSD used Lean Six Sigma - a performance improvement methodology - to achieve this success. Lean Six Sigma uses a collaborative team effort to focus on faster and better ways of completing a task without sacrificing quality for the customer. Mark Belcik, EM, manager of MSD's QA/QC group, and Ray Schork, EM, earned Black Belt certifications in Lean Six Sigma in 2015.

The Lean Six Sigma team was comprised of EM employees Mark Belcik, Maria Donisi, Altes Oliver, Ray Schork, Bob Keller and Mick Pittman. With input from the construction inspectors and a lot of work, the team concluded that mobile reporting was the best solution.

Mark Belcik then collaborated with Superintendent Mike Pittinger, WWC, and Andy Mackowiak, WWC, after hearing about WWC’s success with Flowfinity software.

A mobile app using Flowfinity software on iPads was developed and pilot tested and is now being deployed in the field.

“The app uses drop-down information that does not need to be retype each day and allows photos to be easily added,” said Mark. “The form can’t be submitted until all of the required fields are complete, and it’s automatically emailed to their supervisors.”

Kronos (continued from page 1)

According to the audit, “integration of payroll, scheduling, and leave management is a best practice amongst well-performing organizations. The use of technology helps to improve accuracy and reduce payroll errors by integrating the payroll system and absence/leave management. In addition, having a fully-integrated payroll and leave management system could prevent errors from occurring again due to the elimination of paper forms.”

Why Kronos?
Kronos has been successfully used at WWC since 2007. It was also used at RCS prior to MSDs integration with GCWW. It’s considered easy to use and adaptable to unique working conditions and timekeeping needs.

“It’s an impartial process that makes tracking the impossible possible,” said Superintendent Mike Pittinger, WWC.

What to expect?
The biggest change for MSD employees will be getting used to clocking in and out every day. The good news is that Kronos offers multiple ways to do this:

- 1D badge swipe or finger swipe at a wall-mounted Kronos terminal
- Logging time on a computer
- Logging time via an app on a mobile phone

The conversion to Kronos will happen gradually, division by division, over the course of the next 12 months. Training will be provided to all staff, including specialized training for supervisors. MSD is currently working on a schedule of training and implementation.

“Payroll is a complicated process, so not only will this new system make sure you are being paid correctly, it will give employees a much more transparent view into the payroll process,” said MSD Director Gerald Checcio.

Stay tuned for more updates.

When It Comes to Passwords, Be Creative!

Passwords are painful but necessary for protecting information on our computers, on-line accounts, phones and mobile devices. And here’s a tip: Simple is not better when it comes to passwords.

According to a March 29 article in the Journal News, people are using easy-to-crack passwords way too frequently.

The 10 most common passwords in 2016 include 123456, 123456789, qwerty, 12345678, 111111, 1234567890, 12345, password, 123456 and 987654321.

Other common passwords include passwOrd, password1, login, welcome, football, princess, and abc123.

Some people like to use more personal passwords, such as birthdays, anniversaries, nicknames and phone numbers, but even those can be cracked by hackers sifting through social media sites.
Next Round of Leadership Training for Supervisors

The next round of leadership training for supervisors is scheduled to kick off in May.

The year-long program—called the Leadership Supervisory Development training series—includes about 10 all-day workshops and a wrap-up session. The curriculum, which is a spin-off from Lessons for Success, has three goals:

- Introduce and practice effective, universally accepted supervisory skills
- Enhance leadership qualities
- Promote and coach a participatory style of management

At the end of the program, each participant will complete an Individual Development Plan with the support of their supervisors.

“This is an especially great opportunity for new managers, as it explores several different leadership and management styles and teaches you how to coach and engage your employees,”

-Gina Ruffin Moore, WWA/Training.

Suffer from Glossophobia? Join MSD’s Toastmasters Club

Did you know that roughly 75% of people suffer from Glossophobia, or fear of public speaking? If you are one of them, fear not because Toastmasters is here to help!

