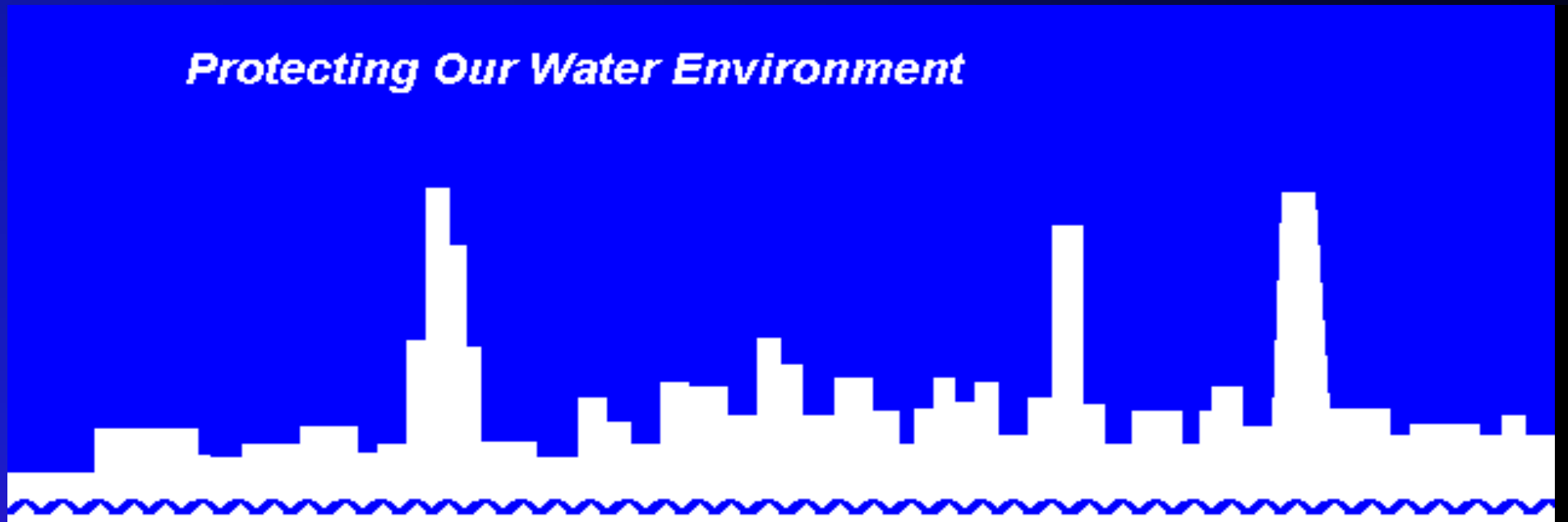

Metropolitan Water Reclamation District of Greater Chicago

STORMWATER MANAGEMENT PROGRAM

November 12, 2009

John P. Murray, P.E., CFM

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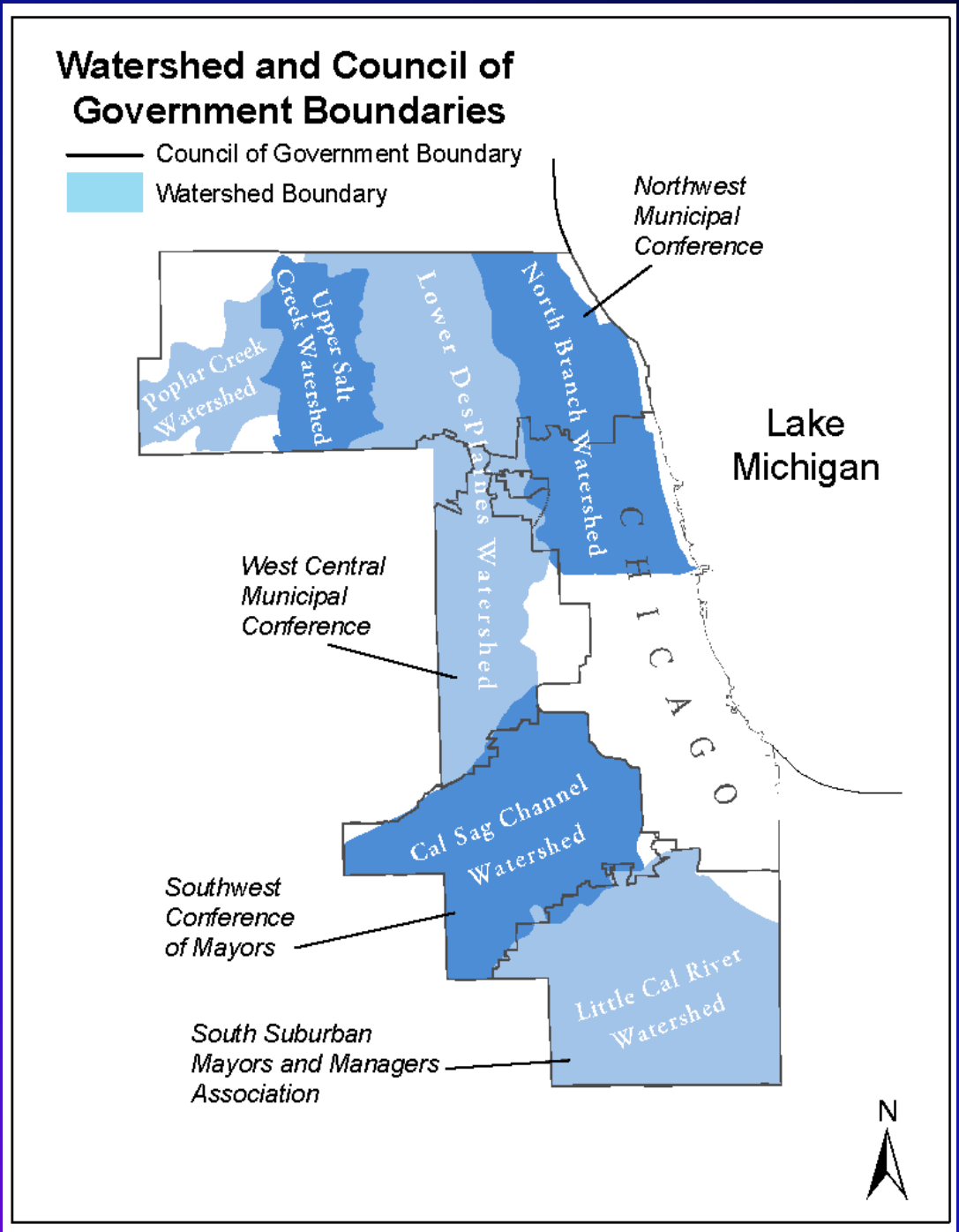
PRESENTATION OVERVIEW

