



Welland, Ontario Assessing Climate Change Risk to Stormwater and Wastewater Infrastructure



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Great Lakes Mayors Conference
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Outline

- Project Overview
- Updating and Projecting IDF Data

Project Overview Who?

Project Partners



Niagara Water Strategy



MINISTRY OF THE
ENVIRONMENT



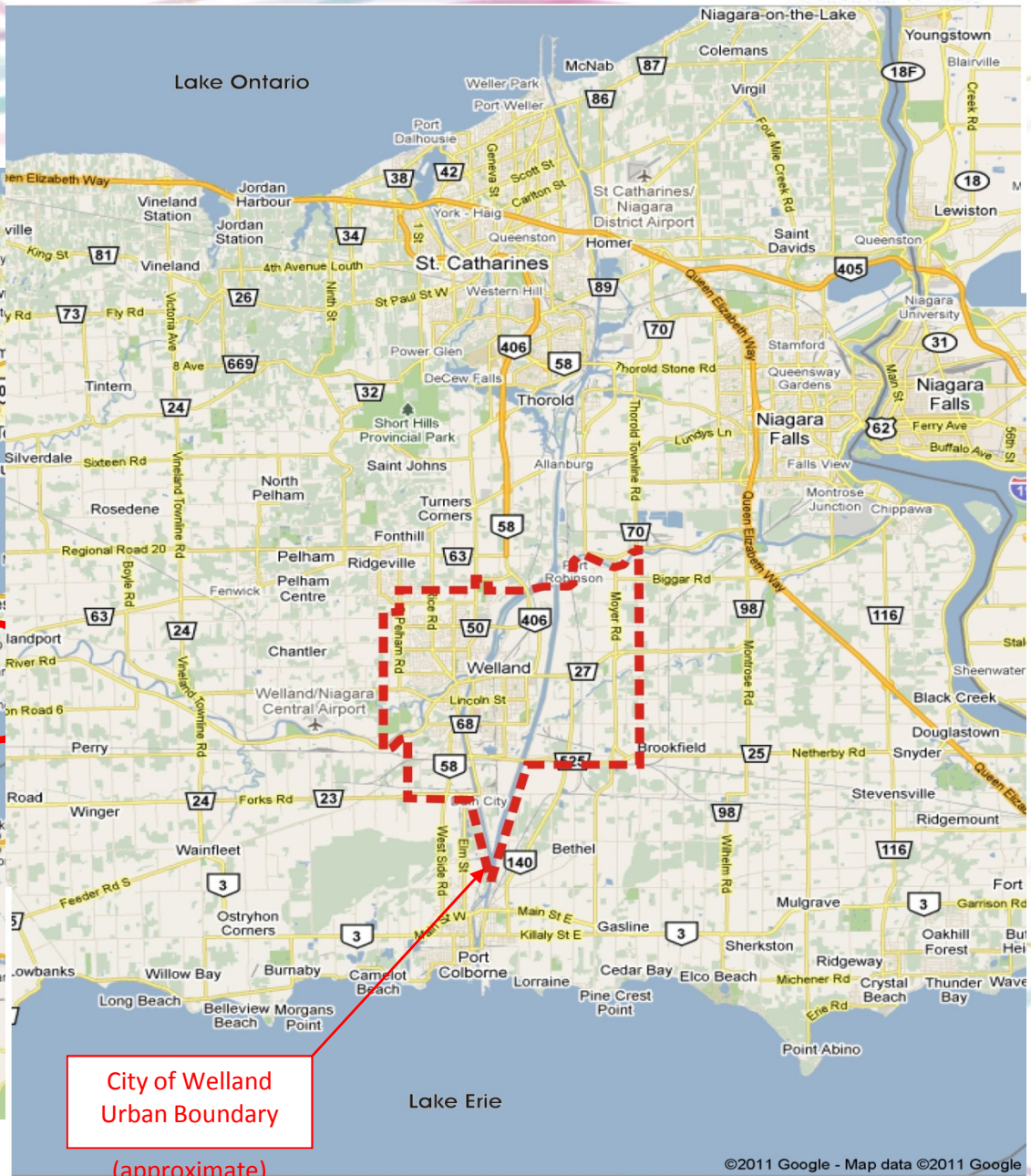
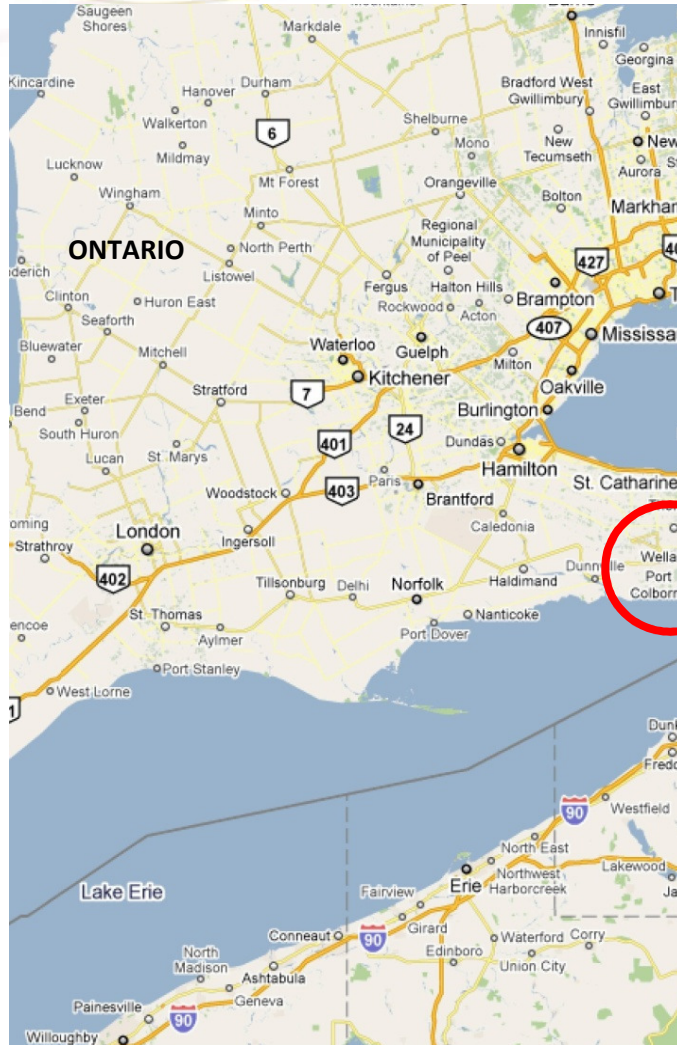
Environment
Canada

