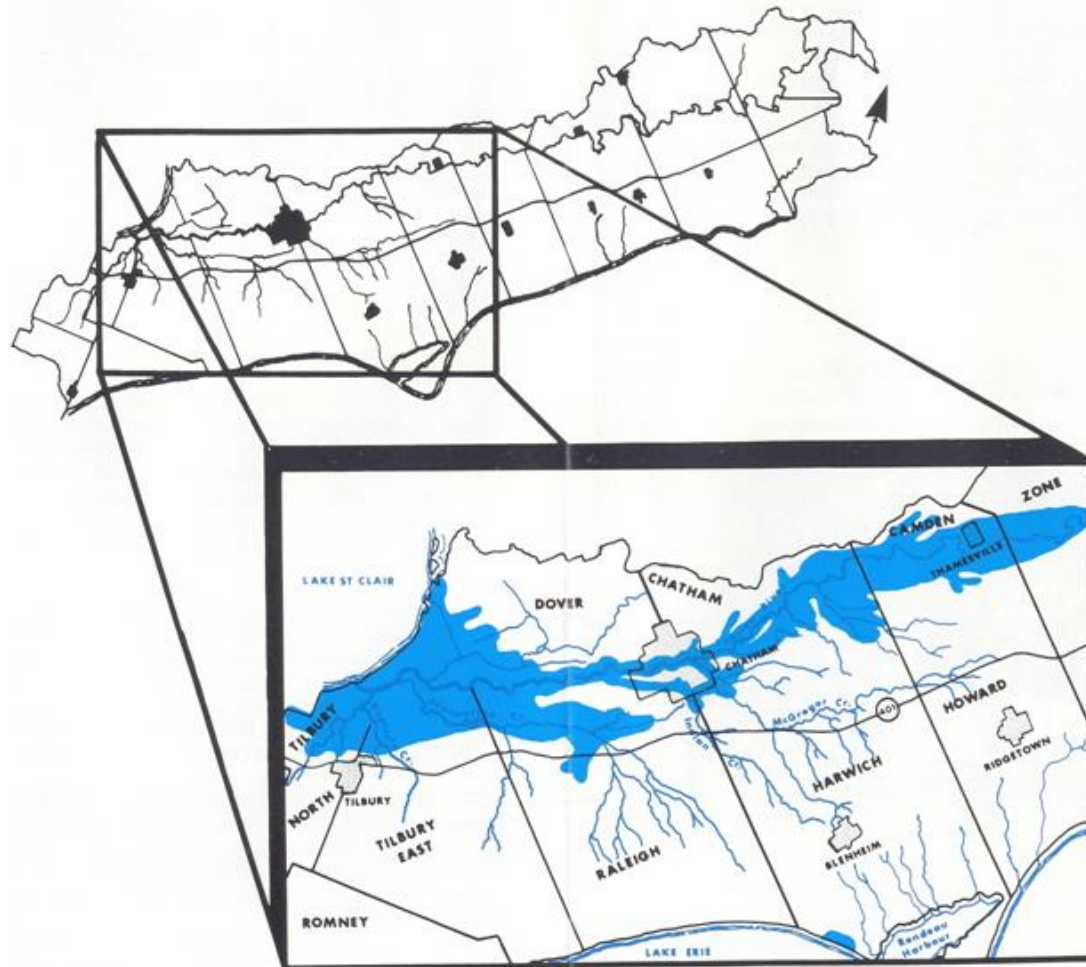


Flooding in the Lower Thames



Flood Prone Areas



The Thames River is the primary focus of flooding but some areas are prone to Great Lakes Flooding as well.

RESPONSIBILITIES OF THE LTVCA

- ▶ Maintain a watershed monitoring network in order to assist in the issuance of flood messages to the Municipalities and other selected agencies.



- ▶ Provide other technical advice of flood related matters to the Municipalities and other selected agencies.

LTVCA RESPONSIBILITIES (cont.)



- ▶ Undertake certain designated emergency measures to alleviate flooding beyond the means of a single Municipality.
- ▶ Liaise between the Municipalities and the Province on matters relating to the procurement of provincial assistance during a flood emergency.