- ***Statutory background***
- ***Cook County Stormwater Management Plan***
- ***Current District stormwater management initiatives***
- ***Detailed Watershed Plans (DWPs)***
- ***Watershed Management Ordinance (WMO)***

STATUTORY BACKGROUND

- *Public Act 93-1049 (Act)*
  - *Granted authority to the District to assume responsibilities of stormwater management for Cook County and provided a funding mechanism*
- *Requires the District to prepare and adopt by ordinance a countywide stormwater management plan*
- *The countywide plan may incorporate six or more separate watershed plans*
- *Names six major watersheds in Cook County for which detailed watershed plans shall be developed*
- *Created Watershed Planning Councils to act as advisory bodies to the MWRD*
- *Requires benefit cost analysis in evaluating project prioritizations between watersheds*
- *Allows District to prescribe by ordinance reasonable rules and regulations for floodplain and stormwater management*

WATERSHEDS AND COUNCILS OF GOVERNMENT



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COOK COUNTY STORMWATER MANAGEMENT PLAN

- *Required under the Act*
- *The District may plan, implement, finance and operate regional stormwater management projects in accordance with the adopted stormwater management plan*
- *CCSMP was developed in 2006 and adopted by the Board of Commissioners in February 2007*
- *CCSMP is a high level, organizational plan establishing an overall framework for the program.*

COOK COUNTY STORMWATER MANAGEMENT PLAN

- *Not a regulatory ordinance*
- *States mission, goals, minimum requirements for funding capital improvement projects*
- *Provides basic overview of program elements:*
  - *Detailed Watershed Plan Development*
  - *Watershed Management Ordinance*

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CURRENT STORMWATER MANAGEMENT INITIATIVES

- Small Streams Maintenance Program (SSMP)
  - Started in 2006
  - Goal is to reduce flooding by removing obstructions and debris in the waterways that impede the natural drainage of small streams and rivers
  - Have removed 85,000 CY of debris since inception and 35,000 CY 2009 thru October
  - Requests can be made via the District website or by contacting Brian Levy at 312-505-7604

CURRENT STORMWATER MANAGEMENT INITIATIVES:
JOINT FUNDING AGREEMENTS WITH USGS

- *Operation and maintenance of eight USGS stream gauges and one rain gauge in Cook County*
- *Study of the location and extent of areas with hydrologic characteristics amenable to passive recharge of stormwater*
  - *Identification of sites suitable for locating stormwater best management practices (BMPs) to reduce surface runoff*

CURRENT STORMWATER MANAGEMENT INITIATIVES:
JOINT FUNDING AGREEMENTS WITH USGS

- *City of Chicago Department of Transportation Sustainable Streetscape Project*
  - *MWRD's Monitoring and Research Department will monitor effectiveness of BMPs incorporated into an urban streetscape project being designed by CDOT*
  - *USGS is gathering sewer flow data and performing shallow groundwater monitoring to determine pre-construction wet-weather flows in the existing collection system*
  - *Study will assess how best management practices contribute to combined sewer overflow abatement and overall flow and pollutant loading reduction to treatment plants*

LEGEND

Recycled content
Divert 95% of Construction Waste from Landfills; Specify new materials with a minimum 20% Recycled Content

Energy conservation
Meet an energy reduction baseline below the streetscape baseline; select optimal street lights for energy efficiency; use reflective surface on sidewalks/roadways to improve lighting; use renewable energy on designated fixture

Storm-water management
Divert 100% of two year storm event from city storm system through the use of pervious pavements, bioswales and recharge of Chicago River through existing outfall

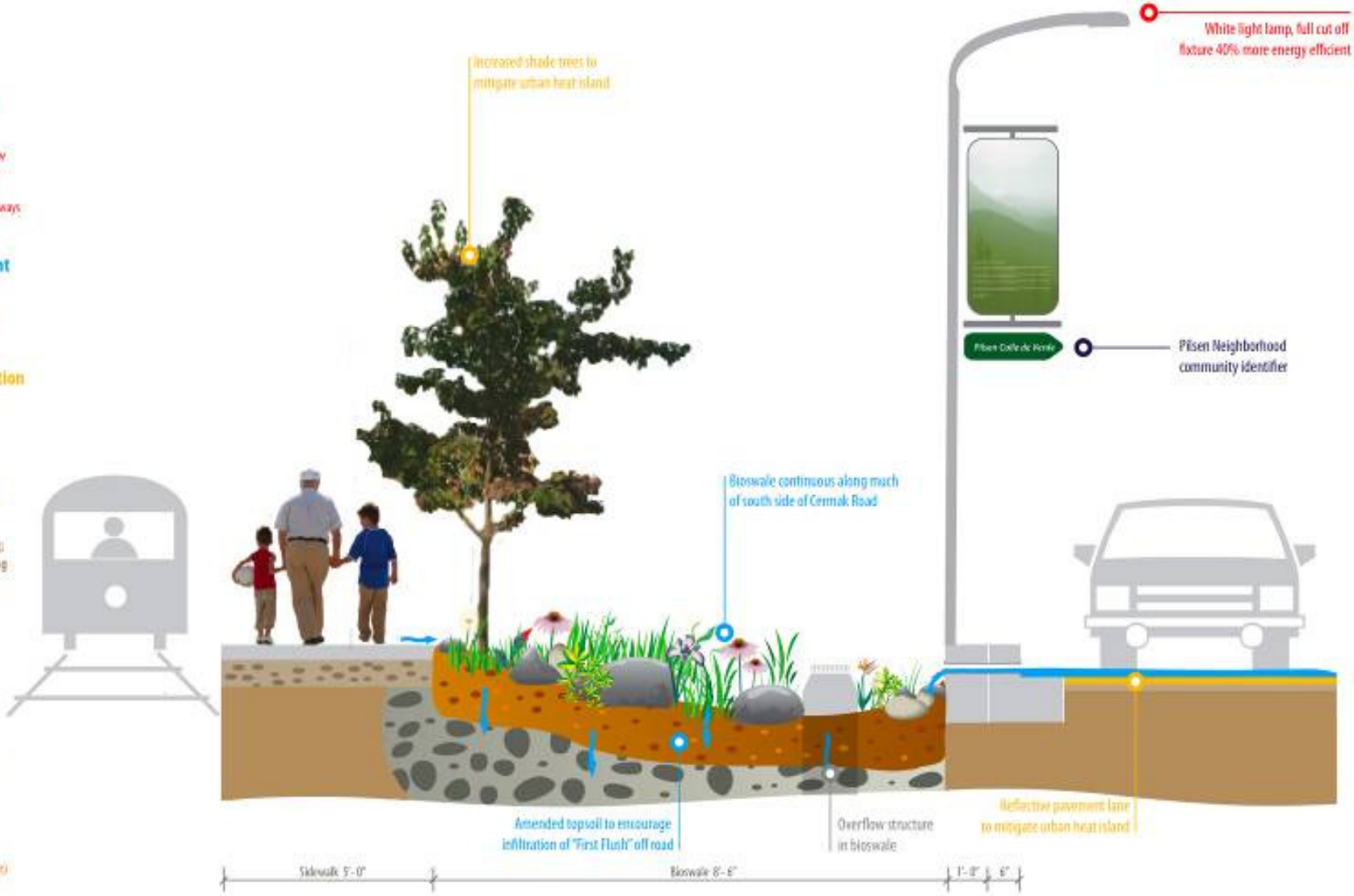
Urban heat island mitigation
Reduce ambient summer temperatures on streets and sidewalks through use of reflective pavements on roadways, light colored materials on sidewalks and use of trees for shading

