



Green More, Pay Less: Understanding Drainage Charge Credits for Nonresidential Property

November 9, 2016

Workshop Agenda



- Welcome and Workshop Outcomes
- The Basics of the New Drainage Charge
 - What Will it Cost
 - How and When Properties are Billed
- Adjustments to Your Bill
- The Credit Program Overview
- Disconnected Impervious Surface Area Credits
- How to Get Information for Credits
- Site Self-Evaluations
- Understanding the Credit Application Process
- Next Steps: Your Credit Action Plan



Workshop Outcomes

- Give you a clear understanding of:
 - How your bill is calculated
 - How to validate your property data
 - How to identify existing credits on your property
 - How to implement storm water management that will result in a credit
 - Credit application process
- Develop a specific action plan

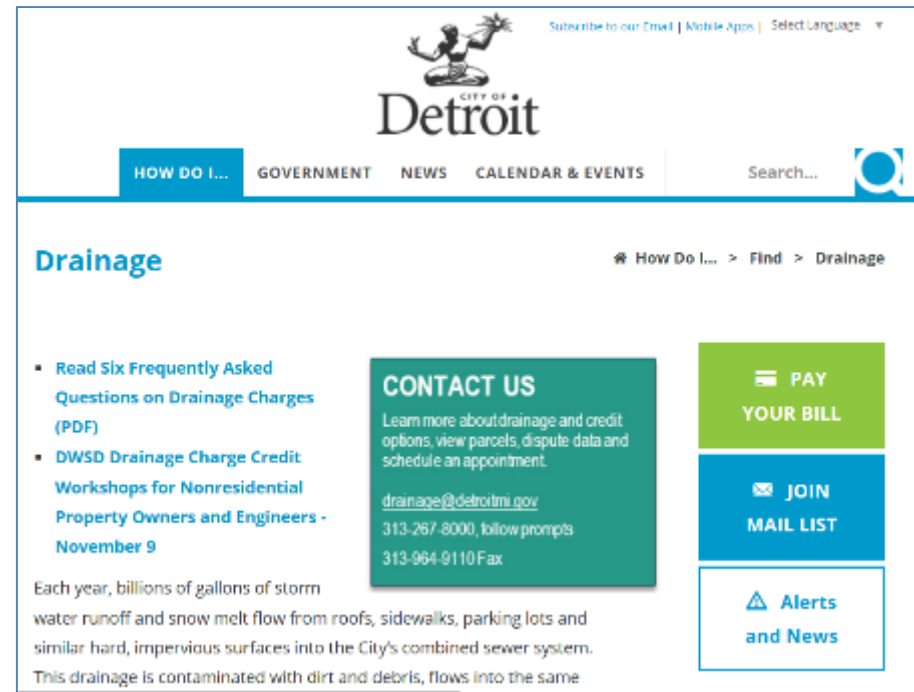
Handout Material/ Website

Each Customer Entity Should Receive Today

- *Agenda*
- *Drainage Charge Credit Application Process Flow*
- *Credit Action Plan*
- *Published drainage guides. Also available on the web site.*
- *Evaluation Form*

Drainage Charge Website

www.detroitmi.gov/drainage



The screenshot shows the City of Detroit website's drainage page. At the top, there is a navigation bar with the City of Detroit logo, a search bar, and links for 'HOW DO I...', 'GOVERNMENT', 'NEWS', and 'CALENDAR & EVENTS'. Below the navigation bar, the page title is 'Drainage'. On the left, there are two main links: 'Read Six Frequently Asked Questions on Drainage Charges (PDF)' and 'DWSD Drainage Charge Credit Workshops for Nonresidential Property Owners and Engineers - November 9'. In the center, there is a 'CONTACT US' box with the email 'drainage@detroitmi.gov', phone number '313-267-8000', and fax number '313-964-9110'. On the right, there are three prominent buttons: 'PAY YOUR BILL', 'JOIN MAIL LIST', and 'Alerts and News'. At the bottom, there is a paragraph of text explaining that billions of gallons of storm water runoff and snow melt flow from roofs, sidewalks, parking lots, and similar hard, impervious surfaces into the City's combined sewer system, which is contaminated with dirt and debris.