The Thames River

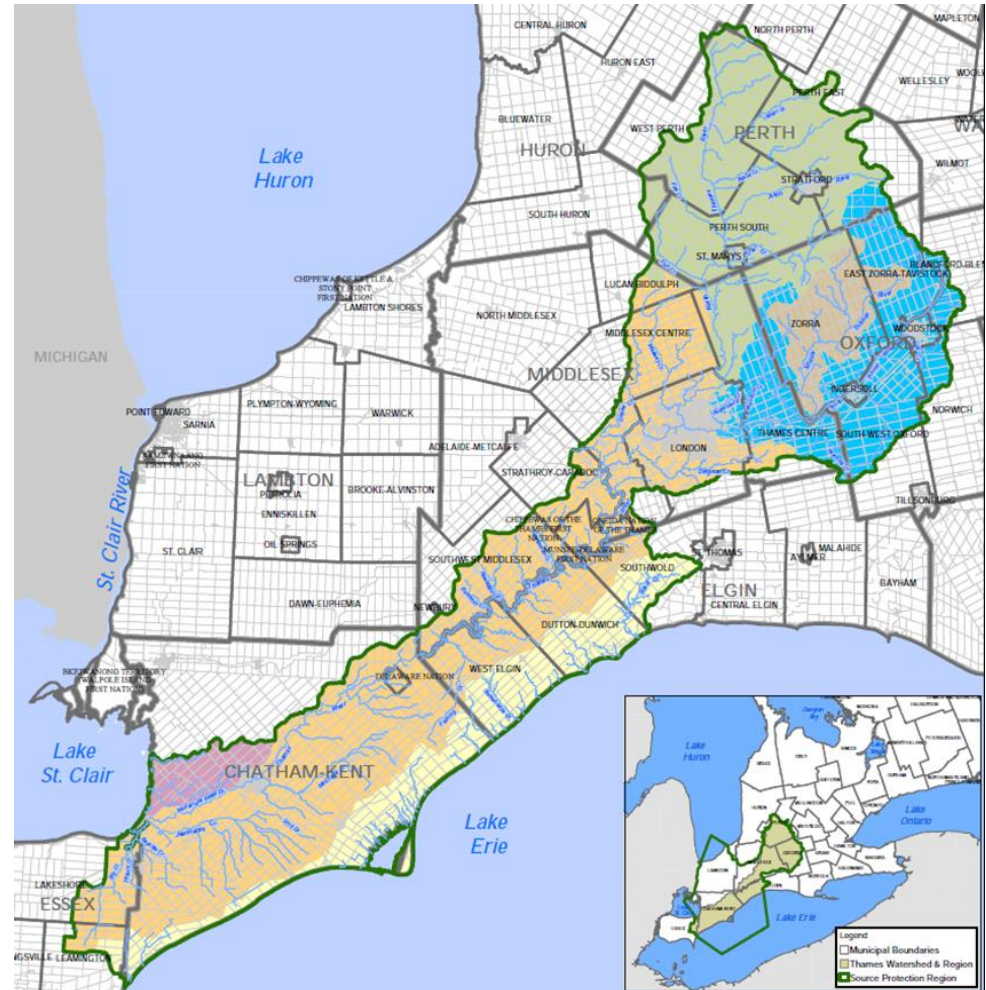
- ▶ Has experienced a long history of flooding
- ▶ The most probable flood event is one that originates from rain and snowmelt.
- ▶ The resulting flooding can be aggravated in some areas due to ice jamming.