Environnement
Canada

Great Lakes & St. Lawrence Cities Initiative
Alliance des villes des Grands Lacs et du Saint-Laurent



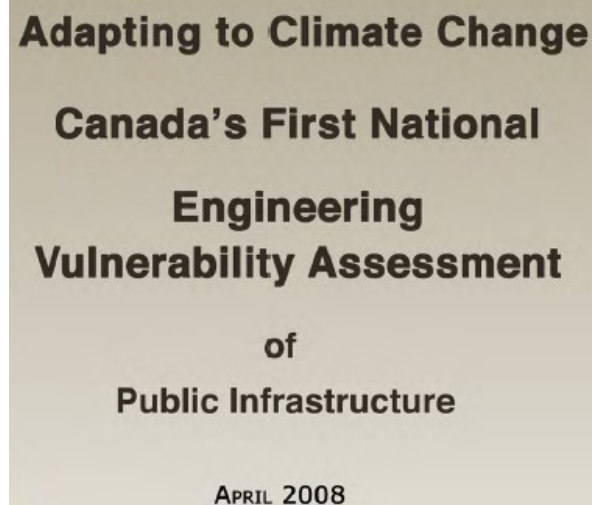
Project Overview Where?



Project Overview

How? – The PIEVC Protocol

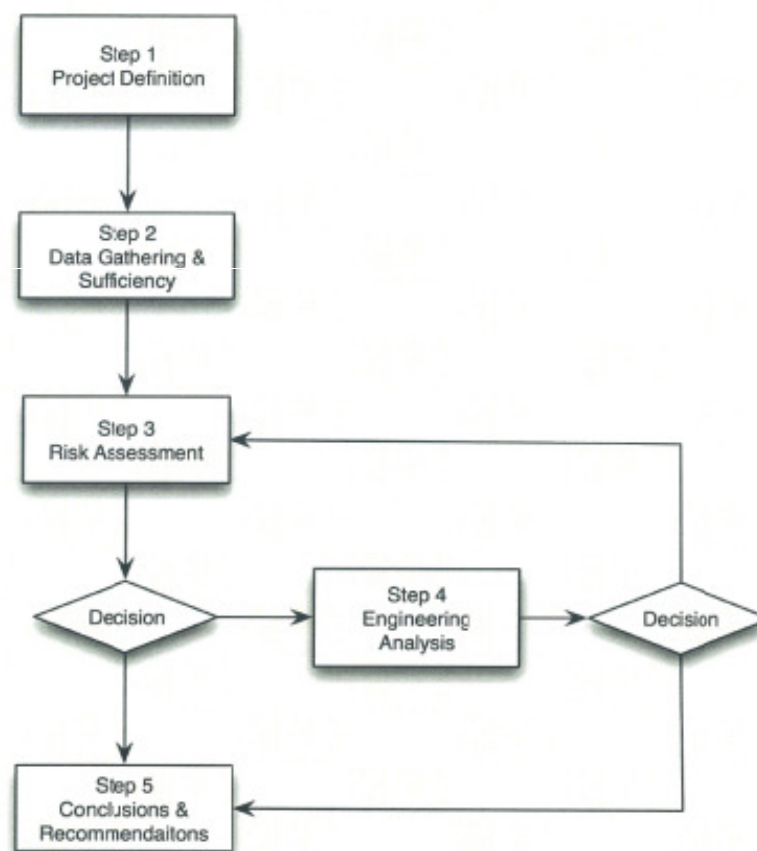
- Scoping study completed in March 2007 (Protocol v1)
- Four infrastructure categories
 - buildings
 - roads and associated structures