Who is here?



- Who owns property or is a representative for a property owner?
- Do you own one parcel? More than one parcel?
- Do you own less than one acre? More than one acre?
- Did you get a letter about an unbilled parcel?
- Do you own property that you are planning to modify in the near future? Or are you a developer?



DRAINAGE CHARGE BASICS

One Common Rate



By January 2018, all property owners will be transitioned to a **uniform rate** based on impervious acreage. **Impervious cover** is hard surfaces such as rooftops, driveways, parking lots that cause storm water to run off. *Less impervious cover results in a lower charge.

**Drainage charge = Total impervious surface area of the parcel
x Impervious acre rate (dollars per acre per month)**

October 2016: DWSD launched **drainage charge credits** to reduce drainage bills and promote storm water management and green infrastructure.

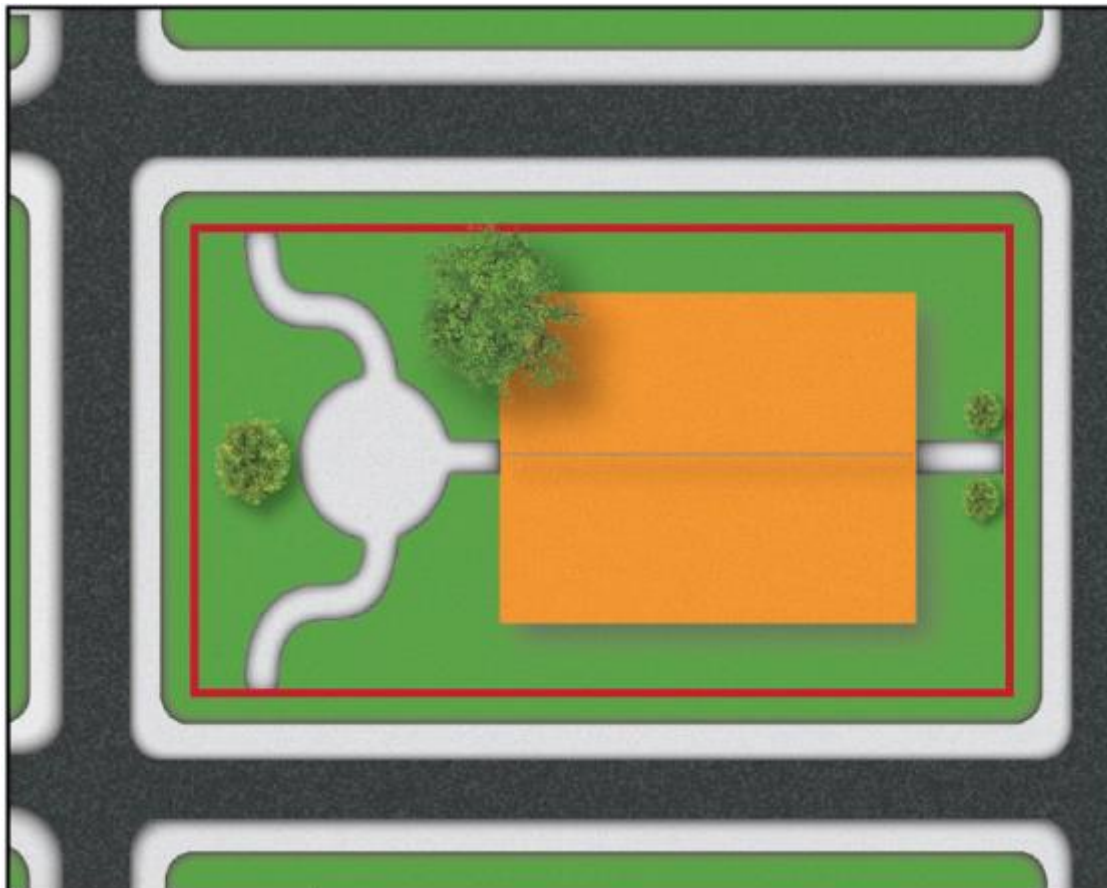


How Much Will It Cost?