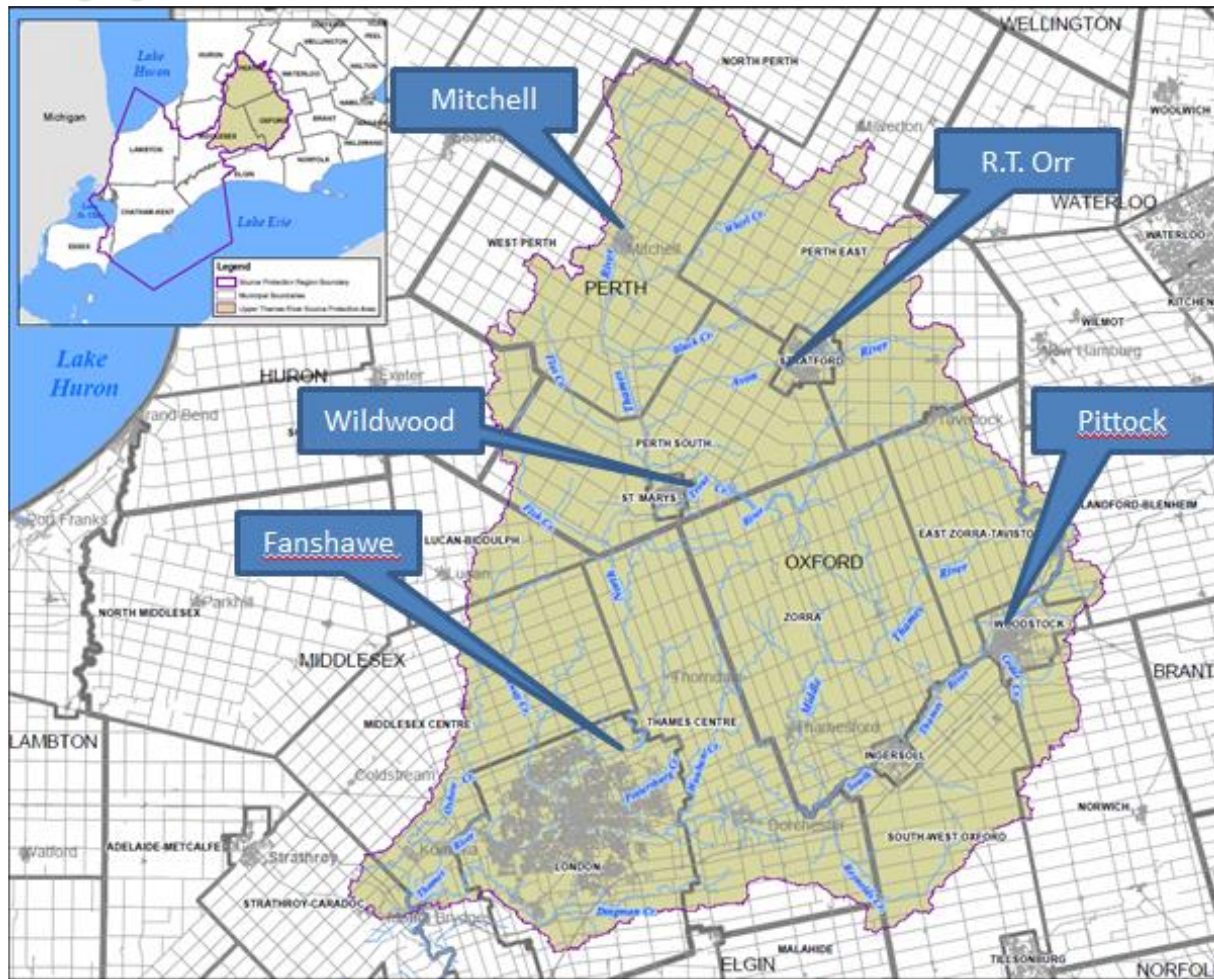
Severe floods have occurred in 1937, 1947, 1948, 1968, 1977, 1979 and 1985.

Thames River Watershed

- ▶ 5825 km²
- ▶ 2nd largest watershed in Ontario
- ▶ 3482 km² in the UTRCA
- ▶ 3275 km² in the LTVCA



