

*Metropolitan Water Reclamation District of Greater Chicago*

# ***CALUMET WATER RECLAMATION PLANT***

Facility Improvements  
Master Plan for the Future

## ***Board of Commissioners***

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# CALUMET WATER RECLAMATION PLANT

## *Protecting Our Water Environment*

The Metropolitan Water Reclamation District of Greater Chicago (District) provides the citizens of Cook County with award-winning environmental service at the lowest possible cost. The District's Calumet Water Reclamation Plant (WRP), located at 400 E. 130<sup>th</sup> Street in Chicago, will face new challenges in the coming years, and the District plans to meet them with cost effective, state-of-the-art technology.

Today the Calumet WRP provides a multi-step wastewater treatment process, cleaning the water even more thoroughly than required by the discharge permit, before the treated water is discharged to the Little Calumet River. Solids removed from the wastewater are processed and taken from the plant for beneficial reuse. The plant can treat an average flow of 354 million gallons per day (mgd), and receives flow from a population of 1,053,160<sup>(1)</sup> as well as discharges from commercial and industrial establishments. Treatment consists of the following:

**Preliminary Treatment** – A mechanical process that removes rags, wood, trash, and grit from the wastewater through screening and settling in tanks

**Primary Treatment** – A process in which settleable organic and inorganic materials in the wastewater are removed using settling tanks

**Secondary Treatment** – A biological process that breaks down remaining organic matter

**Solids Treatment** – A series of processes in which solids collected during primary and secondary treatment are thickened, stabilized, and dewatered to generate a useful product known as biosolids

To ensure that the Calumet WRP continues to provide high quality service to the community into the future, the District has initiated a major study to determine future needs and establish a long-range plan for the facility that will improve the air and water environment. This effort, called the **Calumet Master Plan**, will serve as a road map for the District's future course of action. Major challenges include:

- Providing treatment for wastewater stored in the Thornton Composite Reservoir, which is under development as part of Phase II of the District's Tunnel and Reservoir Plan ("Deep Tunnel"). The Thornton Composite Reservoir will have a capacity of 7.9 billion gallons. As the reservoir is dewatered, the wastewater will be pumped to the Calumet WRP for treatment.
- The need to produce high-quality biosolids, to give the District greater flexibility in locating and serving beneficial reuse biosolids markets.
- Potential changes in State regulations, which may require additional levels of wastewater treatment.

With the projected increase to population and industry in the Calumet WRPs service area, the future average daily dry weather flow to the Calumet WRP will increase substantially. Additionally, the number of days the Calumet WRP will treat higher flows will increase because the plant will also treat water pumped from the TARP Thornton Composite Reservoir.

Key objectives for the Calumet Master Plan are as follows:

- Assess future flows and pollutant loadings.
- Maintain treatment capacity for flows projected through the year 2040.
- Replace/upgrade existing plant components.
- Review opportunities for process changes.
- Reduce energy costs.
- Provide increased odor control.

The Calumet Master Plan now includes 10 major projects. The graphic at right lists the projects and indicates areas in which they will take place. The District estimates the total cost to implement these comprehensive improvements to be \$507,164,000.

Near-term projects which have been completed include site improvements and a central boiler facility. Near-term projects under construction include a new high level influent pumping station, new grit collection and grit washing facilities, new primary settling tanks, and the installation of two new blowers. The sludge thickening improvements are scheduled to begin construction in 2010. These projects will increase the pumping capacity of the plant, improve primary treatment, improve the quality of the biosolids produced on site, and provide more energy efficiency. An additional benefit of the improvements will be diminished odors.