Public transportation
Improve bus stops with signage, shelters where possible, and lighting; facilitate use of bikes with lanes along Blue Island, and strategically located bike racks

Water efficiency
Limit or eliminate use of potable water sources for irrigation; Specify Native or Climate-adapted, drought tolerant plants for all plantings

Education
Provide public outreach materials/ self-guided tour brochure to highlight innovative, sustainable design features of streetscape

Monitoring
CDOT is partnering with MWRD (Metropolitan Water Reclamation District)



BIOSWALE AT CERMAK ROAD

CDOT

Wight & Company
Soodan & Associates, INC.
Phoenix Architects
Mactec

Image courtesy of CDOT

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CURRENT STORMWATER MANAGEMENT INITIATIVES

- *Permeable Pavement Pilot Study*
  - *Will give first-hand insight with respect to the use of permeable pavement systems as a stormwater BMP*
  - *Will provide a basis for recommending alternative paving materials for use on District facilities*
  - *Comparing performance of pervious concrete, porous asphalt and porous unit paving to conventional asphalt*

CURRENT STORMWATER MANAGEMENT INITIATIVES

- ***M&R Department will oversee monitoring of pavement's effects on quality and quantity of stormwater runoff***

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MWRDGC STORMWATER MANAGEMENT

DETAILED WATERSHED PLAN DEVELOPMENT

- *Purpose*
  - *Identify the stormwater related problems in a watershed*
  - *Develop alternative solutions to those problems*
  - *Evaluate the alternatives to determine those that are most effective in addressing the watershed's needs*
  - *Completed DWP will contain a summary of the watershed's areas of concern, and a listing of proposed regional capital improvement projects*

DETAILED WATERSHED PLAN DEVELOPMENT

- ***Chapter 6 of the CCSMP provides guidance for detailed watershed plan development***
- ***District has enlisted the assistance of consulting firms with experience in watershed planning on similar scale and/or within the region***
- ***District led information-gathering effort, contacting all municipalities and townships within respective watersheds, state and federal agencies, and other stakeholders, requesting information on problem areas and on any existing data that may support our DWPs***

DETAILED WATERSHED PLAN DEVELOPMENT

General Steps – Phase A:

- ***Gather existing information on current watershed conditions & past studies***
- ***Analyze the suitability of existing information***
- ***Determine what additional information is necessary and outlining procedures for obtaining this information***

DETAILED WATERSHED PLAN DEVELOPMENT

General Steps – Phase B:

- *Obtain the required new data*
- *Develop hydraulic and hydrologic (H&H) models of the watershed, using or updating existing models when possible*
- *Identify potential projects to address stormwater related issues*
- *Quantify benefits and estimate costs of potential projects, and determine other non-economic factors to allow evaluation of alternative projects*

PUBLIC PARTICIPATION

- ***MWRD updates Watershed Planning Councils on status of watershed plans at quarterly meetings***
- ***MWRD conducts a series of workshops with technical and planning staff of municipalities and townships on the Watershed Planning Council, to solicit feedback on DWP development***
- ***Workshop sessions are generally held for each tributary***

PUBLIC PARTICIPATION

- Workshop #1
  - Present local/regional classification of reported problems
  - Present draft inundation maps
  - Discuss availability of open space for use as project sites
- Workshop #2
  - Present preliminary alternatives
- Workshop #3
  - Present finalized alternatives

- By necessity, public review process starts well before DWP report is written

DETAILED WATERSHED PLAN DEVELOPMENT

Cook County GIS Data Available to the District

- *Orthophotography (2003), resolution of 6 inches*
- *LiDAR points (2003) – used to develop digital elevation models, horizontal accuracy of 2.2 feet and vertical accuracy of 0.6 feet*
- *Cadastral (parcel) and Planimetric data (2006)*
- *Hydrolines shapefile (1998) - updated as part of DWPs*
- *Assessed values of parcels (2006)*

DETAILED WATERSHED PLAN DEVELOPMENT

Stormwater Management Database

- Based upon a similar database developed by CH2M Hill for project in another city
- Facilitates tracking problem information, project photos, and alternatives
- Automates damage calculations based upon model output and parcel data
- Contains conceptual cost estimating feature
- Produces standardized reports
- Hosted on District server, but accessed by all DWP consultants

DWP TASKS: FIELD RECONNAISSANCE

- *Survey stream cross sections*
- *Visit structures including bridges and culverts survey/measure as required*
- *Measure damage elevations and high water marks/first floor entry points where other data sources are not available or usable*
- *Inspect waterways to determine Manning's n*

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DWP TASKS: FIELD RECONNAISSANCE

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DETAILED WATERSHED PLANNING TASKS:
H&H MODELING

- Decision to use HEC-HMS for hydrologic models and HEC-RAS for hydraulic models
- Programs are widely used in engineering community, recognized by FEMA, and likely be to supported for the foreseeable future
- HEC-geoHMS was used to produce model input from GIS data sources and HEC-geoRAS was used to process output from HEC-RAS
- Model output to be in GIS format
- Hydrologic modeling decisions
  - Maximum subbasin size of one square mile
  - Rainfall data from ISWS Bulletin 70
  - Use 2001 Land Use Data from CMAP; NRCS digital soils data

DETAILED WATERSHED PLANNING TASKS:
H&H MODELING

- *Calibration of models using USGS stream gauge data, rain gauge data, radar-derived rainfall data where appropriate, IDNR-OWR stage data and high water elevations; sensitivity analysis of hydrologic parameters*
- *Evaluation of existing, baseline, future and alternative conditions at 2-, 5-, 10-, 25-, 50, 100-, and 500-year storm events, for critical storm duration*
- *Preparation of maps and hydraulic profiles showing existing conditions inundation areas during the 100-year storm event*
- *Technical review of models by outside firm*