 - stormwater and wastewater systems
 - water resources
- Sampling strategy completed
- 1st national assessment
- Current Protocol v9 (April 2009)



Project Overview

How? – The PIEVC Protocol

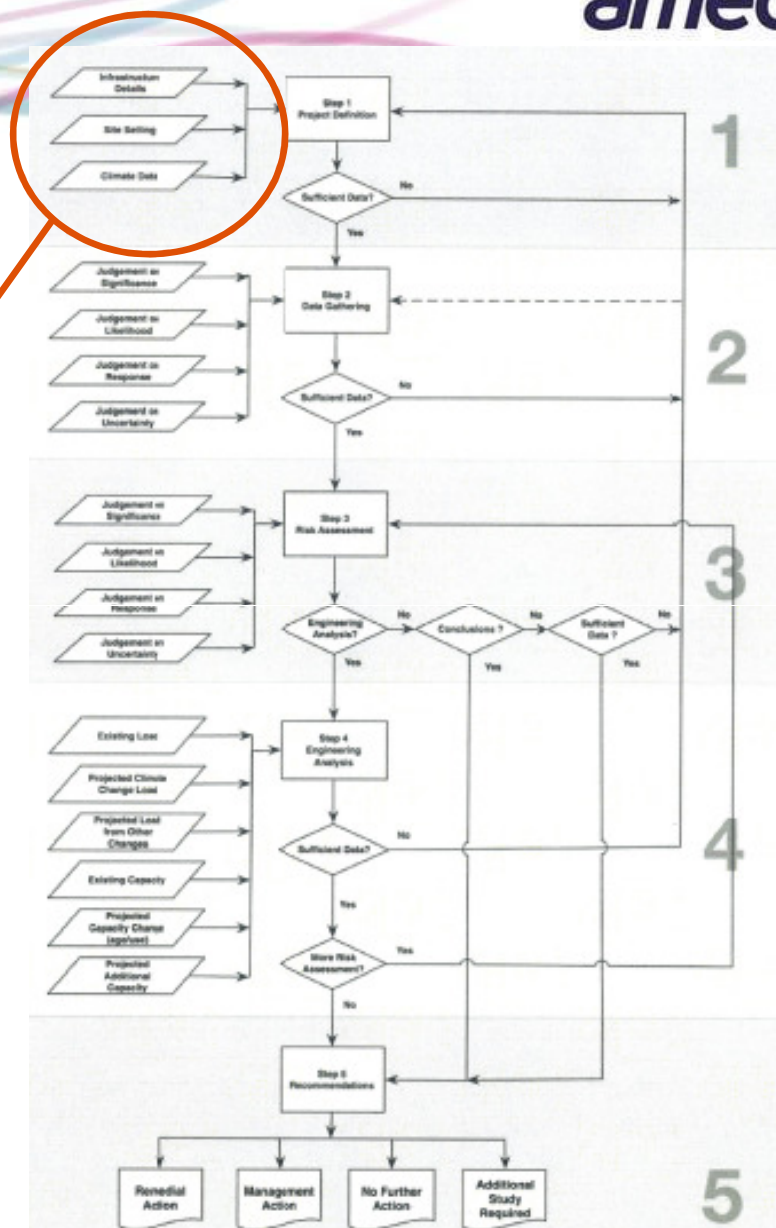
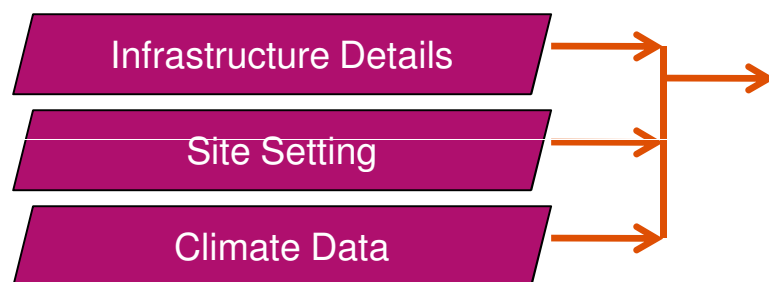
- Infrastructure of interest?
- Do we have data?
- Loads and impacts?
- More analyses required?
- Recommendations