Established in 1924, Toastmasters helps individuals improve their communication and leadership skills, resulting in greater self-confidence and personal growth.

MSD has hosted its “Sewer Talk” Toastmasters Club since 2011. The club is open to all City employees.

During a typical meeting, club members practice public speaking skills by giving impromptu and planned speeches on a variety of topics. They also learn how to provide constructive feedback to help others.

“The club provides a safe and comfortable place to improve public speaking skills,” said Gina Ruffin Moore, WWA/Training, the club’s Vice President of Public Relations.

The Toastmasters Club meets twice a month: 1:30 – 2:30 p.m. on the first Thursday of each month at GCWW and the third Thursday of each month at MSD. As an added bonus, employees receive training credit for attending Toastmasters!

If you are interested in participating, please contact Gina Ruffin Moore at 557-7150 or giruffin.moore@cincinnati-oh.gov for more information and talk to your supervisor.
Appendix B: September Issue of MSD’s Employee Safety eNewsletter

(See next page)
September is National Preparedness Month

National Preparedness Month (NPM) is an annual campaign to encourage Americans to take steps to prepare for emergencies in their homes, schools, organizations, businesses, and communities. While September is the month for recognizing national preparedness, the goal is to engage the public to make preparedness a part of their daily lives.

This September, NPM will focus on planning, with an overarching theme of "Disasters Don’t Plan Ahead. You Can."

By planning ahead, you can learn what to do when disaster strikes - wherever you might be.

The goal of NPM is to increase the overall number of individuals, families, and communities that engage in preparedness efforts.
As people increasingly seek information through their mobile devices, FEMA and Ready Campaign are tapping into social media and other new ways to gain attention and help everyone to be prepared before emergencies occur.

For more information visit Ready.gov/September, download the FEMA app here, or follow the campaign on Facebook and Twitter.

Emergency Preparedness: Will You Be Ready if Disaster Strikes?

Daily routines can be disrupted with little or no warning by a catastrophic event, and help might not always be available.

Whether you are facing a natural or man-made emergency, try to stay informed through radio, TV or the Internet. Keep a battery-powered or hand-cranked radio on hand, just in case the electricity goes out.

FEMA and the National Safety Council recommend the following general precautions, which apply to many disaster situations:

- Make sure to have a family communication plan in place; all members of the family should review and practice the plan;

- Have all family members’ and other important phone numbers written down or memorized;

- Have an emergency kit in your car and at least three days of food and water at home;

- Be sure to store all important documents - birth certificates, insurance policies, etc. - in a fire-proof safe or safety deposit box;

- Assign one family member the responsibility of learning first aid and CPR; and

- Know how to shut off all your utilities.

We all need to prepare and learn how to respond to natural and man-made disasters.
For example, the likelihood that you and your family survive a house fire depends as much on having a working smoke detector and an exit strategy (that you've practiced) as on the fire department. The same is true for surviving a terrorist attack or other emergency. We must have the tools and plans in place to make it on our own, at least for a period of time, no matter where we are when disaster strikes. Just like having a working smoke detector, preparing for the unexpected makes sense.

Get Ready Now...

- Get a kit of emergency supplies;
- Make a plan for what you will do in an emergency;
- Be informed about what might happen; and
- Get involved in preparing your community.

**National Preparedness Checklists:**

- [Vehicle Emergency Supply Kit](#)
- [Emergency Supplies Checklist](#)
- [Pet Emergency Supplies Checklist](#)
- [Wallet Sized Emergency Communication Plan Cards](#)

**September & October Safety Training & Topics**

- New Hire Onboarding-HazCom Chemical Handling: September 5, 7:30-9:30 a.m., Mill Creek
- New Hire Onboarding-Forklift Training: September 6, 8:00 a.m.-1:00 p.m., Mill Creek
- New Hire Onboarding-Lockout-Tagout (LOTO) Training: September 7, 7:30-9:30 a.m., Mill Creek
- New Hire
Onboarding-Confined Space Training:
September 7, 9:30 a.m.-1:30 p.m., Mill Creek