Drainage Charge Bill Calculation is:

Monthly Rate × Number of Impervious Acres



— Parcel
Boundary

Impervious Areas:

□ Concrete

■ Building

Site Summary

Total Area: 4.06 acres

Impervious Area: 2.68 acres

Drainage Charge Rate: \$750.00/ imp. acre

Drainage Charge Calculations

Formula: Impervious Area x Drainage Charge

Application:

2.68 acres x \$750.00/imp. area = \$2,010.00/month

Impervious Surfaces

Impervious Cover



Pervious Surfaces

Not Impervious Cover



Impervious or Pervious?

- The following cover types are **PERVIOUS**, but may show as impervious in aerial photography:
 - Mulch (gardens, playgrounds, etc).
 - Landscaping gravel
- Compacted gravel or dirt is **impervious**. A gravel or dirt surface that is driven on will be treated as impervious.

How to Access Your Property Data



DWSD Parcel Viewer - <http://www.detroitmi.gov/drainage>

- Uses City Assessor's Office data
- Online Access Available 24/7
- Searchable by Property Address
- Total and Impervious Parcel Data Provided

What is the Impervious (Hard) Surface for My Property?

The **DWSD Parcel Viewer** allows you to search for parcel information by address. Impervious surface area is used to calculate drainage charges (some customers will be phased in over the next year). Open the **viewer** and type in your street address. DWSD uses data from the City of Detroit Assessor's Office and flyover images to determine the impervious surface for water runoff. If you disagree with the data, please complete the **drainage survey form**.