Project Overview

How? – The PIEVC Protocol

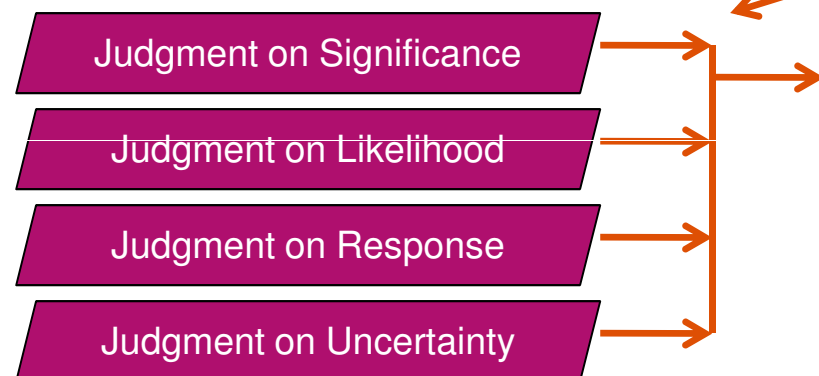
■ Step 1 – Project Definition



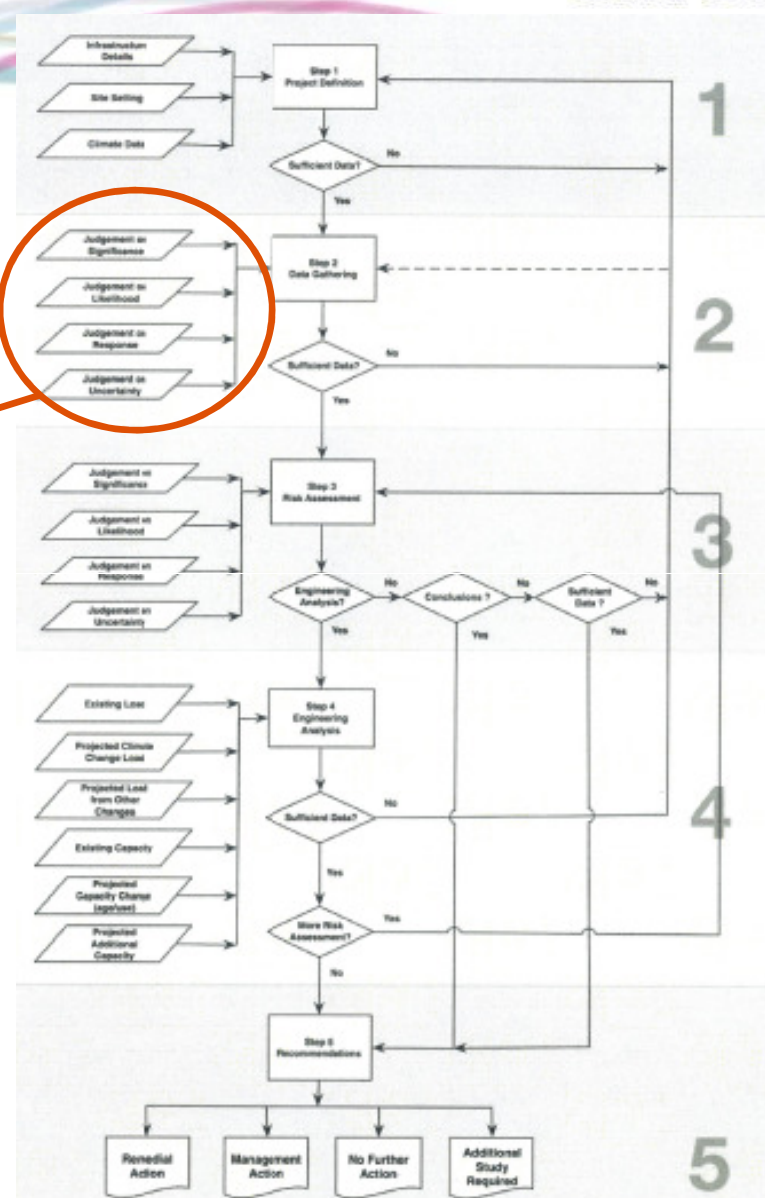