DETAILED WATERSHED PLANNING TASKS:
ECONOMIC ANALYSIS

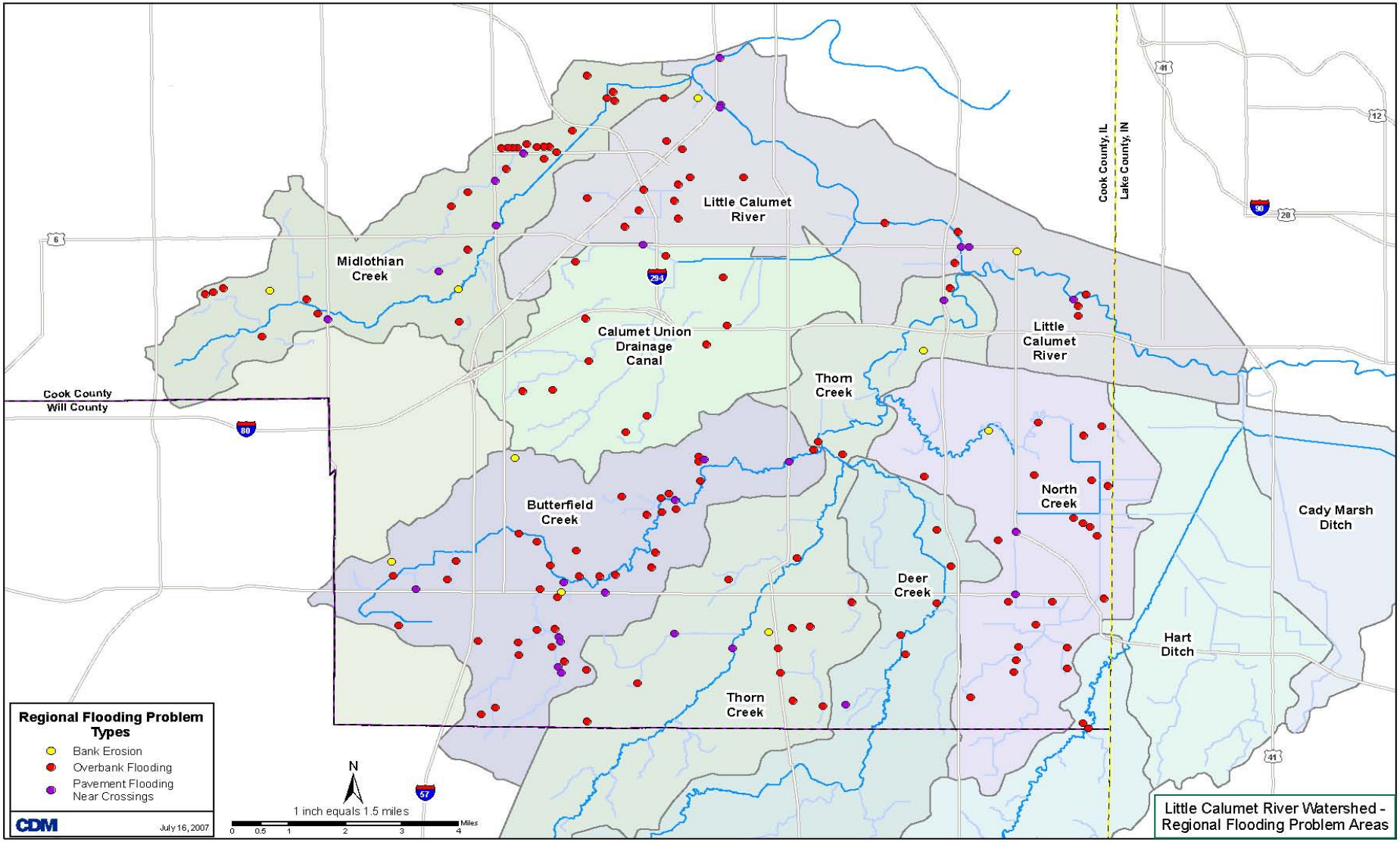
- *Economic damages are calculated by summing property damage from flooding, streambank erosion damage, transportation damage, and recreation damage*
- *Structure location and first floor entry elevation are determined by use of aerial photography, approximations based upon topograhic data, and field surveying as needed*
- *Assessed value of assets is derived from Cook County's tax parcel assessment data*

DETAILED WATERSHED PLANNING TASKS:
PROBLEM ASSESSMENT

- *Evaluate problems reported during outreach effort, problems identified using DFIRMS, and problems revealed during modeling*
- *Categorize specific problems as regional or local*
- *Regional problems may be grouped based upon location and cause of the problems*
- *A stormwater management measure or combination of measures comprise an alternative that addresses regional problems*

DETAILED WATERSHED PLANS

Little Calumet River Watershed: Regional Flood Problem Areas



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DETAILED WATERSHED PLANNING TASKS:
ALTERNATIVE DEVELOPMENT

- *Chapter 1 of CCSMP lists minimum criteria for capital improvement projects, therefore alternatives must meet these criteria*
- *Chapter 6 of CCSMP lists several possible technologies that can be applied to a problem or grouping of problems*
- *Examples: detention/retention facilities, culvert/bridge replacement, channel improvements, levees/floodwalls, streambank stabilization and erosion control*
- *Where opportunities exist, capital projects will incorporate multiple objectives such as best management practices or habitat restoration*
- *Existing documentation of wetland and riparian areas will be reviewed, in order to assess wetland/riparian impacts and enhancement opportunities*

DETAILED WATERSHED PLANNING TASKS:
ALTERNATIVE ANALYSIS

- *Perform H&H analysis of alternatives at range of recurrence interval events*
- *Check how well alternative solves known problems and impacts to other alternatives in the watershed*
- *Modeling shall determine the flood damage reduction benefits for each alternative*
- *Benefits can include added value of recreation facilities, wetlands and riparian areas*
- *Conceptual cost estimates shall be determined for each alternative, using Stormwater Management Database.*
- *Costs estimates to include study, design, land acquisition, construction and O&M (when appropriate)*
- *Benefit-to-cost ratio determined for each alternative*

DETAILED WATERSHED PLANS TO CAPITAL IMPROVEMENT PROJECTS

- *As part of DWPs, recommended alternatives will be identified in an Implementation Plan*
- *Draft watershed plan report will be provided for District and Watershed Planning Council review*
- *Recommended capital improvement projects from each DWP will be reviewed on a countywide basis by the District's Board of Commissioners*
- *Priority by which projects will be implemented will be determined by the Board of Commissioners*

Project Prioritization
Stormwater Management Annual Budget
Overview

- Administrative
- Studies
- Small Stream Maintenance Program
- Capital Improvements Program
  - *Comprised of projects recommended in Detailed Watershed Plans (DWPs)*
    - *Design*
    - *Projects*