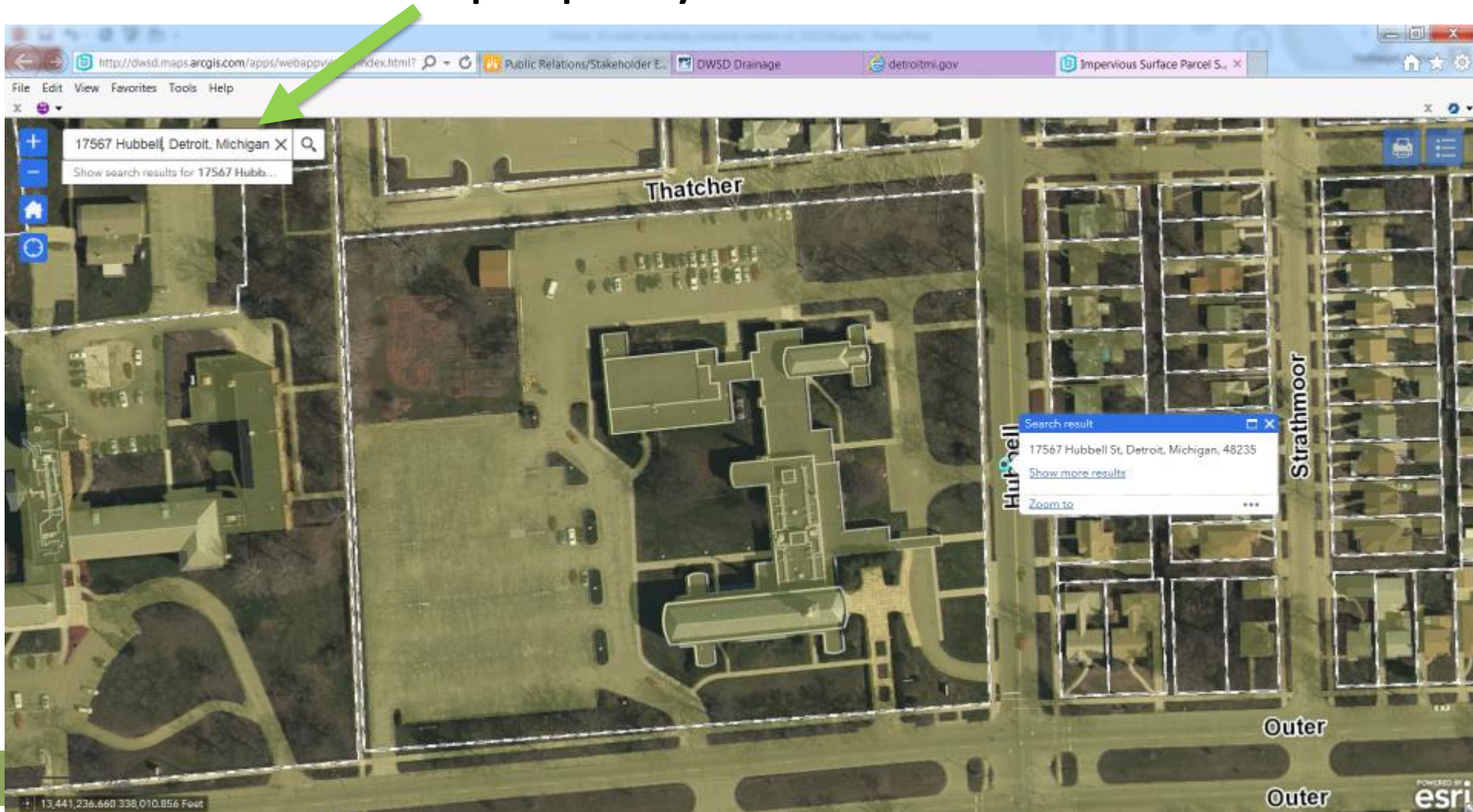


For Discussion Purposes Only

Address Search

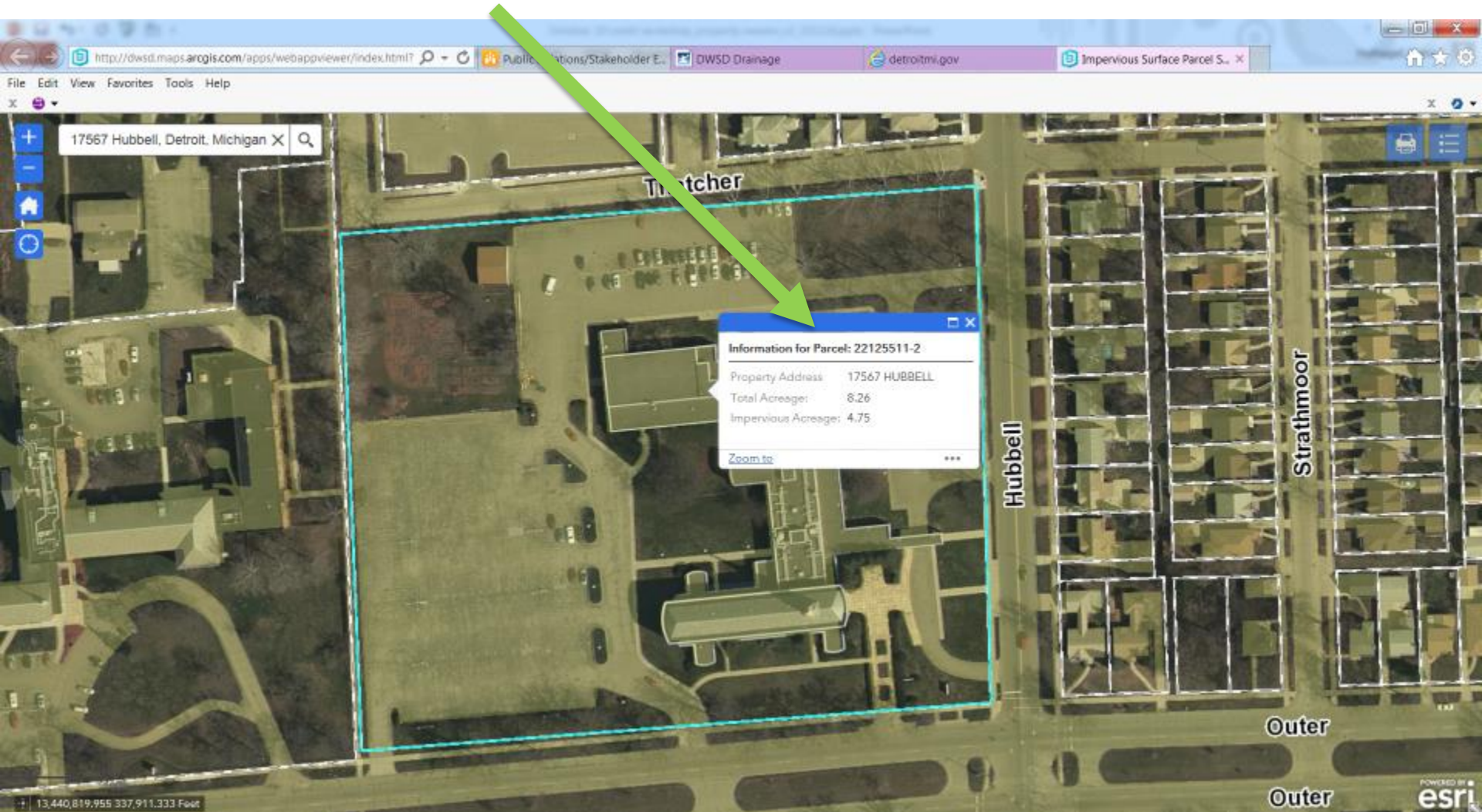