Upper Thames Watershed



Dams

- ▶ Fanshawe
- ▶ Wildwood
- ▶ Pittock
- ▶ Mitchell
- ▶ R. T. Orr

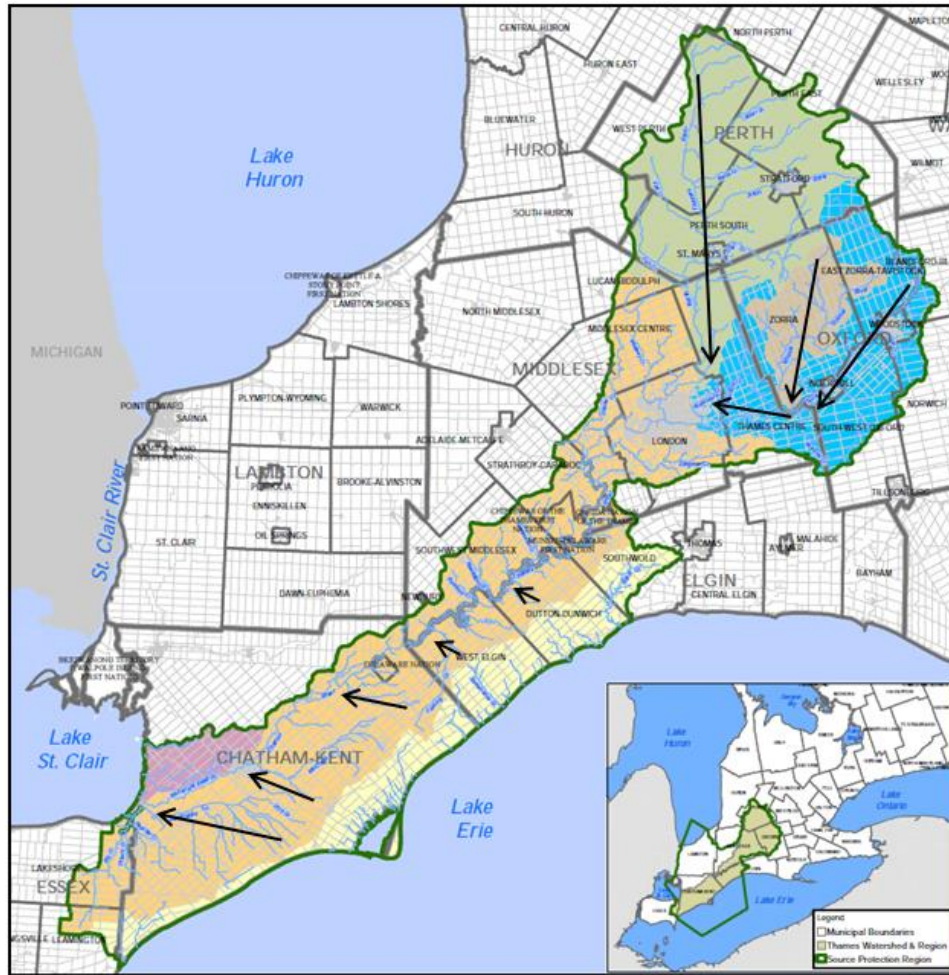
Local Flooding

- ▶ Flooding caused by rainfall in the watershed of the Lower Thames
- ▶ During the same first day of runoff, the smaller creeks and drains will enter the lower Thames River
- ▶ Need extreme rainfall event(s) (multiple days with rain) or heavy rains on top of already saturated soil conditions such as those typical in the spring
- ▶ Consecutive flooding on the tributaries of the Thames River such as McGregor Creek

Flooding from upriver

- ▶ Caused by heavy rainfall in the Upper Thames watershed
- ▶ Causes high flows in the Upper Thames that then pass downstream
- ▶ Can back up local tributaries causing further flooding

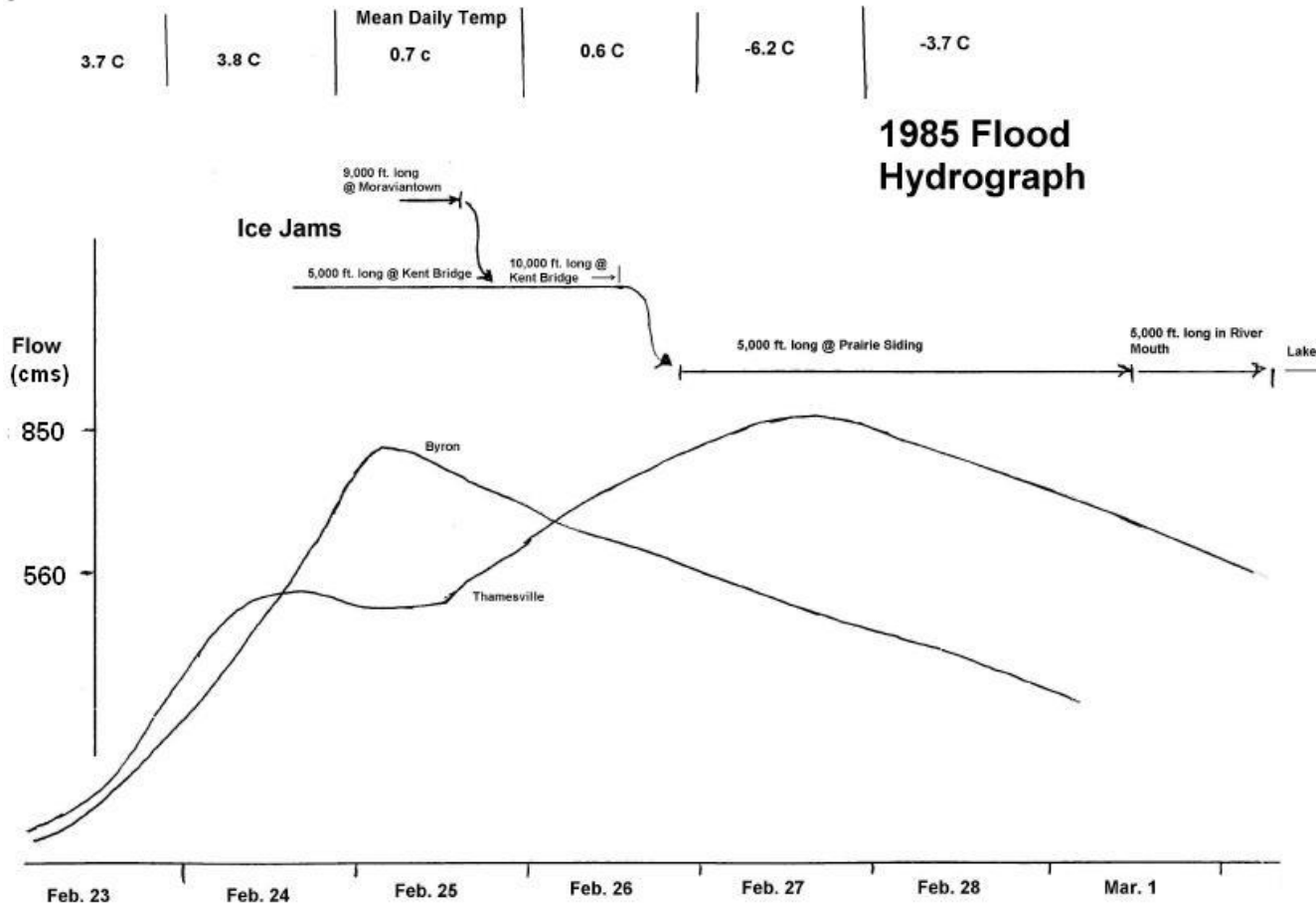
Progression of Flooding



On the first day, flows converge at the forks of the Thames River in London.