- New Hire Onboarding-Activity Safety Program Overview Training:
  September 8, 7:30-8:30 a.m., Mill Creek

- Confined Space Refresher Training:
  September 12, 8:00-10:00 a.m., Collection

- Hand & Power Tools Safety Training:
  September 12, 7:15-8:15 a.m., Mill Creek

- Hand & Power Tools Safety Training:
  September 13, 8:00-9:00 a.m., Muddy Creek

- Hand & Power Tools Safety Training:
  September 14, 7:30-8:30 a.m., Little Miami

- Job Hazard Analysis (JHA) Training:
  October 10, 7:15-8:15 a.m., Mill Creek

- Job Hazard Analysis (JHA) Training:
  October 11, 8:00-9:00 a.m., Muddy Creek

- Job Hazard Analysis (JHA) Training:
  October 12, 7:30-8:30 a.m., Little Miami
Appendix C: Flowchart to Determine if Flooding is Overland Flooding or Sewer Backup
Appendix D: Notice of Construction Letter, Fact Sheet, & Press Release for the Quebec Heights Sewer Separation & Sewer Rehabilitation Project

February 9, 2017

Insert Customer Address

Re: Project # 11240170 – QUEBEC HEIGHTS SEWER SEPARATION (part of the Lick Run Project) & SEWER REHABILITATION PROJECT
Notice of Construction

Dear Customer or Name:

The Metropolitan Sewer District of Greater Cincinnati (MSD) will construct a “green infrastructure” project in East Price Hill starting in early March.

The project will collect stormwater from local streets (Ridlon, Wessels, Carson, Drott and Glenway) and a City-owned ravine behind the former Quebec Heights school and ultimately convey it to the Lick Run Greenway in South Fairmount.

This effort, part of the Lick Run Project (www.projectgroundwork.org/lickrun), will keep stormwater out of MSD’s combined sewer system and help reduce combined sewer overflows (CSOs) into the Mill Creek.

In addition, MSD will reline an existing combined sewer that runs through the project area.

Construction is anticipated to start the week of February 27th and should be complete by Spring 2018. MSD’s contractor for the project is Sunesis Construction.

For more details about this project, please read the enclosed fact sheet. If you have any questions or concerns, please contact MSD Customer Service at (513) 557-3594 or MSD.Communications@cincinnati-oh.gov.

Thank you in advance for your cooperation and patience while we upgrade the sewer system.

Sincerely,

Ian Laselka, P.E.
Project Manager
Metropolitan Sewer District of Greater Cincinnati

Enclosure

Project Groundwork is a program of the Metropolitan Sewer District of Greater Cincinnati
1600 Gest Blvd - Cincinnati, Ohio 45204 - 513-353-3594 - www.projectgroundwork.org - www.msdgc.org
Quebec Heights Sewer Separation & Sewer Rehabilitation Project

Project Purpose
The Metropolitan Sewer District of Greater Cincinnati (MSD) will construct a "green infrastructure project" in East Price Hill beginning in early March 2017. This effort — part of the Lick Run Project — will keep nearly 11 million gallons of stormwater out of MSD’s combined sewer system each year and help reduce sewer overflows into the Mill Creek.

The project will collect stormwater from local streets and a ravine and ultimately convey it to the Lick Run Greenway in South Fairmount. Please see project map on back.

Project Description
The project includes the construction of new storm sewers in and around Ridlen, Wessels, Carson, Drott and Glenway Avenue. It also includes the restoration of a stream and retrofitting of an existing stormwater detention basin in a greenspace area (owned and maintained by Cincinnati Parks as Glenway Woods Preserve) behind the former Quebec Heights school.

The work in the ravine involves:
- Closing off stormwater inlets along the stream bed to the combined sewer system that runs beneath it.
- Stabilizing the stream banks with native plants to prevent erosion and adding stream features such as ledge rock cascades, log vanes and step pools to slow the flow of water.
- Improving an existing stormwater detention basin to slow the flow of water.
- Construction of a maintenance access path.

