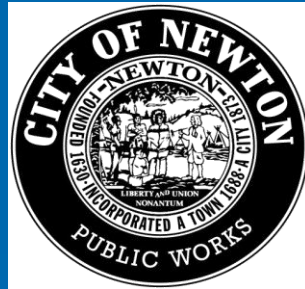


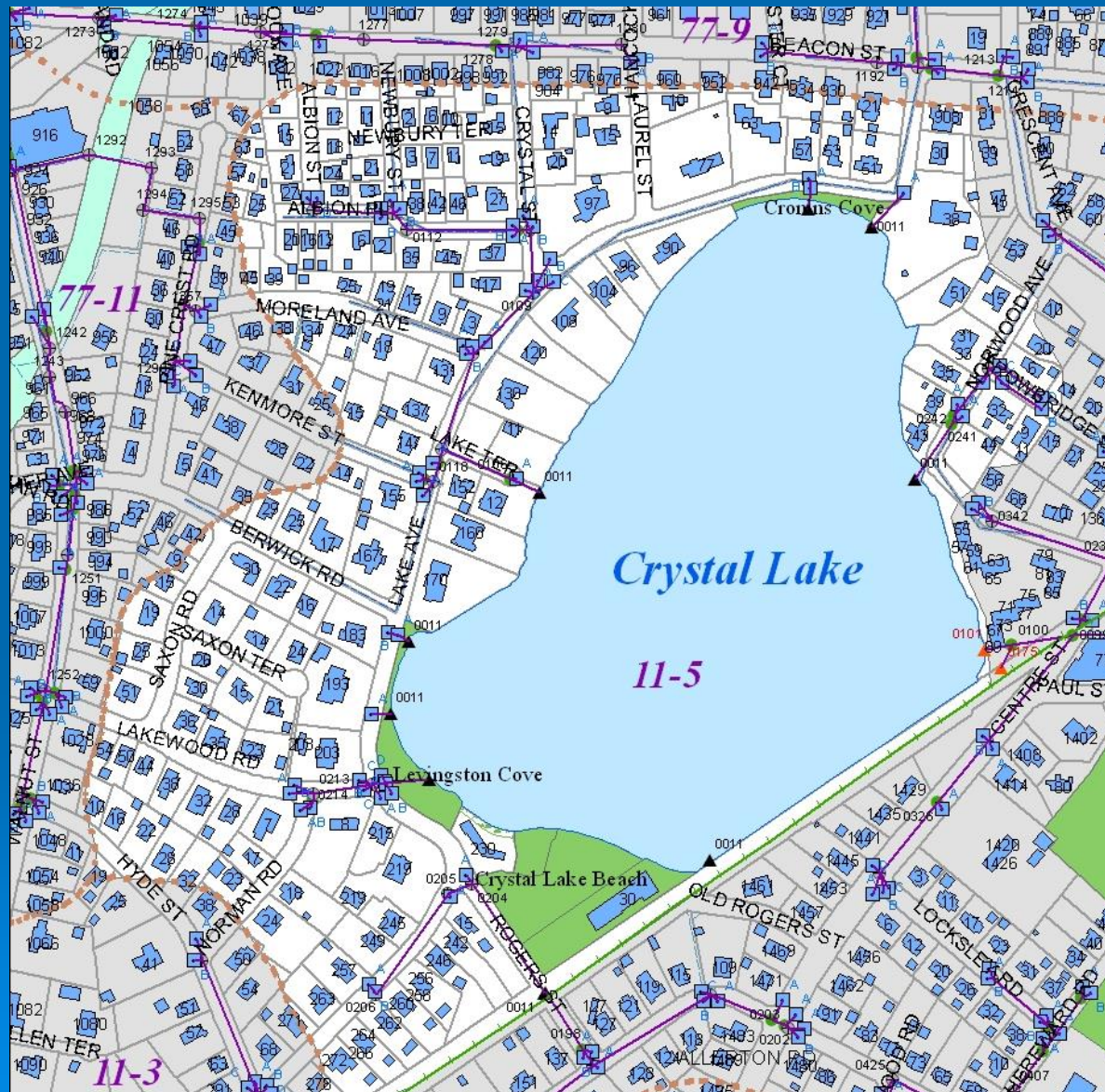
Crystal Lake Watershed: Monitoring and Improvements by Public Works Dept.