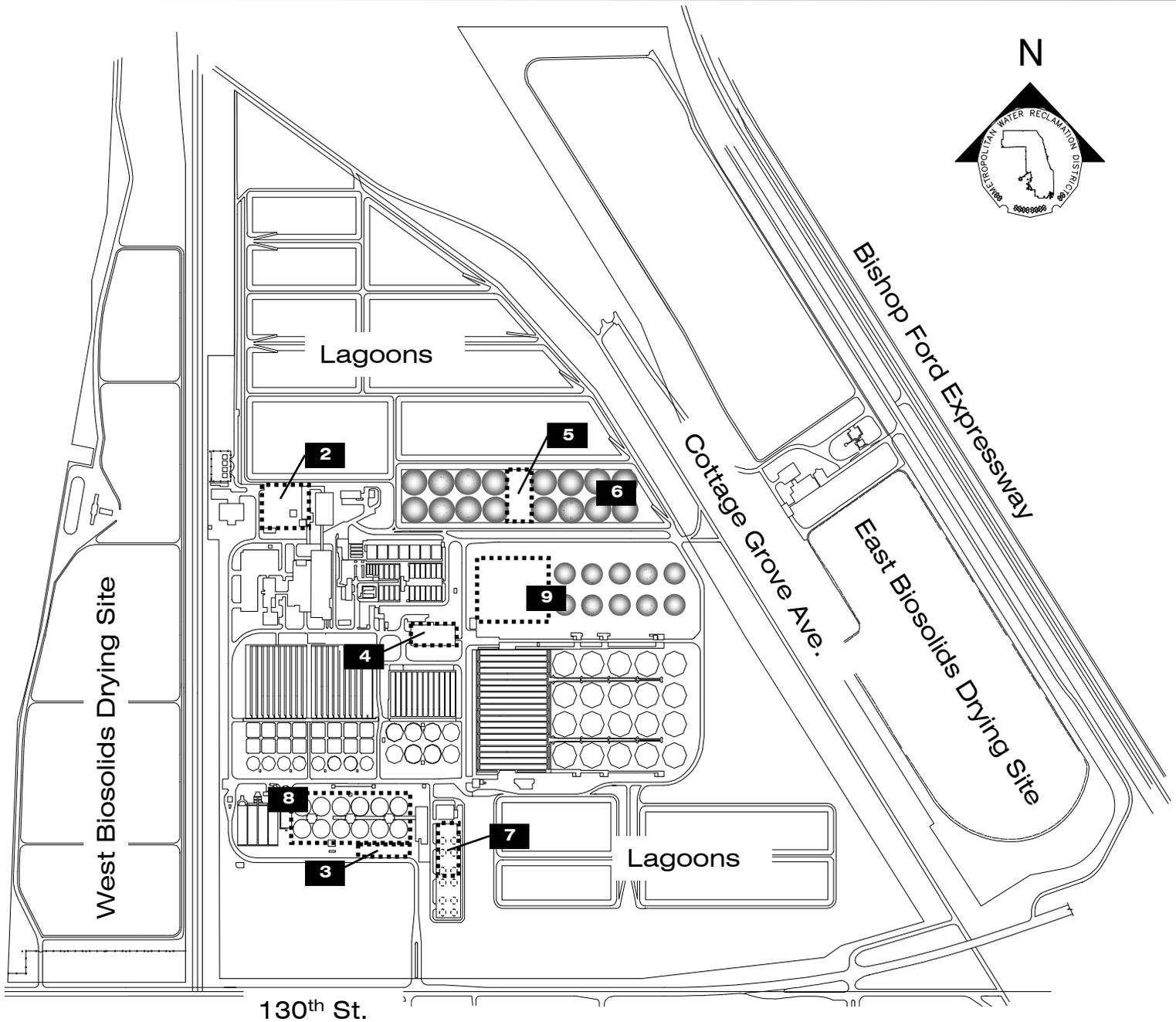
A mid-term project includes new digester gas storage and utilization facilities. The storage and utilization facilities will maximize the use of digester gas as an energy source.

Long-term projects include construction of New Aeration Battery D, and potential projects to provide additional levels of treatment in response to increasingly stringent environmental regulations. Construction will be phased through the year 2025 to ensure the treatment plant's capacity is maintained while new facilities are built and old facilities are taken out of service. Effluent quality will meet or exceed that required by the State at all times during construction.

The Calumet Water Reclamation Plant has been recognized in the past for its outstanding performance in treating wastewater. The District is hard at work to ensure that the exceptional performance of the Calumet WRP will continue far into the future.

<sup>(1)</sup> Population in 2000. Source: Northeastern Illinois Planning Commission.

# Calumet Water Reclamation Plant



## CALUMET WRP Planned Improvements

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| <ol style="list-style-type: none"> <li>1. Site Improvements - Completed (multiple locations throughout the plant)</li> <li>2. New High Level Influent Pumping Station - Under Construction</li> <li>3. Central Boiler Facility - Completed</li> </ol> | <ol style="list-style-type: none"> <li>4. Installation of two 75,000 SCFM Blowers - Under Construction</li> <li>5. New Grit Collector and Grit Washing Facilities - Under Construction</li> <li>6. New Primary Settling Tanks - Under Construction</li> <li>7. New Sludge Thickening Facilities</li> </ol> | <ol style="list-style-type: none"> <li>8. Digester Gas Storage and Utilization Facilities</li> <li>9. New Aeration Battery D</li> <li>10. Potential Nutrient Removal Projects (location to be determined)</li> </ol> |
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A new influent pumping station is under construction.



A new Central Boiler Facility has been constructed which will provide additional heating requirements with high efficiency boilers which will maximize digester gas usage.

New primary tanks are under construction in this area.