The project will connect at the downstream end to storm sewers installed along Quebec Road.

About 113 trees will be removed from the project area prior to construction. However, 229 trees, 177 new shrubs, and 51,000 plants will be planted as part of the project.

Example of a stream restoration (ledge rock cascade and step pool)

This project is part of MSD’s Project Groundwork, which is designed to make our communities cleaner, healthier and more economically sustainable.
PRESS RELEASE

FOR IMMEDIATE RELEASE
March 3, 2017

MEDIA CONTACT: Deb Leonard at (513) 557-7095 (office), (513) 316-7510 (mobile),
or Deb.Leonard@cincinnati-oh.gov

MSD Lick Run Project Update:
Construction to Start in Quebec Heights Area

CINCINNATI – The Metropolitan Sewer District of Greater Cincinnati (MSD) will construct a green infrastructure project in the Quebec Heights area of East Price Hill starting in early March.

Construction is anticipated to be complete by Spring 2018.

The project will collect stormwater from local streets and a City-owned ravine behind the former Quebec Heights School and ultimately convey it to the Lick Run Greenway in South Fairmount. See attached project map.

This effort, part of the Lick Run Project (www.projectgroundwork.org/lickrun), will keep stormwater out of MSD's combined sewer system and help reduce combined sewer overflows (CSOs) into Mill Creek.

The project will restore a stream and reline an existing stormwater detention basin in the greenspace area owned and maintained by Cincinnati Parks as Glenway Woods Preserve.

The ravine work includes closing off stormwater inlets to the combined sewer system along the stream bed, stabilizing the stream banks with native plants and stream features, improving the existing stormwater detention basin, and constructing a maintenance access path.

The project also includes the construction of new storm sewers in and around Ridlen, Wessels, Carson, Drott and Glenway Avenue. In addition, MSD will reline an existing combined sewer that runs through the ravine area.

About 113 trees will be removed from the project area prior to construction. However, more than 200 trees, 170 shrubs, and 51,000 plants will be planted as part of the project.
Construction will occur primarily Monday through Friday during daylight hours, depending on weather and the contractor’s schedule. Work on weekends may be necessary at times. MSD’s construction contractor is Sunesis Construction.

Temporary lane restrictions will occur on Ridlen, Wessels, Carson, Drott and Glenway in the vicinity of the construction. Access to homes and businesses will be maintained, but delays may occur.

For additional information about the project, please contact MSD Engineering Customer Service at (513) 557-3594 or MSD.Communications@cincinnati-oh.gov or visit www.projectgroundwork.org/lickrun.
Appendix E: West Fork Watershed Community Meeting: Invitation Letters and Fact Sheets for CSO 125 and West Fork Projects

July 31, 2017

MSD Customer
Address

RE: CSO 125 PROJECT (MARTHA AND NORTH BASINS) - COMMUNITY MEETING ON AUGUST 15, 2017

Dear MSD Customer,

You are invited to a community meeting to discuss the Metropolitan Sewer District of Greater Cincinnati’s (MSD) upcoming CSO 125 stream separation project in Northside, also known as the Martha and North basins project.

CSO 125 - Community Meeting
- 5:30 – 7:00 p.m.
- Tuesday, August 15, 2017
- North Church, 4222 Hamilton Avenue in Northside (45223)
- Parking available behind the church and on the street

MSD will also host a meeting on its West Fork Creek project in Northside from 7:30 – 7:45 p.m. on the same day and location. You are welcome to attend that meeting as well.

The CSO 125 project includes two stormwater detention basins to collect and store stormwater and 1.2 miles of storm sewers along Kirby and Virginia avenues to discharge the stormwater directly into the West Fork Channel, a tributary of the Mill Creek. Please see attached project map.

The project will help keep stormwater out of the combined sewer system and reduce sewer overflows into the West Fork Channel by about 138 million gallons a year. The CSO 125 project is part of MSD’s West Fork Project.