Project Prioritization
Capital Improvement Program (CIP)

- Slate of projects from completed DWPs to be presented to MWRD Board of Commissioners (Board) on an annual basis
- Projects approved by Board comprise the CIP
- In general, DWP projects fall into two categories
  - *Streambank Stabilization*
  - *Flood Control Project*

Project Prioritization
Streambank Stabilization (SS)

- **DWP criteria >> active erosion within 30 feet of a structure**
- **Two categories for prioritization**
  - ***SS1 >> imminent danger to structures and/or threat to public safety***
    - ***commercial and residential buildings, roadways, utilities***
  - ***SS2 >> Other***
    - ***Monitoring, reclassification to SS1 if necessary***

Project Prioritization
Streambank Stabilization (SS)

- **Factors for prioritization within SS1 and SS2**
  - ***B/C Ratio***
  - ***Number of benefiting communities***
  - ***Total dollar cost of the project***
  - ***Total dollar benefits of the project***

Project Prioritization
Flood Control Projects (FC)

- Examples of Flood Control projects include: reservoirs, levees, conveyance improvements
- All FC projects scored through a ranking factor process, which considers the following
  - *Benefit-to-Cost Ratio*
  - *Problem Identification*
  - *Land availability*
  - *Number of benefiting communities*
  - *Total dollar cost of project*
  - *Total dollar benefits of project*
  - *Roadway flooding*

Project Prioritization
Flood Control Projects (FC)

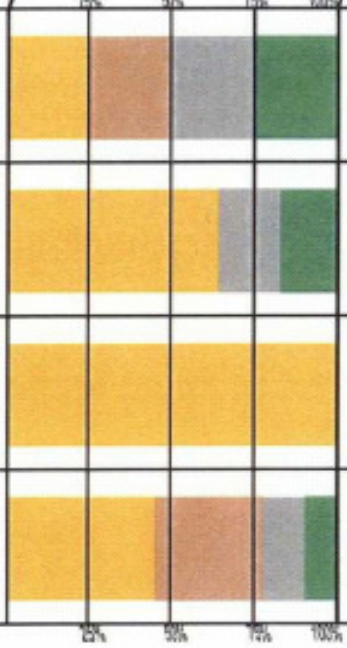
- **Two categories of FC projects for prioritization**
  - ***FC1 >> projects scoring in top 10%***
  - ***FC2 >> remaining projects***

Overall Project Prioritization

1. **Streambank Stabilization 1 (SS1)**
   - *Erosion that puts structures in imminent danger*
2. **Flood Control Category 1 (FC1)**
   - *Top ranked flood control projects*
3. **Flood Control Category 2 (FC2)**
   - *Remaining flood control projects*
4. **Streambank Stabilization 2 (SS2)**
   - *Areas to be monitored*
   - *May be recommended for funding after SS1, FC1 and FC2 have been addressed*

Project Prioritization

Metropolitan Water Reclamation District of Greater Chicago
Example Prioritization Matrix

	B/C Ratio	Total Benefits ($)	Total Project Cost ($)	Total Cost To MWRDGC ($)	Relative Damage Averted (%)	Area Removed from Floodplain (ac)	Wetland or Riparian Area Protected (ac)	Number of Structures Protected	Possibility of Funding Provided by Outside Agencies	Implementation Time (months)	Water Quality Benefit	Communities Involved
Project A	1.25	5.0 M	4.0 M	3.2 M		5.0	40	6	Very Likely	6	Positive	Oak Park Berwyn Cicero
Project B	2.5	7.5 M	3.0 M	3.0 M		2.6	8	10	Not Likely	28	Slightly Positive	Park Ridge Des Plaines Mount Prospect
Project C	1.2	12.0 M	10.0 M	7.8 M		13.0	0	50	Somewhat Likely	3	No Impact	Oak Lawn Chicago Ridge
Project D	1.0	15.0 M	15.0 M	14.0 M		3.9	15	25	Not Likely	24	Slightly Postive	Buffalo Grove Wheeling Des Plaines Mount Prospect Prospect Heights

Property Damage Erosion Transportation Recreation

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Project Prioritization
Local Participation

- **Not mandatory for project implementation**
- **Examples**
  - ***Monetary***
  - ***Acquisition of property***
  - ***Utility relocation***
  - ***Long term maintenance***

STATUS OF DETAILED WATERSHED PLANS

Calumet-Sag Channel Watershed

- Damages over a 50-year period estimated to be $16,000,000.00
- Plan completed in August 2009 and is available on District's website (www.mwrd.org)

STATUS OF DETAILED WATERSHED PLANS

Upper Salt Creek Watershed

- Damages over a 50-year period estimated to be $8,000,000.00
- Final DWP to be released next week
- Final DWP will be available on District's website

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STATUS OF DETAILED WATERSHED PLANS