Project Overview

How? – The PIEVC Protocol

■ Step 2 – Data Gathering



- IDF analyses



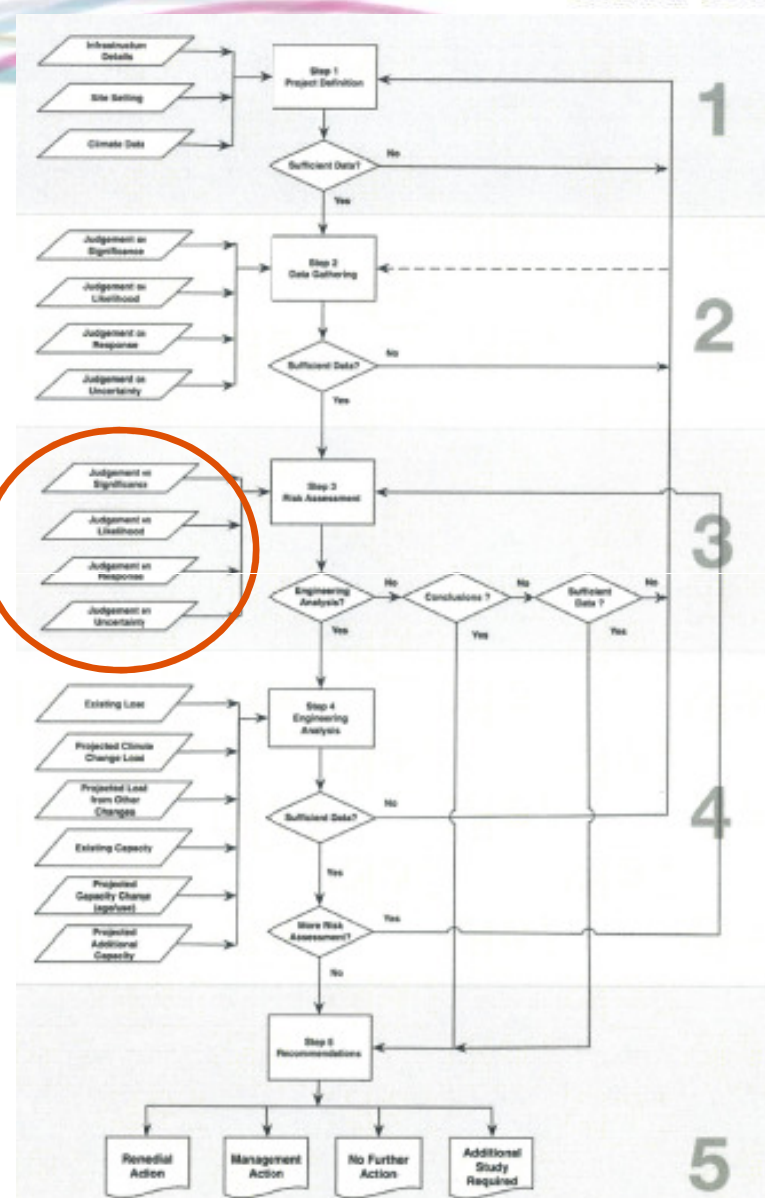
Project Overview

How? – The PIEVC Protocol

