City of Crystal Lake

Ordinance Amendment
Chapter 630: Watershed
Area around Crystal Lake that drains to the Lake through groundwater.

It’s the primary source of water into the Lake.
What is not Changing:

- Requirements for New Developments
- Requirements for Commercial Developments
- Philosophy on Infiltration
Crystal Lake Watershed - History

1975
First Watershed Ordinance

2007 (November)
Crystal Lake Stormwater Management Design Manual adopted.
  • Guidance for design of stormwater management systems
  • Protect Quality and Quantity of Water Reaching Lake

Focused on new development and expansion of existing commercial development.
Did not address development in existing developed neighborhoods around the lake that were platted decades ago.
**Existing Residential Areas**

General policy for existing homes in the watershed was developed:

- Required infiltration trenches installation for any new impervious over 300 square feet.
- Generally been working but enhancements have been identified.
Existing Residential Areas

- During various stormwater public meetings in 2017 and 2018, recurring comment was to improve how City addresses improvements in existing residential areas.

- Issues Identified:
  - Percentage of impervious (an additional 300 square feet added to a small lot can have a big impact compared to a large lot).
  - Changes in vegetation can increase runoff (removal of trees and bushes compared to manicured grass lawn).
  - Trench drains in wet areas provide no storage (always full).
  - Maintenance of trench drains in the future (2nd homeowner).
Proposed Enhancements - Who Does This Impact?

Existing residential homes in the watershed:

- Any improvement BEFORE January 1, 2020 will not be affected by these new requirements.

- It is only for projects who submit for a building permit AFTER January 1, 2020
Proposed Enhancements

What was utilized?

• Field review of existing trench drains in different areas
• Practices by other communities
• Feedback from local contractors and homebuilders
• Technical expertise (consultant review of proposed procedure)

Options Explored:

• Long-term maintenance concerns
• Enforcement
• Financial hardships
Proposed Enhancements - Soil Types

Using the US Department of Agriculture Soil Mapping to determine if soil will drain into the ground within 72 hours to minimize standing water, provide storage between storms and minimize mosquitos.
Proposed Trench Drain Enhancements

**OLD**

**NEW**

- Surface Drainage Inlets (cleanouts & location identifiers)
- Underground Chamber (stormwater storage above water table)
Proposed Trench Drain Enhancements

Quick4® Equalizer 36
with MultiPort EndCap

The Quick4® Equalizer 36 Chamber fits in a 24" wide trench and is ideal for curved or straight systems. It features the patent-pending Contour Swivel Connection™ which permits turns up to 10° right or left. The MultiPort™ endcap allows multiple piping options and eliminates pipe fittings. The chamber’s four-foot length provides optimal installation flexibility.
Proposed Enhancements - Lot Size

Larger lots could be allowed more impervious surface coverage before triggering requirements.

Impacts to surrounding properties is less.
Proposed Enhancements - Trench

Infiltration trench length determined by size of project and soil type (make sure site drains into ground).

**EXHIBIT C - SIMPLIFIED ANALYSIS**

<table>
<thead>
<tr>
<th>Step 1: Determine Total Impervious Lot Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter Total Lot Area in Square Feet</td>
</tr>
<tr>
<td>Existing Impervious Area in Square Feet</td>
</tr>
<tr>
<td>Proposed Impervious Area Added in Square Feet</td>
</tr>
<tr>
<td>Total Impervious Surface (maximum 50%)</td>
</tr>
<tr>
<td>Increase in Impervious Surface (maximum 1.5%)</td>
</tr>
</tbody>
</table>

**Step 2: Determine Length of Infiltration Trench Required**

| Unified Soil Classification System (USCS) Symbol | 290b |
|-----------------------------------------------|
| Total Length of Infiltration Trench Required (maximum 50 feet) | 5 feet OK |
| Total Number of Days to Drain (maximum 3 days) | 1 days OK |

Trenches located within a **recorded easement area** – identify location and details perpetual maintenance responsibilities.
Existing Residential Permits in Watershed

STEP 1: IS TOTAL IMPERVIOUS LOT COVERAGE > 50% (SINGLE FAMILY) OR > 60% (TWO FAMILY)?

YES → CHECK ZONING REQUIREMENTS

NO

WILL PROPOSED IMPROVEMENT INCREASE THE AMOUNT OF OVERALL IMPERVIOUS ON THE LOT BY > 1.5%?

YES

WILL PROPOSED IMPROVEMENT INCLUDE SUBSTANTIAL GRADING AND/OR REMOVAL OF BRUSH OR WOODED AREAS?*

NO

NO STORMWATER STORAGE NEEDED AT THIS TIME

YES

DETERMINE STORMWATER STORAGE USING SIMPLIFIED ANALYSIS

DETERMINE STORMWATER STORAGE USING REGULAR ANALYSIS

IS THE REQUIRED INFILTRATION TRENCH > 50 LINEAL FEET?

NO

COMPLETE INFILTRATION TEST

IS THE REQUIRED DAYS TO DRAIN > 3 DAYS?

NO → INSTALL INFILTRATION TRENCH PER CITY DETAILS

YES

IS INFILTRATION FEASIBLE BASED ON FINDINGS?

NO

YES → ENGAGE PROFESSIONAL ENGINEER TO REVIEW PROPOSED IMPROVEMENTS AND SITE CONDITIONS

*C'substantial impact: Greater than 50% of the area being impacted.

Brush Area: Any area that cannot be mowed that does not include a wooded area.

Wooded Area: Any area where the tree canopy is interlocking.
Potential Impacts

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Building Permits Issued Each Year</th>
<th>Total Building Permits Issued in Watershed That Added Impervious</th>
<th>Requirements With New Enhanced Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>2016</td>
<td>2,714</td>
<td>1.4%</td>
<td>48.6%</td>
</tr>
<tr>
<td>2017</td>
<td>3,132</td>
<td>1.2%</td>
<td>55.3%</td>
</tr>
<tr>
<td>2018</td>
<td>2,844</td>
<td>0.8%</td>
<td>54.2%</td>
</tr>
</tbody>
</table>

On average, homeowners would have seen:

- Reduction in requirements would save approximately $200-$250
- $1,500 for a new trench drain needing to be installed
Exceptions exist for properties located in areas where poor soils exist and water doesn’t drain into the ground. Areas shown in red below.

These residents will need to work closely with City staff on case-by-case basis.
Next Steps

Chapter 630 Code Changes

• Removes redundant information that is covered in other sections of the City Code.
• References appropriate development standards that need to be followed.

Adoption

• Address any City Council comments/concerns in the existing policy
• Host a public meeting
• Pending approvals and positive feedback, staff hopes enhanced policy and ordinance approval of Chapter 630 effective January 1, 2020.
QUESTIONS