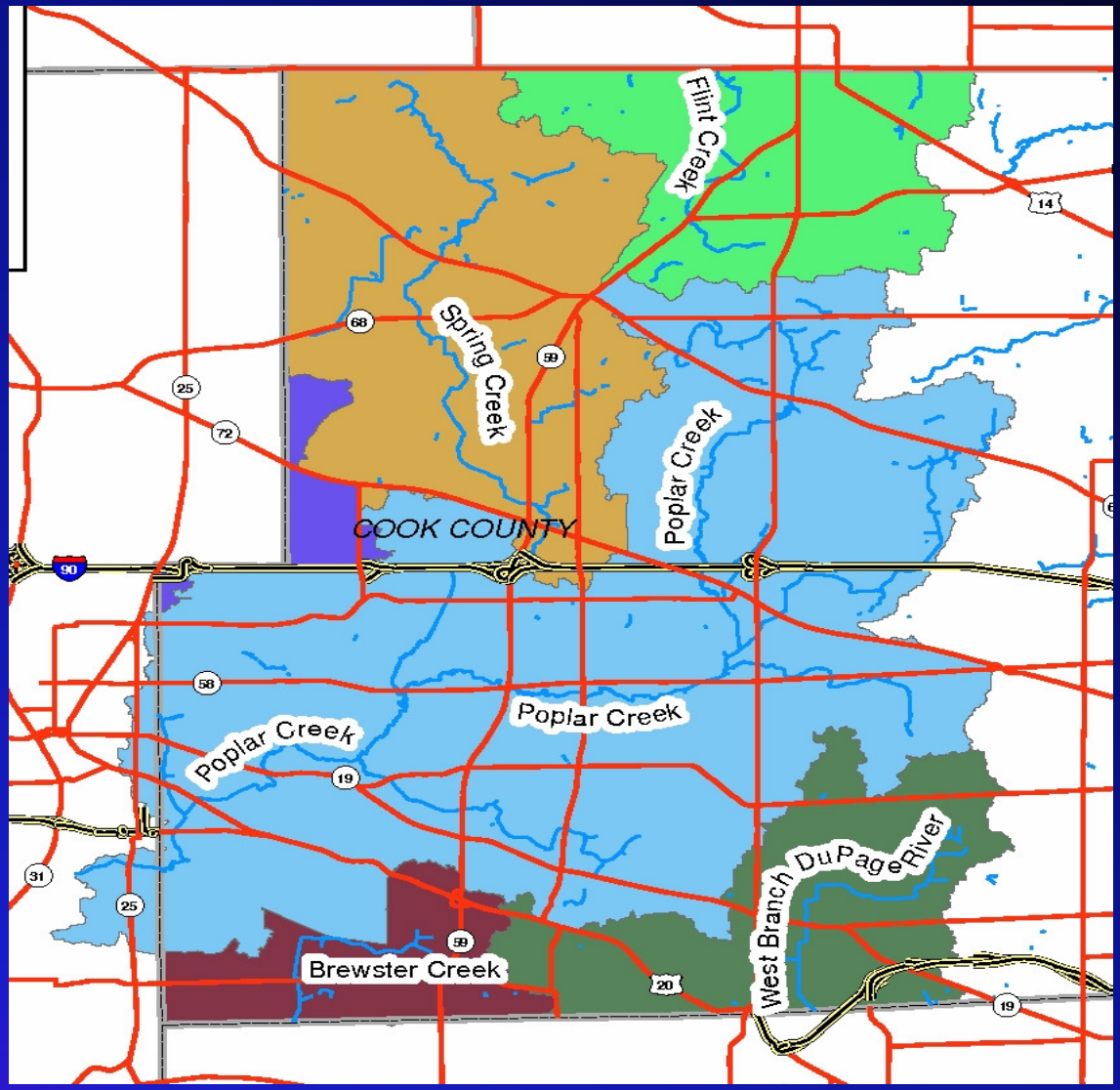
Little Calumet River Watershed

- Damages over a 50-year period estimated to be $75,000,000.00
- Draft DWP out for review; comments are due by November 25, 2009
- Final plan completion anticipated by end of 2009

STATUS OF DETAILED WATERSHED PLANS

Poplar Creek Watershed

- The Draft Report is expected in late Spring 2010
- Workshops will be held this winter
- Modeling is mostly complete and peer review currently underway
- The final plan is expected in Summer 2010



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STATUS OF DETAILED WATERSHED PLANS

North Branch of the Chicago River Watershed

- Survey work completed over the summer
- H&H models completed for West Fork, Middle Fork, Skokie, upper portion of Main Stem, and Lake Michigan
- H&H models for lower portion of Main Stem and North Shore Channel expected by early December
- Technical review of models to be completed in early January
- Alternative development in progress
- Final recommend alternatives expected in February
- Draft report expected in April
- Final report completion anticipated in May

STATUS OF DETAILED WATERSHED PLANS

Lower Des Plaines River Watershed

- H&H modeling and Alternative Development currently underway
- Draft Report expected summer 2010
- Final Report expected fall 2010

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Watershed Management Ordinance (WMO)

- **Agenda:**
  - ***WMO Development***
  - ***WMO Components***
  - ***Administration / Enforcement***
  - ***WMO Tentative Schedule***

Watershed Management Ordinance (WMO)

- **Authority to develop WMO from enabling legislation**
  - ***The District can "prescribe by ordinance reasonable rules and regulations for floodplain and stormwater management"***
  - ***The rules and regulations shall, at a minimum, meet the standards for floodplain management established by the Office of Water Resources of the Department of Natural Resources and the requirements of the Federal Emergency Management Agency for participation in the National Flood Insurance Program.***

- **WMO Objective : Establish uniform, reasonable, and comprehensive countywide stormwater management regulations**
  - ***Municipalities can adopt more stringent standards than the WMO***

WMO Stakeholder Involvement

- **Watershed Planning Councils (WPC)**
  - *Membership consists of municipality Mayors/Presidents*
  - *District staff provided WMO status and addressed questions at WPC meetings since 2007*
- **Technical Advisory Committee (TAC)**
  - *Membership comprised of 2 municipal engineers/public works directors from WPC and agencies which have stormwater management regulatory authority (FEMA, IDNR, Corps of Engineers, Collar Counties, etc.)*
  - *11 Meetings beginning in July 2007 ending July 29, 2009*
- **Public and Private Organization Advisory Committee (PPOAC)**
  - *Membership comprised of ecosystem partnerships, environmental group such as Environmental Law and Policy Center, Openlands, and Center for Neighborhood Technology*
  - *6 Meetings beginning in November 2007 ending July 29, 2009*
- **Advisory committee overlap**
  - *Each committee provided one liaison to attend the other's meetings*

WMO Development Process

Drafted White Papers

- Introduction of Components and Concepts
- Distributed to TAC/PPOAC for Discussion
- Distributed to Municipal Conferences and WPCs

Drafted Proposed Ordinance Language

- Discussed by TAC/PPOAC
- Distributed to Municipal Conferences and WPCs

Community Outreach Letter

- February 20, 2008
- Municipal Conferences provided email distribution lists to allow MWRD to distribute WMO documents directly to municipal technical staff

WMO Development Process

- Revised WMO language after review and evaluation of comments received from:
  - *TAC / PPOAC*
  - *Communities*
- Full technical requirement draft as revised discussed with TAC & PPOAC on Dec 11, 2008
- Written comments from TAC, PPOAC and municipalities were received in January, February 2009
  - *Received 57 Comment Letters from Communities & Organizations*

WMO Development Process

- Incorporated appropriate comments into a Full Draft WMO
- Full draft discussed with TAC & PPOAC on July 29, 2009
- Developing accompanying Technical Guidance Manual (TGM)
  - *Provides information necessary to achieve compliance with WMO standards*
    - *Example: step by step instructions for detention calculations*

WMO Components

- Drainage and Detention
  - *MWRD currently regulates under Sewer Permit Ordinance (SPO)*
- Water Quality
- Soil Erosion and Sediment Control
- Floodplain Management
- Wetlands
- Riparian Area

- NOTE: All components above are addressed in collar county ordinances (Lake, DuPage, Will, McHenry, Kane).