■ Step 3 – Risk Assessment



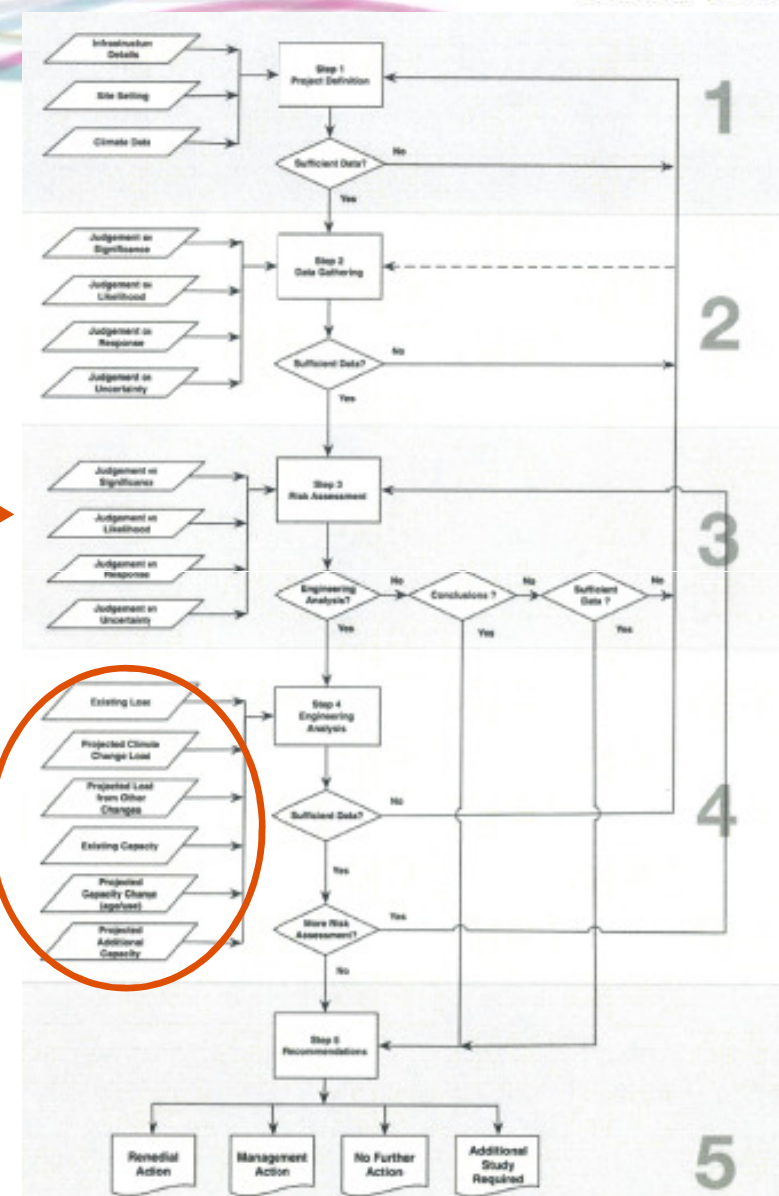
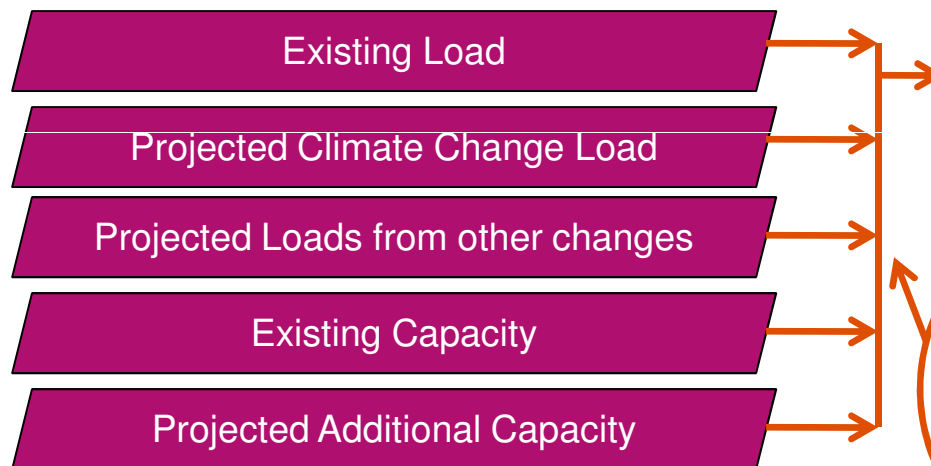
* Vulnerability assessment workshop