Presented by
Maria Rose, CFM, Environmental Engineer

Crystal Lake Conservancy Annual Meeting – October 25, 2012

Drainage Areas to Crystal Lake



Lake Outfalls



Outfall 1



Outfall 2



Outfall 3



Outfall 4 – no longer in use

Lake Outfalls



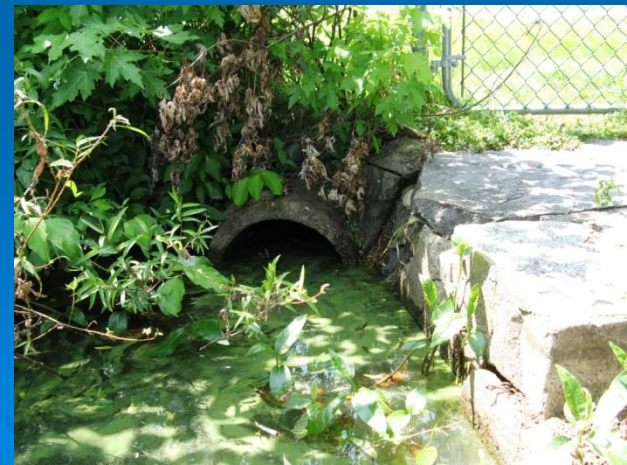
Outfall 5



Outfall 6



Outfall 7



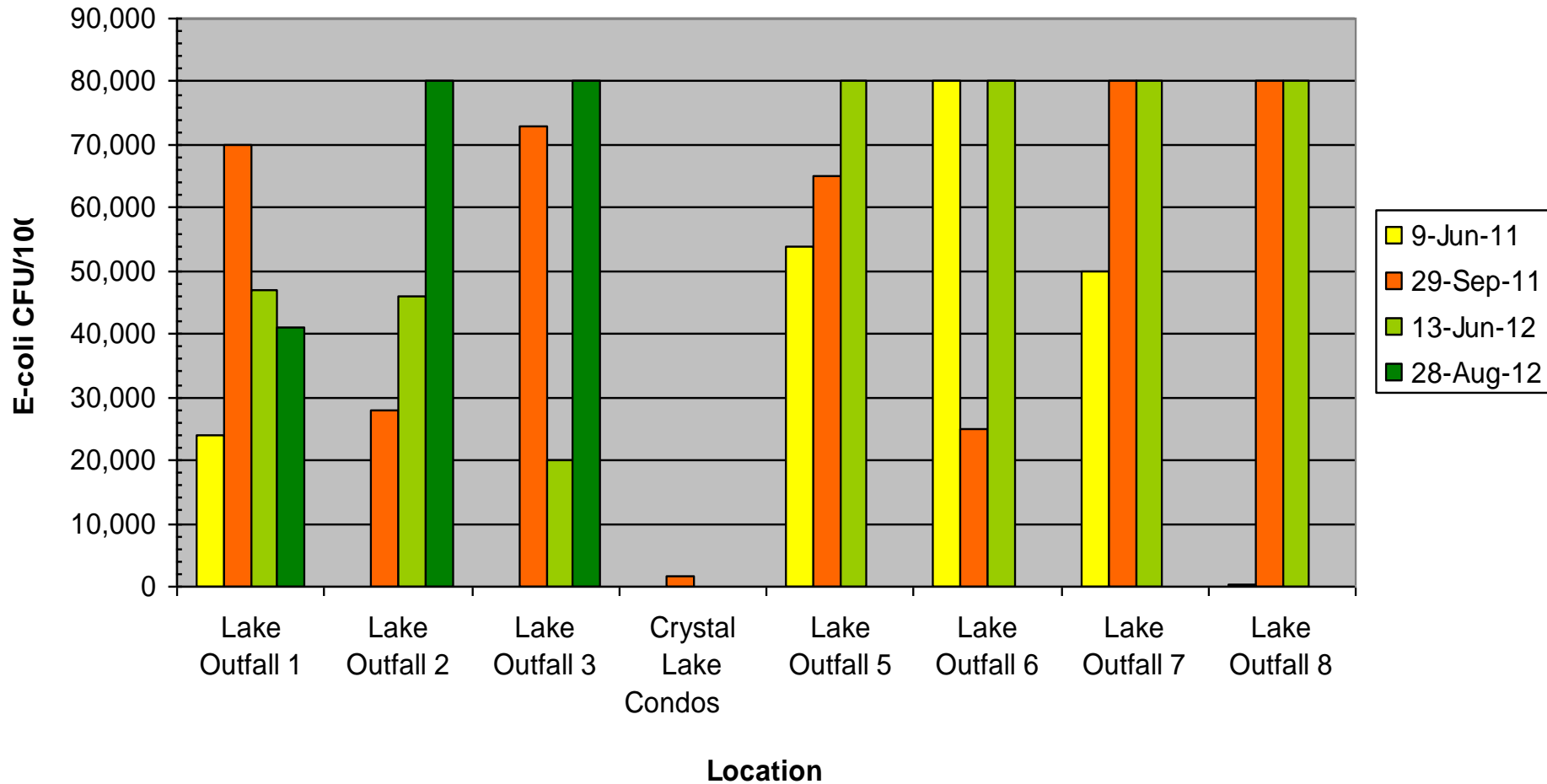
Outfall 8

Outfall & Drain Sampling

- Four sampling events all during wet weather:
 - June 9, 2011 (4 outfall samples & 4 lake samples)
 - September 29, 2011 (from 7 outfalls, plus 1 lake)
 - June 13, 2012 (all from outfalls and/or drain manholes; plus street runoff samples)
 - August 28, 2012 (3 street runoff & 3 outfalls)
- Lab analyzed for E.coli and Total Phosphorus
- Field testing for Detergents, ammonia and pH