WMO Detention Component

	Current MWRD Regulations (SPO)	Draft WMO
Thresholds	5-Acre Nonresidential 10-Acre Residential	3-Acre Nonresidential 5-Acre Residential
Combined Sewer Areas	Detention not required	Detention required
Release Rate	3-Yr Undeveloped	0.15 cfs/acre
2-Yr Release Rate	None	0.04 cfs/acre (Discharging to Waterways)
Rainfall Data	Technical Paper 40 (1961) 100Yr, 24Hr = 6.00”	ISWS Bulletin 70 (1989) 100Yr, 24Hr = 7.58”
Detention Volume Methodology	Modified Rational	Hydrograph

Detention: How does WMO compare to collar counties?

	Draft WMO	DuPage / Kane County	Lake County	Will County
Non-Residential Threshold	3 acres	1 acre	1 acre new impervious area, or 3 acres hydrologically disturbed area, or Site more than 50% impervious with greater than 0.5 acre impervious	1 acre
Residential Threshold	5 acres	3 acres	1 acre new impervious area, or 3 acres hydrologically disturbed area, or Site more than 50% impervious with greater than 0.5 acre impervious	5 acres
Release Rate	Dual Release (0.04/0.15)	Single Release (0.10)	Dual Release (0.04/0.15)	Dual Release (0.04/015)
Detention Volume	Hydrograph	Hydrograph	Hydrograph	Hydrograph
Rainfall Data	Bulletin 70	Bulletin 70	Bulletin 70	Bulletin 70

WMO Water Quality Component

- Required when site is ultimately discharging to a waterway
- Treatment of 1-inch of runoff from impervious surfaces via:
  - *Retention Based Practices (when site conditions allow)*
    - *Applicant must demonstrate retention based practices are not feasible*
  - *Mechanical separator only if retention based practices cannot be provided*
- Threshold:
  - *½ acre parcel (non-residential)*
  - *1 acre parcel (residential)*
  - *More than 1 acre of new impervious area (roadway) where practicable*

WMO Volume Control Component

- Required when discharging to combined sewers for sites below detention threshold
- Purpose
  - *Reduce loading on local sewer systems and water reclamation plants*
- Proposed capture & retention of 1” of runoff from impervious surfaces
- Proposed Thresholds
  - *0.5 – 3 acre parcels (non-residential)*
  - *1 – 5 acre parcels (residential)*
  - *More than 1 acre of new impervious area (roadway) where practicable*
- Suite of quantifiable BMPs per TGM – Retention based practices
  - *Porous pavement*
  - *Swales*
  - *Rain Gardens*
- Proposed Redevelopment Site Option to VC
  - *Reduce existing impervious area by 20%*

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WMO Soil Erosion and Sediment Control Component

- Proposed regulations in draft WMO are based on ILR-10
  - *ILR-10 is IEPA's NPDES stormwater permit for construction site activities*
- Design criteria and specifications from *Illinois Urban Manual* and TGM
- Provides MWRD with inspection and enforcement authority
- Proposed MWRD threshold is 0.5 acres
  - IEPA ILR-10 threshold is 1 acre

WMO Floodplain Management Component

- **Proposed Flood Protection Elevation = 1-ft above Base Flood Elevation (BFE)**
- **BFE is highest elevation determined from:**
  - ***Cook County Flood Insurance Rate Maps prepared by FEMA***
  - ***Inundation Maps from MWRD's Detailed Watershed Plans***
- ***BFE can also be determined by project specific floodplain studies subject to MWRD approval***
- **Proposed Compensatory Storage Ratio = 1.1:1.0 (FIRM BFE)**

Inundation Maps

- Created as part of Detailed Watershed Plans (DWPs)
- Hydrologic and Hydraulic Model Development
  - *Necessary to:*
    - *Facilitate identification of regional problems/alternatives*
    - *Ensure potential DWP projects do not cause adverse impacts elsewhere in the watershed*
  - *DWP Model parameters include:*
    - *Current land use*
    - *Current channel characteristics (field surveying to update/verify cross sections)*
    - *Use of Bulletin 70 rainfall data (older models used Technical Paper 40 rainfall data)*
  - *DWP model output utilized to develop Inundation Maps*

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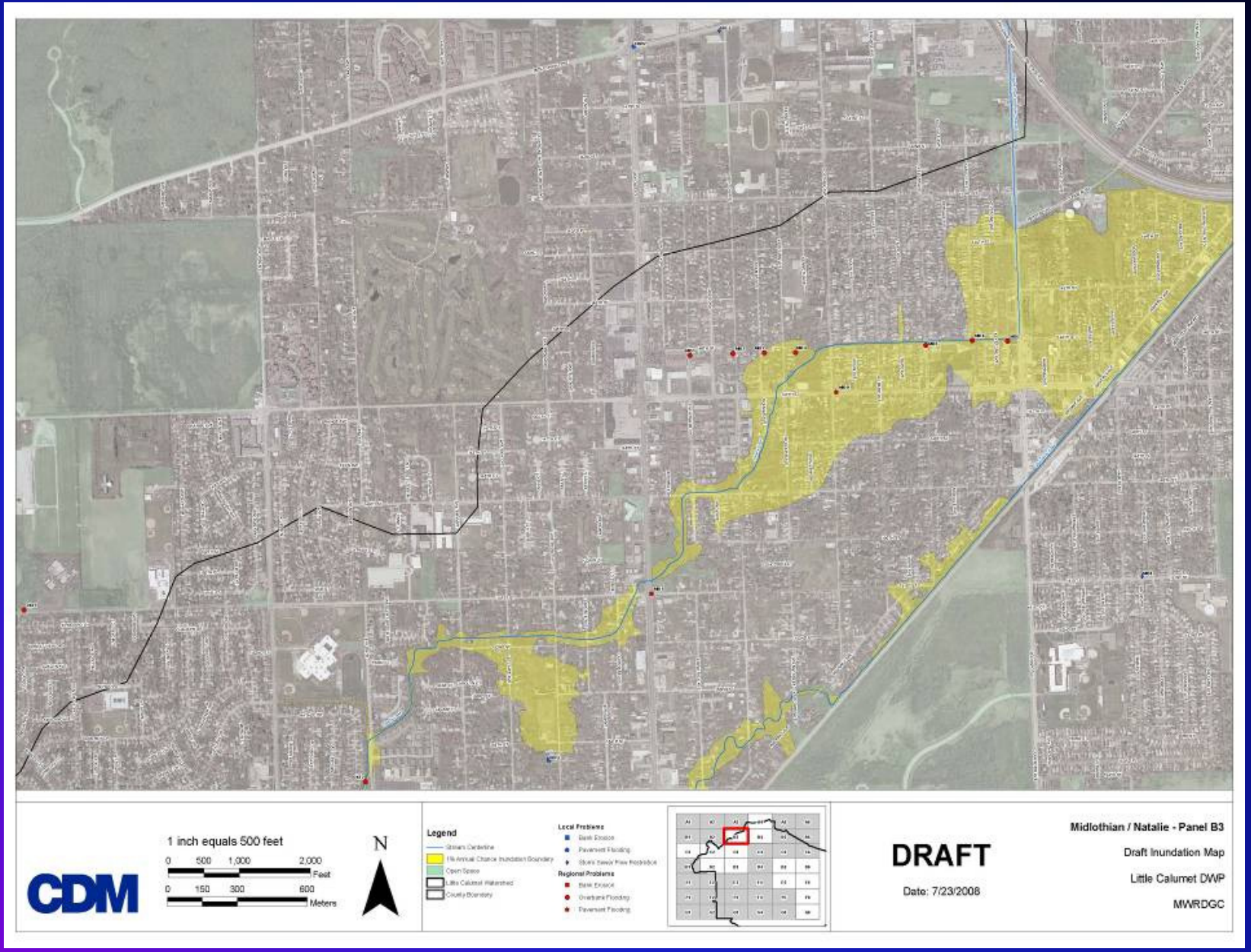
Inundation Maps