Project Overview

How? – The PIEVC Protocol

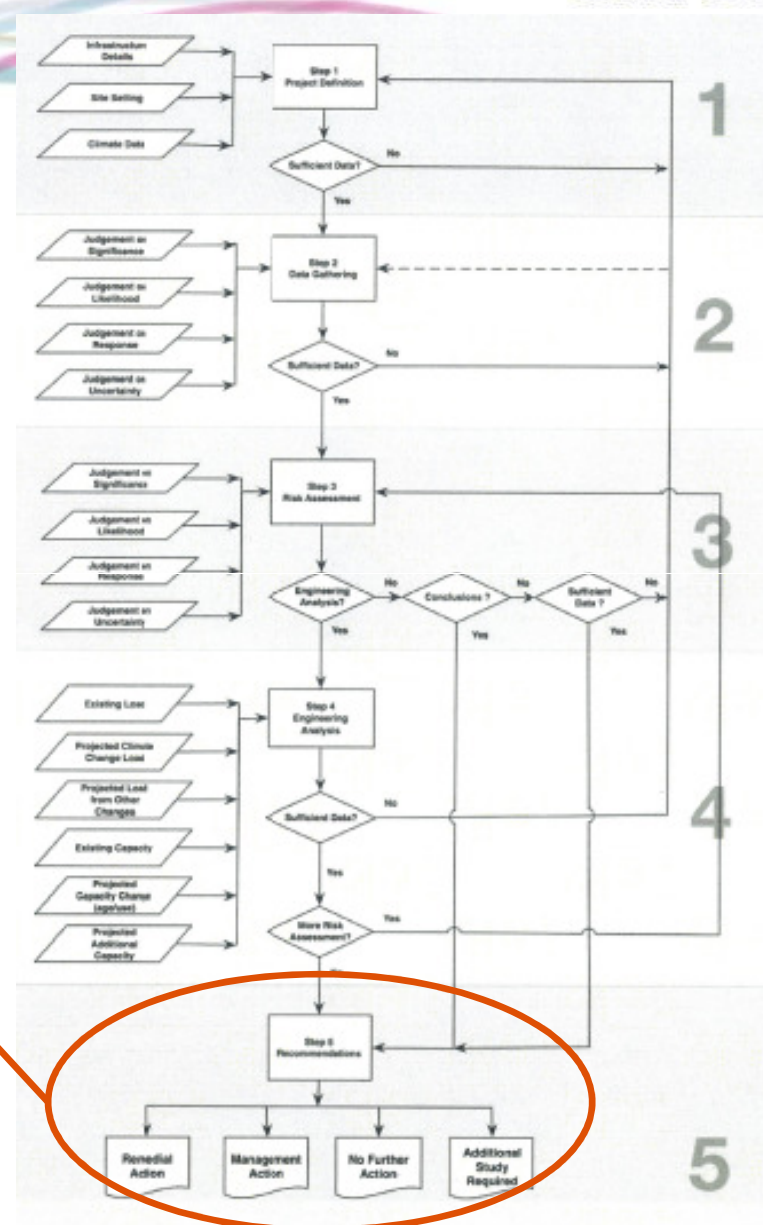
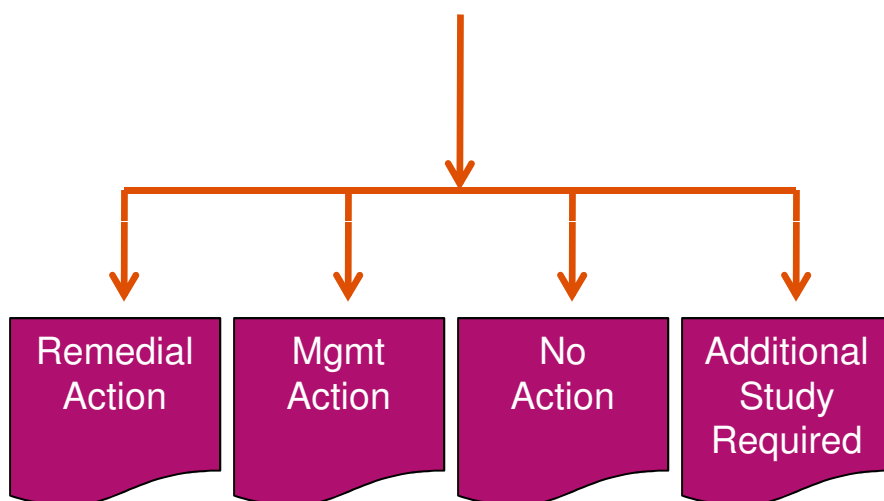
■ Step 4 – Engineering Analysis