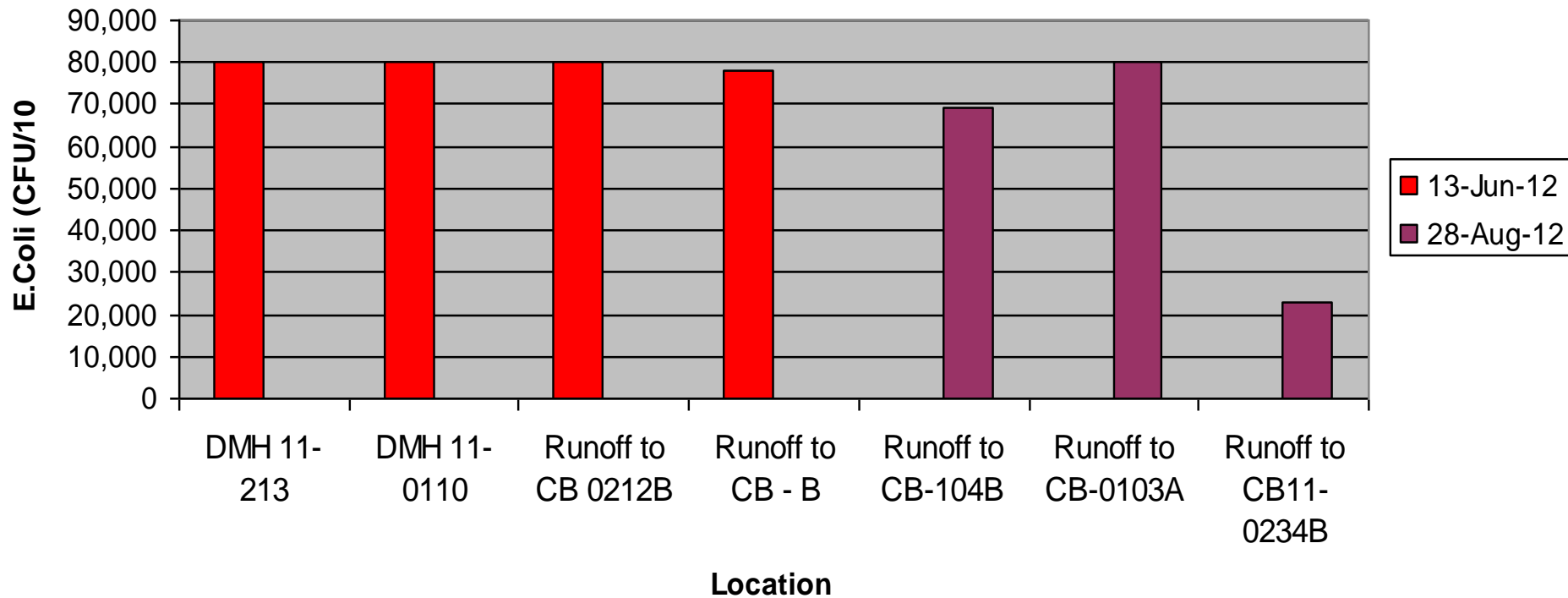


E-Coli Historical Data



For June 2011 event, the samples for Lake outfalls 2, 3, and 8 are lake samples collected next to the outfall. Crystal Lake condos samples are also lake samples behind the condo complex.