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Inundation Maps

- "Inundation Area" is analogous to the 100-year floodplain of FEMA Flood Insurance Rate Maps (FIRMs).
- Increases and decreases in floodplain area/elevation have been identified when comparing DWP inundation maps to FIRMS.
- DWP Models and Inundation Maps represent current conditions of our watersheds and as such should be considered as ***Best Available Data*** for floodplain determination for development or redevelopment projects.
- Models checked for accuracy by third party
- Liability could exist if a structure is built outside the FIRM floodplain but within the DWP inundation area and is subsequently damaged by flooding.

Inundation Maps

- FEMA and State Water Survey (SWS) have contacted the District and are interested in using DWP models to update FIRMs
  - *Acknowledges models are thorough and current*
- DWP models need modification to fulfill federal requirements to become FIRMs, primarily addition of floodway (DWPs only delineate floodplain)
- SWS currently preparing scope for FEMA to update FIRMs with DWP models

WMO Wetland Component

- Jurisdictional vs. Isolated Wetlands
- Isolated wetlands are not regulated by the Army Corps of Engineers
- WMO proposes to regulate isolated Wetlands
- Mitigation is required for impacts to isolated wetlands or wetland buffer areas greater than 0.10 acre
- Mitigation ratios for isolated wetlands same as Army Corps of Engineers for jurisdictional wetlands
- Low Quality, mitigation ratio is 1.5 to 1.0
- High Quality, mitigation ratio is 3.0 to 1.0

WMO Riparian Area Component

- **Mitigation is required for impacts to existing *functional values* of a riparian area**
  - ***flood management, habitat and water quality enhancement, streambank stabilization***
  - ***Existing turf grass, parking lots, etc. do not provide functional values therefore mitigation not required***
- **Riparian area is determined by setback distance from Ordinary High Water Mark and by the quality of the stream**
  - ***IDNR rating of 'A' or 'B' = 100' setback***
  - ***Jurisdictional Water of U.S. = 50' setback***
  - ***Isolated Water of Cook County = 30' setback***

WMO Riparian Area Component

- Removal of invasive species or debris impeding drainage are exempt activities
- Encourage channel relocations be avoided
- Mitigation
  - *replacement or enhancement of riparian areas via plantings that provide stabilization*

How Is The WMO Different From Existing Municipal Ordinances?

Summary of Cook County Municipal Existing Watershed Management Requirements

Cook County Watershed Planning Council

	Little Calumet River	*Lower Des Plaines River**	*North Branch Chicago River*	*Poplar Creek **	*Upper Salt**	*Calumet-Sag*	*Entire County*
Municipalities within Watershed**	38	59	20	9	10	27	135
Fixed Release Rate w/ Hydrograph Method vs. MWRD Release Rate	13 34%	17 29%	7 35%	6 67%	5 50%	4 15%	43 32%
Compensatory Storage Currently a Ratio of 1.1 or More to 1.0 for Fill in Floodplain	13 34%	27 46%	11 55%	7 78%	8 80%	9 33%	62 46%
1 foot of Freeboard or More Currently Required (Flood Protection Elevation - FPE)	20 53%	34 58%	14 70%	8 89%	10 100%	13 48%	81 60%

January 2009

* Not including towns who implement other county requirements within corporate boundaries outside of Cook County.
** Not including Uninc. Cook County

MWRDGC

Administration / Enforcement

- **MWRD will administer / enforce WMO**
  - ***Follow same process as Sewer Permit Ordinance (SPO)***
  - ***Permit fees to cover costs as is current practice with SPO***
  - ***Retention of outside consultant to assist if necessary***
- **Communities REMAIN Responsible for NFIP Compliance**
- **Drainage and Detention requirements of WMO will supersede SPO stormwater requirements**
- **Separate permit under SPO required if a connection to a sanitary sewer is proposed**

Administration / Enforcement

- SPO (currently July 1999 revision) to be updated and combined with WMO in future
- WMO permit required
  - *for all development meeting thresholds*
  - *for all development in Resource Protection Areas affecting stormwater management*
- Grandfathering only for permits issued or in process
  - *No exempt list*

WMO relation to other agencies

- **Forest Preserve District of Cook County (FPD)**
  - ***Developed independent Stormwater Management Policy***
  - ***District will advise applicants proposing point discharge adjacent to FPD property to contact FPD and consult FPD's Stormwater Management Policy***
- **State and Federal agencies are exempt**
  - ***Illinois Department of Transportation***
  - ***Illinois Tollway Authority***
- **City of Chicago exempt from WMO per enabling legislation**

Proposed WMO Schedule

- **Formal Public Review September 2009**
  - ***Full Draft WMO and TGM***
  - ***90-day period***
  - ***Interested parties may formally provide input***
  - ***Public Meetings within watershed planning areas to solicit public comment***
- **Incorporate pertinent public input**
- **Present WMO to Board of Commissioners for Consideration and Request Approval**
  - ***Winter 2010***
- **WMO effective date proposed to be 180 days after adoption by Board of Commissioners**

WMO Public Meeting Schedule

Study Session Date	Watershed	Location	Address
11/4/2009	North Branch Chicago River	Glenbrook North High School	2300 Shermer Road Northbrook, IL 60062
11/18/2009	Lower Des Plaines River	Maine West High School	1755 South Wolf Road Des Plaines, IL 60018
12/2/2009	Little Calumet River	Thornton Fractional North High School	755 Pulaski Road Calumet City, IL 60409
12/9/2009	Poplar Creek and Upper Salt Creek	Streamwood High School	701 West Schaumburg Road Streamwood, IL 60107
12/16/2009	Calumet-Sag Channel	Reavis High School	6034 W. 77th Street Burbank, IL 60459

QUESTIONS?

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