Project Overview

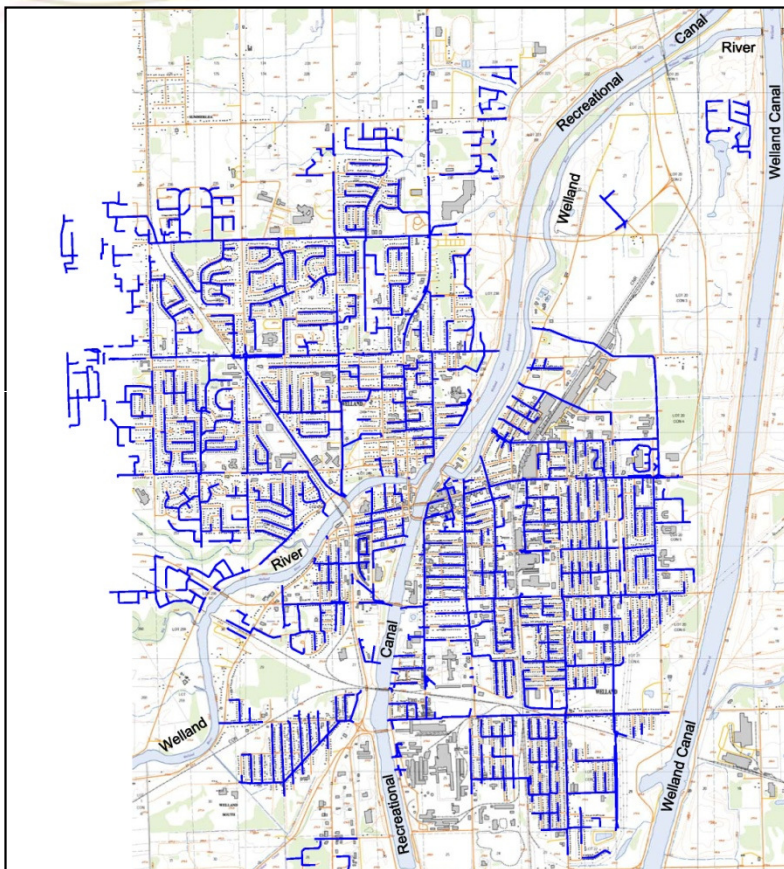
How? – The PIEVC Protocol

Step 5 – Recommendations

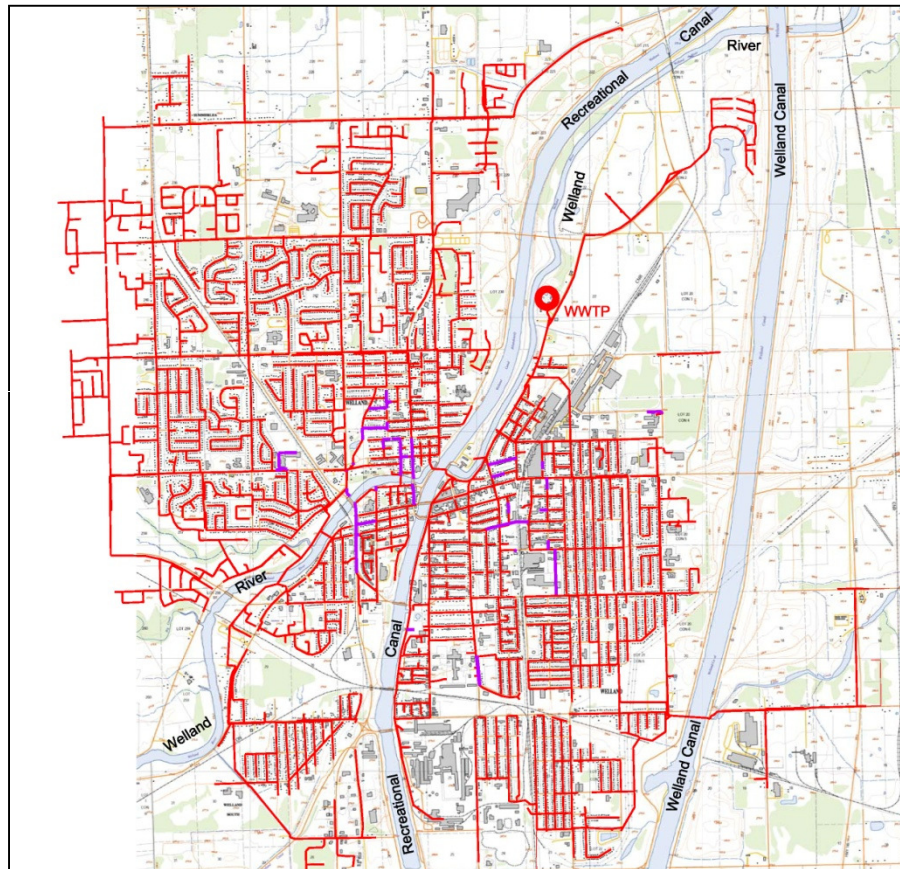


Project Overview

What? – The Infrastructure



Stormwater Collection System



Wastewater / Combined Collection and Treatment System

Project Overview

What? – A Changing Climate

The Long List of Variables:

- High/Low Temperature
- Heat & Cold Waves
- Extreme Diurnal Temperature Variability
- Snow Accumulation
- Blowing Snow/Blizzard
- Lightning

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