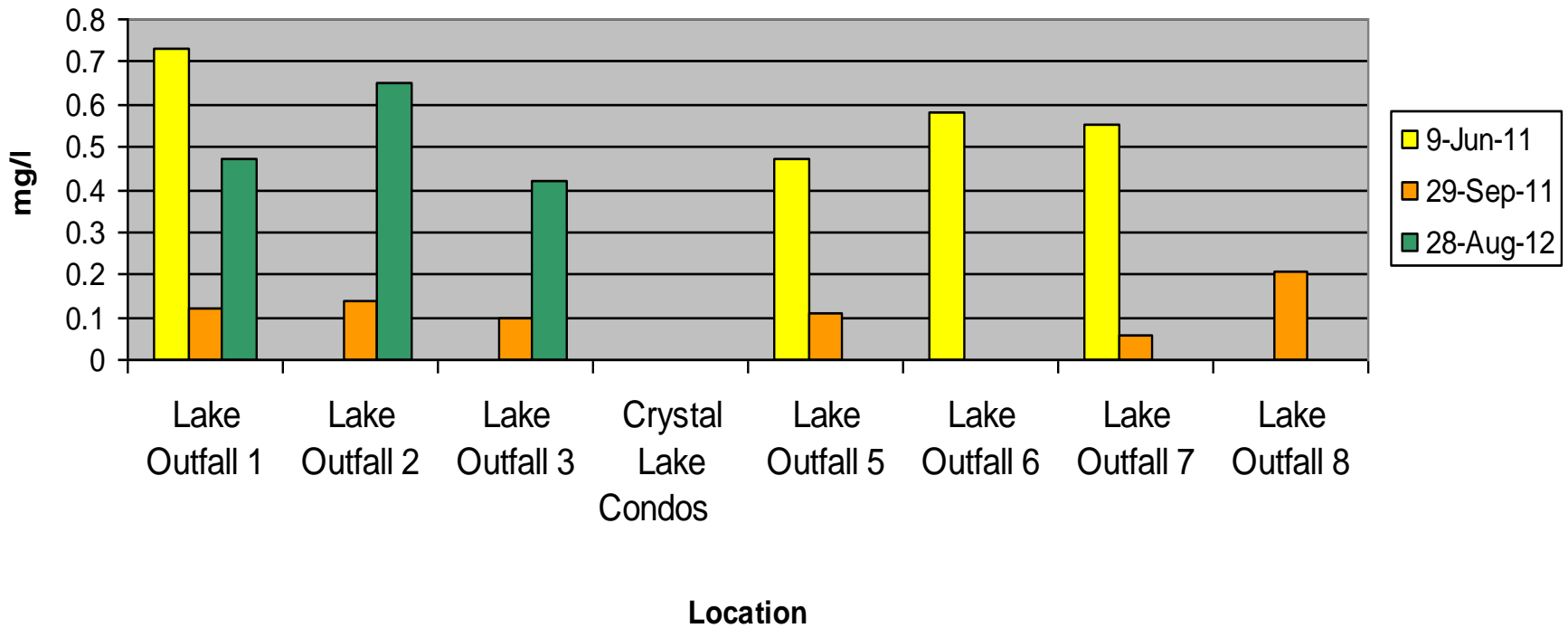
E-Coli Supplemental Data



Notes:

- DMH11-213 → Outfall 5
- DMH11-0110 → Outfall 8
- CB 0212B → Outfall 5
- CB -B → Outfall 7
- CB 104B → Outfall 1
- CB 0103A → Outfall 2
- CB11-0234B → Outfall 3

Total Phosphorus (mg/L)



For June 2011 event, the samples for Lake outfalls 2, 3, and 8 are lake samples collected next to the outfall. Crystal Lake condos samples are also lake samples behind the condo complex.

Data Analysis

- E.Coli bacteria levels vary, but are consistently high at most outfall locations.
- Street runoff samples indicate that stormwater is contaminated before it enters the City's drainage system.
- Sewer cleaning, testing and sealing done in July 2011 did not improve results.
- More extensive sewer and drain cleaning of all pipes in watershed completed in February 2012 had little impact on the water quality.
- Phosphorus levels highest in the spring / summer.
- Detergents present in most samples above background levels.

Investigation Efforts and Costs

(to date)

- Sampling (4 events) = \$1800 plus labor
- Drain Cleaning (June 2011) = 3 days w/ 4-person crew
- Test and Seal sewer main (July 2011) = \$6,000
- Sewer and Drain cleaning and camera scope (Feb 2012) = 10 days w/ 4-person crew
- Smoke Testing, CCTV evaluation, manhole inspections and report = \$ 22,000
- Direct costs = \$ 29,800 (not including Public Works labor or the stormwater project at the bath house \$30K with in-house labor)

Infrastructure Rehabilitations & Follow-up work

- Thirteen (13) sewer line segments (totalling 1,354 linear feet) are impaired and will be lined with cured-in-place liners.
- An open cut repair of the sewer main in Trowbridge St is needed and will be completed.
- Approximately 150 linear feet of drain in Norwood is in poor condition and will be removed and replaced.
- Review sewer service tie cards.
- Additional monitoring & sampling

A cleaner Lake and Watershed
begins with each of us...









Over-feeding
our lawns may also
green our rivers
and ponds!

Green Lawns Without Green Waters!

Applying more fertilizer than the label recommends or your soil needs won't improve your lawn, and instead the extra fertilizer may wash off into nearby waterways. Just as fertilizer helps plants grow on the land, it encourages algae and other aquatic plants to grow in water. Dense weeds and algae reduce oxygen in the water, which in turn harms fish and other aquatic life. "Green water" is also much less attractive for boating, swimming and other human uses.



For more information, visit our community's website
or go to www.stormwatermatters.org.

Drainage Infrastructure