While in the lower Thames, flows from the tributaries enter somewhat in parallel.

Progression of Flooding



Thames River Flood of 1937



Thames
Street in
Chatham

The 1939
flood event
became the
Regulation
event for
Floodplain
Management
in the
Thames River
basin.

1985 Flood of the Thames River

Water passing over Grande River Line in Dover Twp.

Estimated 170 m³/s passed over Grande River Line, an equal amount passed over Riverview Line, and 450 m³/s passed the ice jam.



Thamesville 1947



Looking south towards the Thames River.

Thamesville has no flood control infrastructure against flooding and back up flooding from the Thames River.

Chatham gets hit twice

- ▶ Runoff flooding on Indian and McGregor Creeks is caused by heavy rainfall (and sometimes snowmelt) on the watersheds.
- ▶ Backup flooding from the Thames River occurs when the water from upriver finally makes its way to Chatham and backs up that same system into the low lying South Chatham area.

Chatham

- ▶ Queen St. and Indian Creek Road
 - looking west along the Indian Creek watershed
 - February 25th, 1985 flood

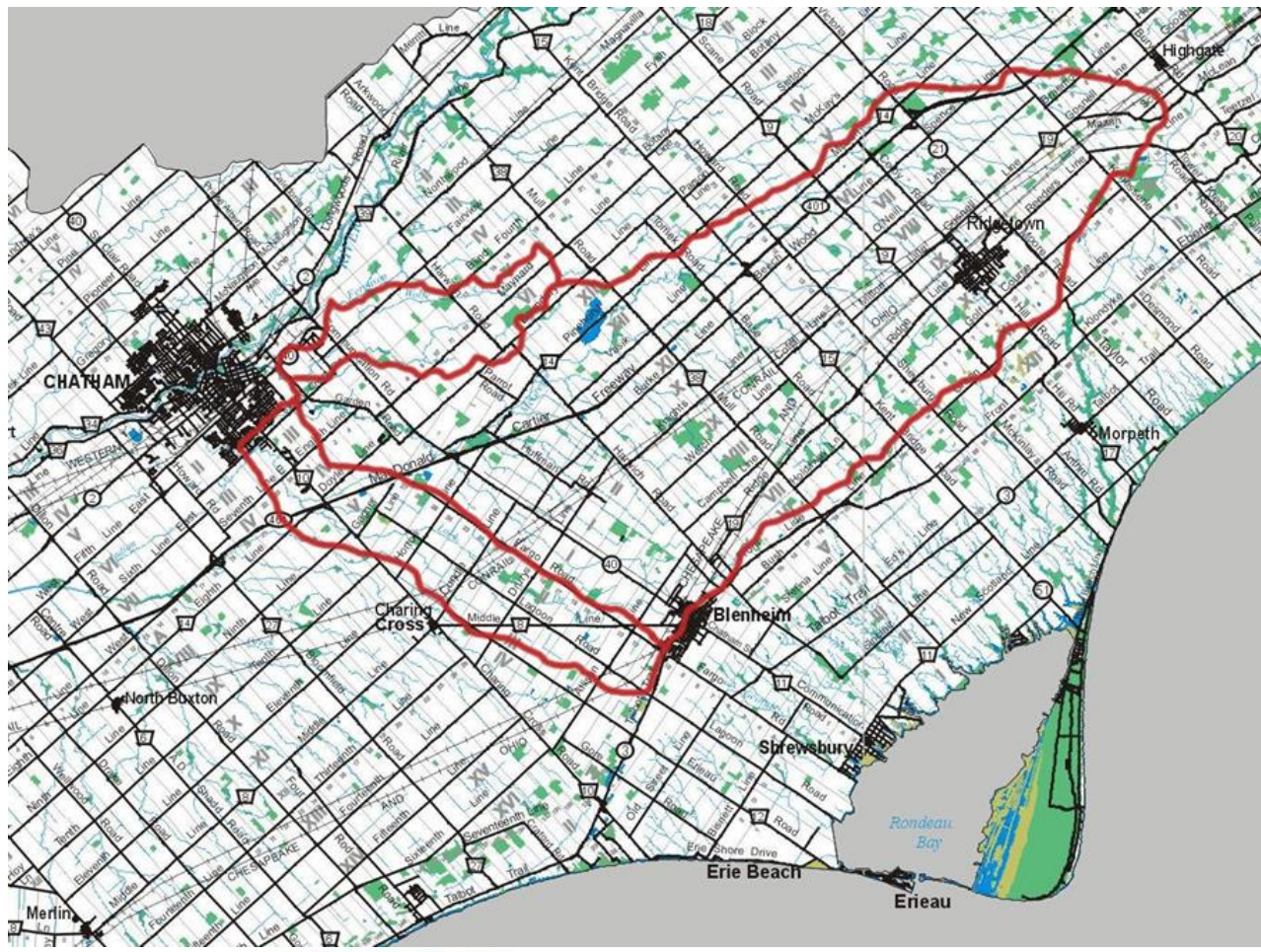


Chatham

- ▶ From 5th St. Bridge
 - Typical spring flooding
 - April 14th, 2013



Indian and McGregor Creek Watersheds



230 km²
drainage area.

Combined watershed of Indian Creek, McGregor Creek and the Wolfe Drain makes up approximately 10% of Chatham-Kent.

Indian-McGregor Creek Project

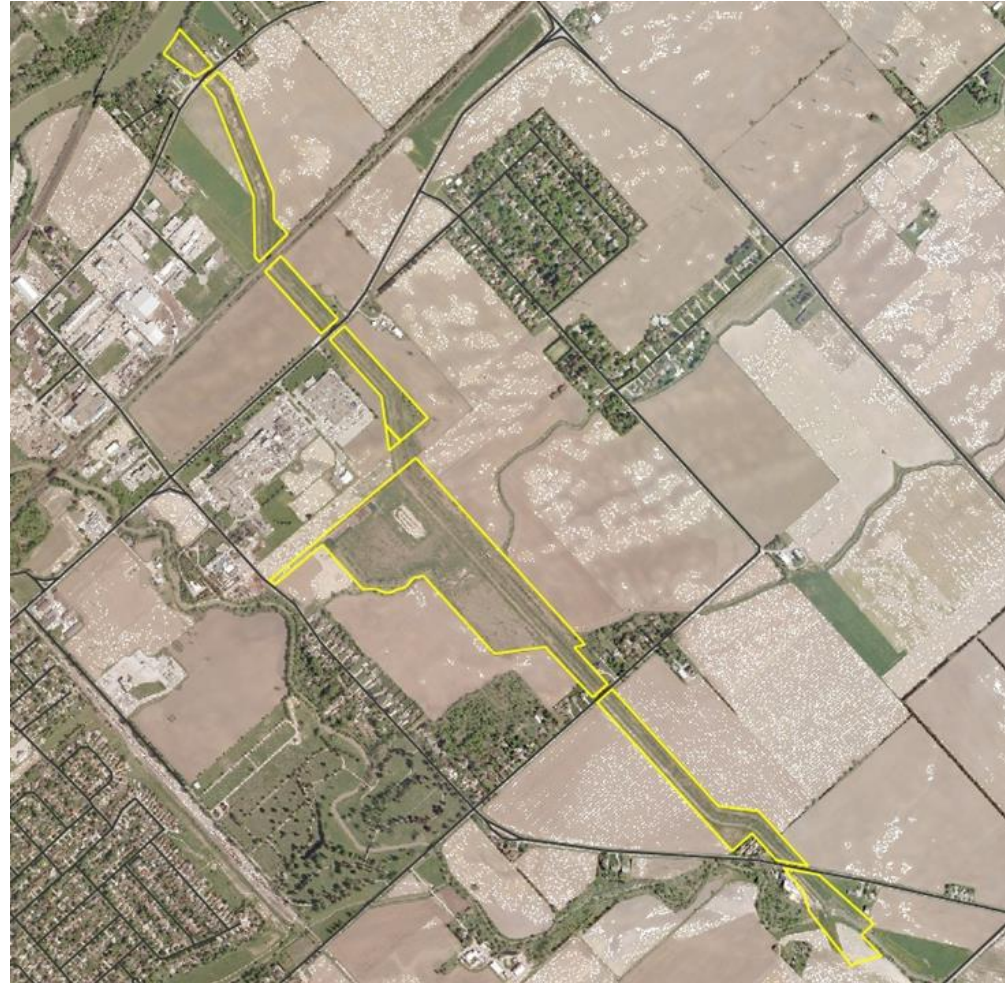
- ▶ Composed of a Diversion Channel and Dam, and a Backwater Dam and Pumping Station at the outlet of McGregor's Creek into the Thames River.
- ▶ Environmental Assessment process began in 1984.
- ▶ Construction from 1989 to 1992.
- ▶ Total project cost \$16.5 million dollars.
- ▶ Estimated \$30 million worth of flood prevention benefits to over 2,000 homes and businesses.
- ▶ A typical operation of just the Diversion in 2013 was estimated to have prevented \$340,000 in damage.