If you have any questions about the project or the community meeting, please contact MSD Customer Service at (513) 557-3594 or MSD.Communications@cincinnati-oh.gov

We hope to see you at the meeting.

Sincerely,
July 31, 2017

MSD Customer
Address

Re: PROJECT # 11040190 – WEST FORK CREEK RIPARIAN/FLOODPLAIN RESTORATION PROJECT – NOTICE OF CONSTRUCTION AND INVITE TO COMMUNITY MEETING

Dear MSD Customer,

The Metropolitan Sewer District of Greater Cincinnati (MSD) will construct a large rain garden (stormwater bioinfiltration basin) along West Fork Road in Northside starting in late August 2017. The project will be completed by Fall 2017 but restoration activities may continue through Spring 2018.

This is the same project that was proposed several years ago. The construction was delayed due to final design issues and the legislative approval process. Please see attached location map.

MSD will host a community meeting on August 15, 2017 to discuss this project. We hope you can join us:

West Fork Creek Project: Community Meeting
- 7:00—7:45 p.m.
- Tuesday, August 15, 2017
- North Church, 4222 Hamilton Avenue in Northside (45223)
- Parking available behind the church and on the street

MSD will also host a meeting on its CSO 125 project (Martha and North Basins) in Northside from 5:30—7:30 p.m. on the same day and location. You are welcome to attend that meeting as well.

The West Fork Creek project is primarily funded by a Clean Ohio Conservation Fund grant in partnership with Groundwork Cincinnati Mill Creek with matching monies from MSD.

The basin will be constructed on four vacant parcels owned by MSD in the vicinity of 1769 West Fork Road (formerly the location of an apartment complex). The basin will be about 0.8 acres in size and 2–3 feet deep and contain native plants and special soils to soak up rainwater (also known as stormwater). The basin will capture about 500,000 gallons of stormwater a year, which will help reduce combined sewer overflows into the West Fork Channel, a tributary of the Mill Creek.

MSD’s contractor for the project is Audette, Inc. Work will primarily occur during daylight hours Monday through Friday. Weekend work may be necessary at times. Typical construction-related disturbances such as noise and dirt should be expected during the construction. We apologize for any inconveniences and will work diligently to minimize disruptions. Any disturbed areas will be restored at the end of the project.
Northside Community Meeting

MSD will host a community meeting on Tuesday, August 15, 2017 to discuss two upcoming projects in Northside:

- 5:30 - 7:00 p.m. to discuss the [CSO 125 Project](#) (aka Martha and North Basin)
• 7:00 - 7:45 p.m. to discuss the West Fork Creek Riparian/Floodplain Restoration Project

• Both meetings are at North Church, 4222 Hamilton Avenue in Northside (45223)

• Parking available behind the church and on the street

Please see attached project maps.

For more information on both projects, please visit the West Fork Project website at www.projectgroundwork.org/westfork or contact MSD Customer Service at (513) 5573594 or MSD.Communications@cincinnati-oh.gov.
The CSO 125 project will eliminate about 138 million gallons of combined sewer overflows (CSOs) a year into the West Fork Creek, a tributary of the Mill Creek. The project, which includes two stormwater detention basins, is required under MSD’s solution for the Lower Mill Creek.

What’s the Challenge?
During rains, our combined sewer system can overflow into streams and rivers, making Cincinnati among the top five communities in the U.S. for combined sewer overflows (CSOs).

MSD is under a federal mandate (Consent Decree) to reduce the overflows and has implemented a major public works initiative called “Project Groundwork” to achieve compliance and bring value to the community through this significant investment.

The Challenge in Northside
When it rains, stormwater enters combined sewers in the vicinity of Kirby and Virginia avenues. If the sewers become too full, sewer overflows can occur at CSO 125 (near Beekman Street and Colerain Avenue) into the West Fork Channel, a tributary of the Mill Creek. About 188 million gallons of raw sewage and stormwater overflow annually from this location.

The Solution in Northside
MSD is designing two stormwater detention basins — North Basin and Martha Basin — to keep stormwater out of the combined sewer system and transport it directly to the West Fork Channel.

