



## Stickney Water Reclamation Plant



Stickney Water Reclamation Plant with the Chicago Sanitary and Ship Canal

The Stickney Water Reclamation Plant (WRP) is one of seven wastewater treatment facilities owned and operated by the Metropolitan Water Reclamation District of Greater Chicago (MWRD). The MWRD is the wastewater treatment and stormwater management agency for the City of Chicago and 125 Cook County communities. We work every day to mitigate flooding and convert wastewater into valuable resources like clean water, phosphorus, biosolids and natural gas.

If you live within our service area, the water that goes down your toilet, sinks and drains eventually comes to us to be cleaned. We treat wastewater from homes and businesses throughout our 883-square-mile service area in addition to stormwater from some communities. All of this wastewater and stormwater flows through local sewers into our interceptors before flowing to WRPs where we clean the water and recover resources using a combination of physical, biological, and sometimes chemical, treatment processes.

The MWRD provides this service for over 5 million people. Nearly 450 billion gallons of wastewater is treated by our seven facilities every year.

The Stickney WRP is one of the largest wastewater treatment facilities in the world. The Stickney WRP serves residents in the

central part of Chicago as well as 46 other communities within a 260-square-mile-area. The Stickney WRP consists of two plants; the original West Side Plant which was placed in service in 1930 and the Southwest Plant which was placed in service in 1939. The Stickney WRP currently serves over 2.3 million people and cleans an average of 700 million gallons of wastewater per day and has the capacity to treat 1.4 billion gallons per day.

### Wastewater Treatment

Wastewater treatment works using the same processes that occur naturally in rivers to clean water, incorporating physical and biological processes with a combination of air, gravity and microorganisms. In a WRP, cleaning is sped up dramatically, so a process that could take weeks in a river happens over the course of hours.

The goal of wastewater treatment is to reduce contaminants in water, such as suspended solids, biodegradable organic matter, pathogenic bacteria and nutrients. Contaminants are removed during three major phases of treatment: primary, secondary and tertiary. All MWRD WRPs use primary and secondary treatment. Some of our facilities also apply tertiary treatment due to the nature of the waterways into which they release water.

**Primary treatment:** Wastewater arrives at the plant and passes through coarse screens to filter out large debris. Then it is pumped up from sewer level and flows by gravity throughout the treatment plant. In primary treatment, aerated grit tanks and settling tanks use physical and mechanical means to remove fats and oils and to separate solids from the water. The separated solids are pumped away to undergo their own treatment process and eventually become biosolids, a sustainable alternative to chemical fertilizers. By the end of primary treatment, 60-80% of the solids have been removed.

### Stickney WRP Service Area



The Stickney WRP serves 2.3 million people within 260 square miles in Cook County, Illinois.

### Stickney WRP Communities

- |                  |                 |
|------------------|-----------------|
| Bedford Park     | La Grange       |
| Bellwood         | La Grange Park  |
| Bensenville      | Lyons           |
| Berkeley         | Maywood         |
| Berwyn           | McCook          |
| Broadview        | Melrose Park    |
| Brookfield       | Northlake       |
| Burr Ridge       | North Riverside |
| Chicago          | Norridge        |
| Cicero           | Oak Brook       |
| Countryside      | Oak Park        |
| Des Plaines      | Park Ridge      |
| Elmhurst         | River Forest    |
| Elmwood Park     | River Grove     |
| Forest Park      | Riverside       |
| Forest View      | Rosemont        |
| Franklin Park    | Schiller Park   |
| Harwood Heights  | Stickney        |
| Hillside         | Stone Park      |
| Hinsdale         | Summit          |
| Hodgkins         | Westchester     |
| Hometown         | Western Springs |
| Indian Head Park | Willow Springs  |
| Justice          |                 |

### About Stickney WRP

- 6001 West Pershing Road, Cicero, IL 60804
- 397 employees
- 413 acres
- In operation since June 2, 1930

### Receiving Stream

- Chicago Sanitary and Ship Canal

### Treatment Volume

- 700 million gallons/day (avg.)
- 1,440 million gallons/day (max.)