Indian-McGregor Creek Project



Diversion Channel

- ▶ Channel is 3.3 kilometres long, 6 metres deep with a top width of 50 metres.
- ▶ The Diversion Channel, with associated dams and bridges, was constructed over a two and one half year period starting in 1989 and cost approximately 11 million dollars.



Diversion Channel



6th Street Backwater Dam and Pumping Station

- ▶ Dam has 4 gates each measuring 5 x 3 m.
- ▶ Closed only when water in the Thames River is high.
- ▶ Pumping is required when the dam is closed in order to drain water from flows coming down through the McGregor and Indian Creek watersheds.
- ▶ Has a pumping capacity of 8.5 cubic metres per second.
- ▶ Dam and Pumping Station were constructed in 1991 at a cost of \$3 million.

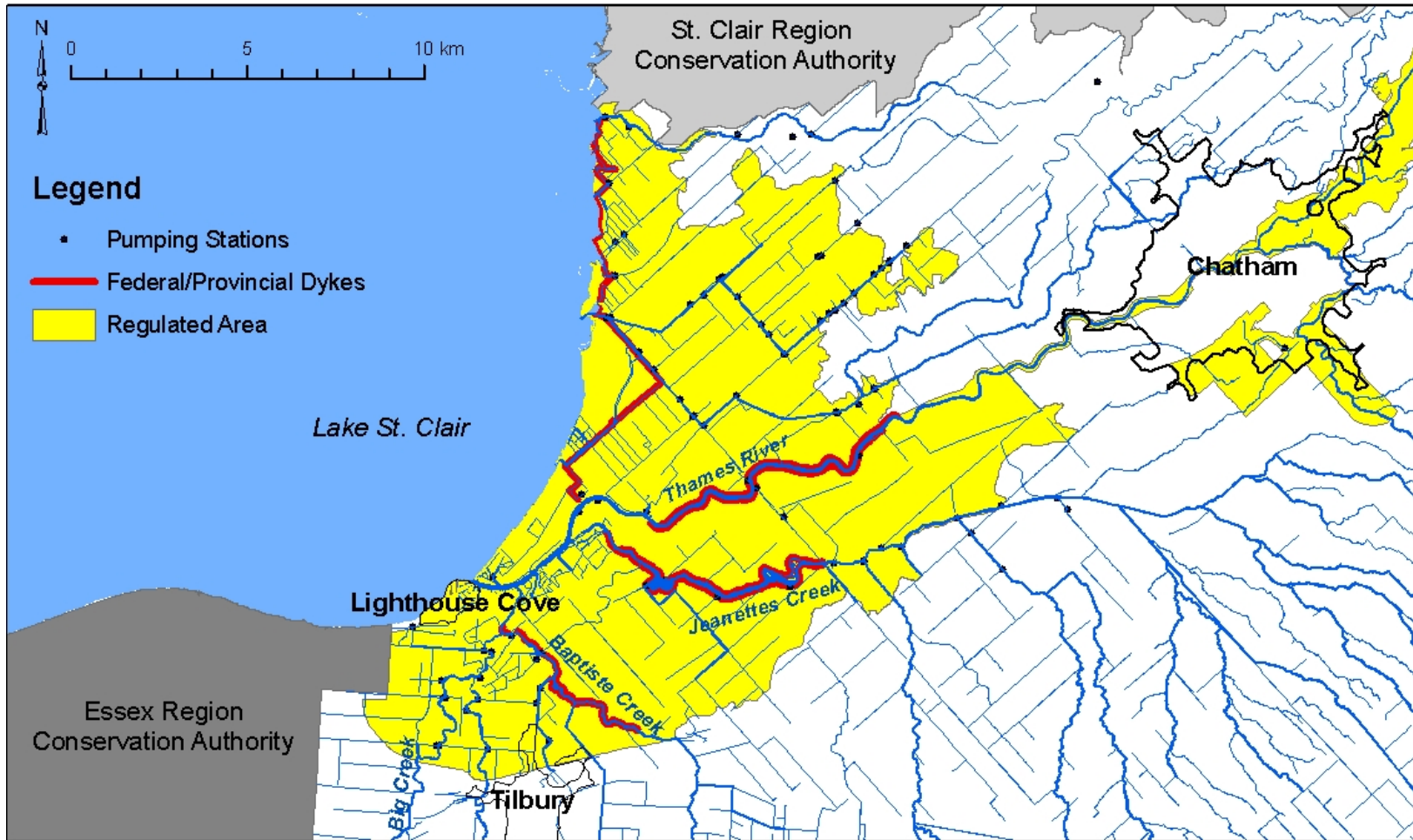
6th Street Dam



Downstream Dykes



Extent of Protection

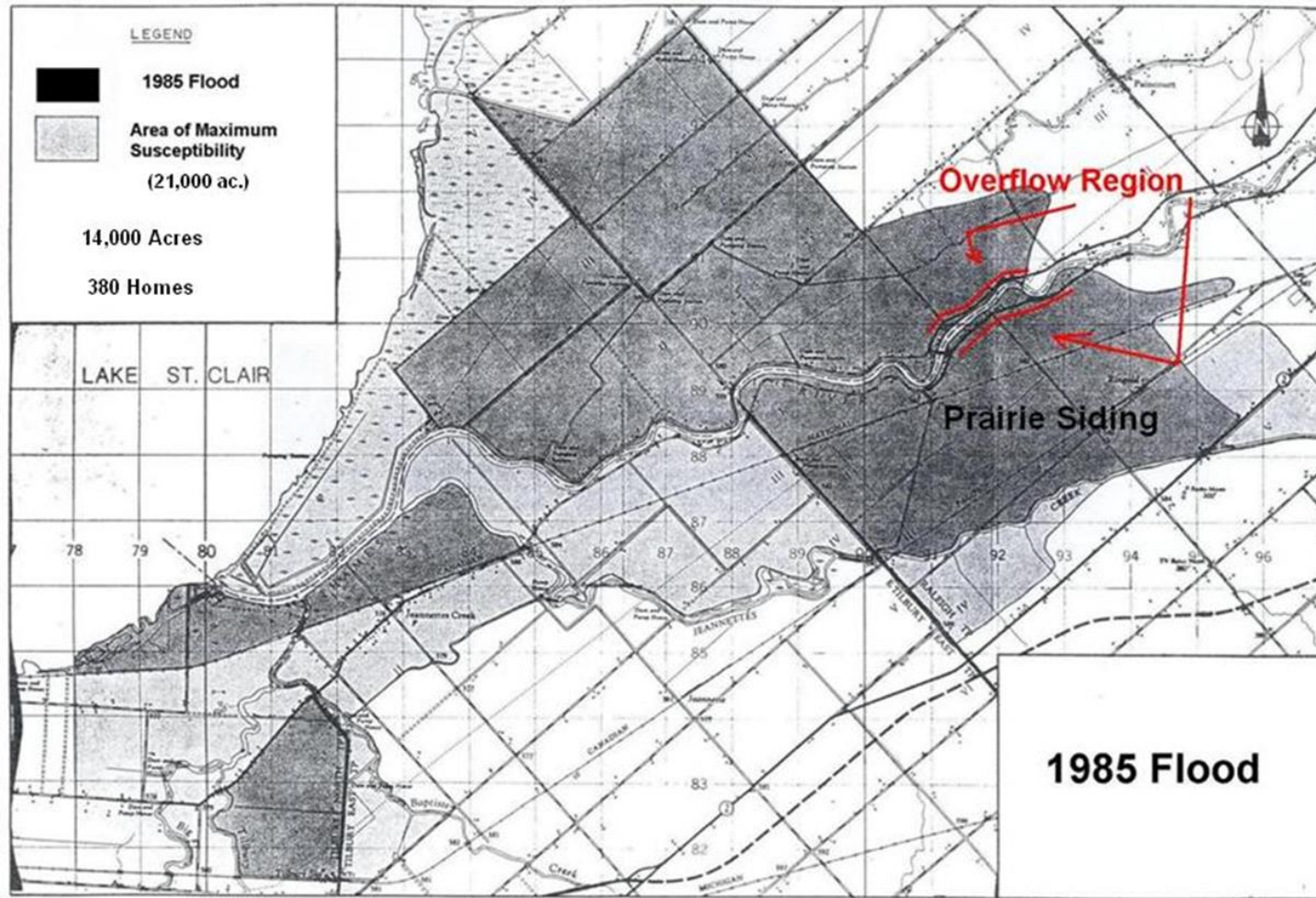


Dykes an Added Measure of Protection



But when they do overtop, or breach, flooding can spread a fair distance from the Thames River, impacting several thousand rural residences and agricultural lands.

Extensive Flooding when dykes fail



Ice Jam Floods can be Expansive



Recent Ice Jam Events

- ▶ 1979 – 9,000 Acres, 100 Homes
- ▶ 1981 – 4,500 Acres, 200 Homes
- ▶ 1984 – 2,000 Acres, 200 Homes
- ▶ 1985 – 14,000 Acres, 380 Homes

The End