The CSO 125 basin project will reduce sewer overflows into the channel by about 138 million gallons a year. This project is part of MSD’s West Fork Project, which is part of MSD’s Lower Mill Creek Partial Remedy (LMCPR).

The basins are designed to hold stormwater during rain events. During lighter storms, the water will flow through a “low flow channel” (like a stream bed) along the bottom of the basins and will drain to an outlet structure. The outlet will release the water at a controlled rate into an underground stormwater outlet pipe that will convey it to the West Fork Channel. The outlet pipe will be about 1.2 miles long and will be constructed underground primarily in the right-of-way along Kirby and Virginia avenues.

During heavier storms, the basins will fill up when the stormwater coming in exceeds the outlet capacity. If the basins fill up completely, they will take less than 24 hours to empty.

Each basin is designed to hold stormwater from a 100-year storm. During extreme weather events, the basins are designed to overflow back into the combined sewer to prevent flooding.
West Fork Creek
Riparian/Floodplain Restoration Project

The Metropolitan Sewer District of Greater Cincinnati (MSD) and Groundwork Cincinnati-Mill Creek were awarded a Clean Ohio grant to design and construct a bioinfiltration basin along West Fork Road in Northside. The basin will help keep stormwater out of the combined sewer system and reduce combined sewer overflows into the West Fork Channel, a tributary of the Mill Creek.

What’s the Challenge?
During heavy rains, raw sewage — mixed with stormwater — overflows from our sewers into local rivers and streams and can also back up into basements.

The vast majority of overflows occur from combined sewers, which carry both sewage and stormwater in the same pipe.

When large amounts of stormwater enter combined sewers, these pipes are often filled beyond their capacity and can overflow directly into local waterways through outfalls known as combined sewer overflows or CSOs.

Hamilton County is among the top five locations in the nation for urban CSOs. Overflows occur as many as 103 times a year at some locations.

What’s the Solution?
To resolve this public health and environmental issue, MSD has embarked on the largest public works project in the history of our community to rebuild and improve our sewer system.

Called Project Groundwork, this multi-year and multi-billion dollar initiative includes hundreds of sewer improvements and stormwater control projects.

What’s the Challenge in West Fork?
The West Fork watershed covers more than 6,000 acres within the City of Cheviot, Green Township and the City of Cincinnati, including the following neighborhoods: College Hill, East Westwood, Fay Apartments, Mt. Airy, Northside, South Cumminsville and Westwood.

This watershed was named after West Fork Creek, which transports natural drainage and stormwater runoff to the Mill Creek. West Fork Creek flows naturally in upstream portions (Mt. Airy Forest) but is channelized (concrete sides and bottom) in the valley where it parallels West Fork Road.

Fifteen CSO locations within the watershed — many along the West Fork Channel — contribute to millions of gallons of sewer overflows each year. The majority of this overflow is not sewage — it’s stormwater runoff from forested hillsides (including Mt. Airy Forest, the City’s largest park) and natural stream flow from upper reaches of the creek.

What’s the Solution in West Fork?
MSD is implementing sustainable solutions to reduce CSOs and improve water quality in the West Fork Channel during Phase 1 of Project Groundwork (by 2018).

The projects, which will eliminate about 173 million gallons of CSOs annually, include:
- CSO 125 Stream Separation Project (also known as Martha and North Basins) - collection of stormwater in two stormwater detention basins with discharge directly to the West Fork Channel. Construction anticipated to start in 2018.
- CSO 127 and 128 Stream Separation Project - collection of stormwater from Mt. Airy Forest with discharge directly to the West Fork Channel. This project was completed in 2015.

MSD is also evaluating a longer-term solution (post 2018) that could potentially include restoration of the West Fork Channel, among other projects.

In the interim, MSD and Groundwork Cincinnati-Mill Creek applied for and were awarded a Clean Ohio Conservation Fund grant to help restore a portion of the West Fork Channel floodplain (see back page).