*Microbes such as these stalked ciliates help remove bacteria and organic material from the water in secondary treatment.*

**Secondary treatment:** In secondary treatment, a community of microorganisms help remove organic material from the wastewater. The microbes need oxygen to thrive, so air is pumped through the water in secondary aeration tanks. Next, the water enters the final settling tanks where remaining solids settle to the bottom and clean water flows out the top. The clean water is released from the Stickney WRP into the Chicago Sanitary and Ship Canal. It only takes 12 hours for wastewater to be converted from raw sewage to clean water. The same transformation would require several weeks in a natural waterway.

**So the water is clean; what happens to all the solids?** Solids, also known as sludge, removed from the wastewater during primary and secondary treatment are sent to temperature-controlled digesters where microorganisms break them down in a process similar to composting. As with compost, the digestion process converts nutrients into forms that plants can use, kills pathogens, and reduces odors. After digesting, the sludge passes through centrifuges which work like a washing machine, spinning at high speeds to dewater the sludge. The resulting drier sludge is aged and air-dried to refine moisture content and further reduce odors.

The 350 dry tons of solids removed from wastewater every day at the Stickney WRP, including solids pumped from the Terrence J. O'Brien WRP, are transported to the nearby Lawndale Avenue Solids Management Area (LASMA) for additional treatment and drying. The resulting biosolids are a sustainable alternative to chemical fertilizers and are used at golf courses, athletic fields, parks and recreational facilities, agricultural fields, forests, and for restoration of strip mines and other disturbed lands.

**Resource recovery:** In addition to primary, secondary and tertiary treatment processes, we have also added innovative technologies

and methods of recovering nutrients such as phosphorus from wastewater. Nutrient pollution is harmful to waterways and aquatic life and poses a threat to healthy drinking water supplies. Phosphorus is a non-renewable resource that is in dwindling supply and is essential for high-yield agriculture and a myriad of industrial uses. The MWRD recently opened the world's largest nutrient recovery facility, which has the capacity to create 10,000 tons of high value fertilizer annually that can be marketed and sold to provide a return on investment for the MWRD and instant savings for taxpayers. Removing and recovering this phosphorus from the wastewater stream will benefit farmers while promoting water quality downstream.

**How do we know we're doing a good job?**

Wastewater treatment facilities are regulated under the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) permit program. NPDES permits set rigorous standards that the water from the plant must meet. The National Association of Clean Water Agencies has given the Stickney WRP the association's highest awards for compliance with these standards. We also see the benefits of our work resulting in increased recreation on the waterways, such as kayaking and canoeing, a rebounding aquatic habitat and increases in fish species. We're reducing energy use at our facilities with a goal of energy neutrality by 2023, and we're recovering valuable resources and expanding the use of biosolids throughout the region.



*The MWRD's nutrient recovery facility with its three mega-sized reactors can recover more than 85 percent of the phosphorus and up to 15 percent of the nitrogen from the water cleaned by the plant.*



**If you flush a toilet in Northlake, it takes about 8 hours to get to Stickney WRP (in dry weather) and 8-12 hours to go through the treatment process before it is released as clean water to the Chicago Sanitary and Ship Canal.**

**Coarse screens catch large objects and debris in water as it enters a wastewater treatment plant.**

Some of the things that have turned up in the coarse screens of our plants over the years include:

- ✓ A 14" diameter snapping turtle
- ✓ Car wheels and tires
- ✓ 2x4 studs
- ✓ Super balls
- ✓ Parking blocks
- ✓ Money
- ✓ A huge ball of rope
- ✓ A 50 foot extension cord
- ✓ Mop heads
- ✓ Tree branches
- ✓ Two opossums
- ✓ ID card of a man from Argentina
- ✓ A bowling ball (with no pins)
- ✓ Fish
- ✓ A prosthetic leg



**The average WRP in the state of Illinois treats one million gallons per day.** At maximum capacity, the Stickney WRP can treat that volume in one minute.