- User enters property address in search field



Property Specific Data

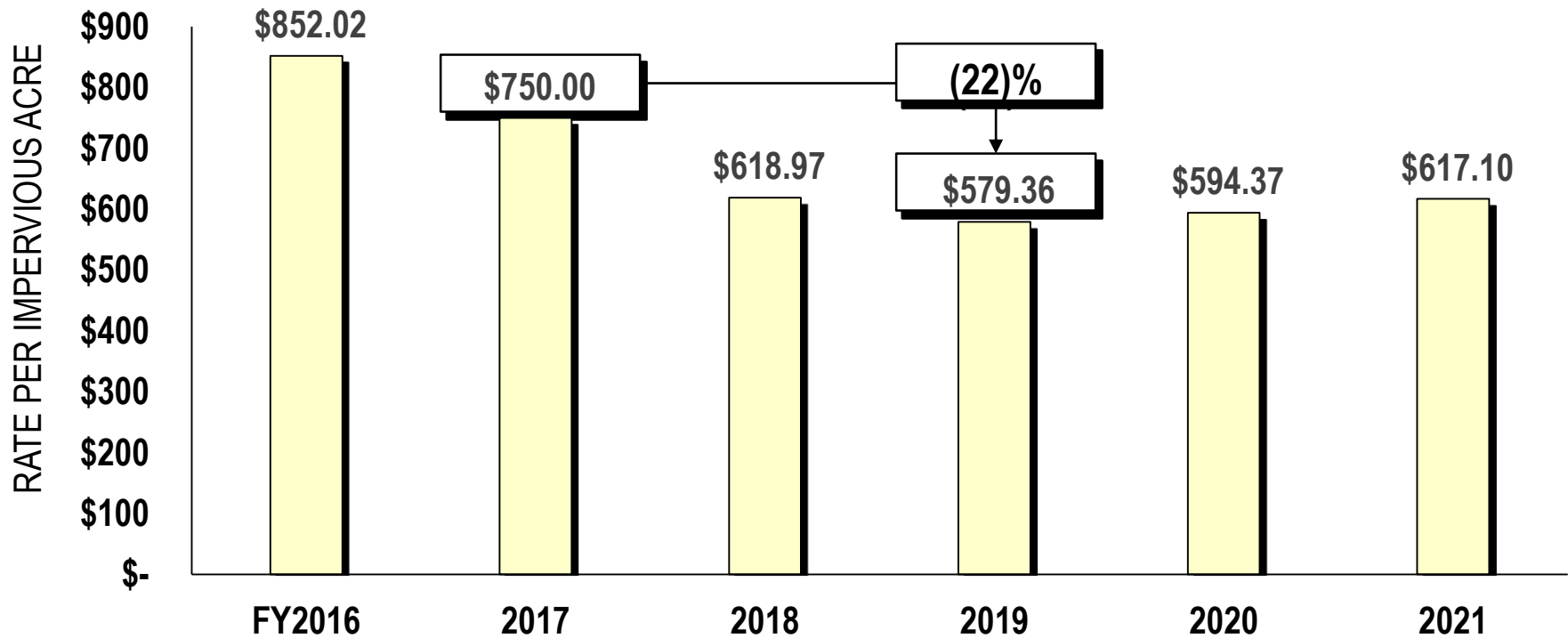
- User clicks on parcel for data



How much will it cost?

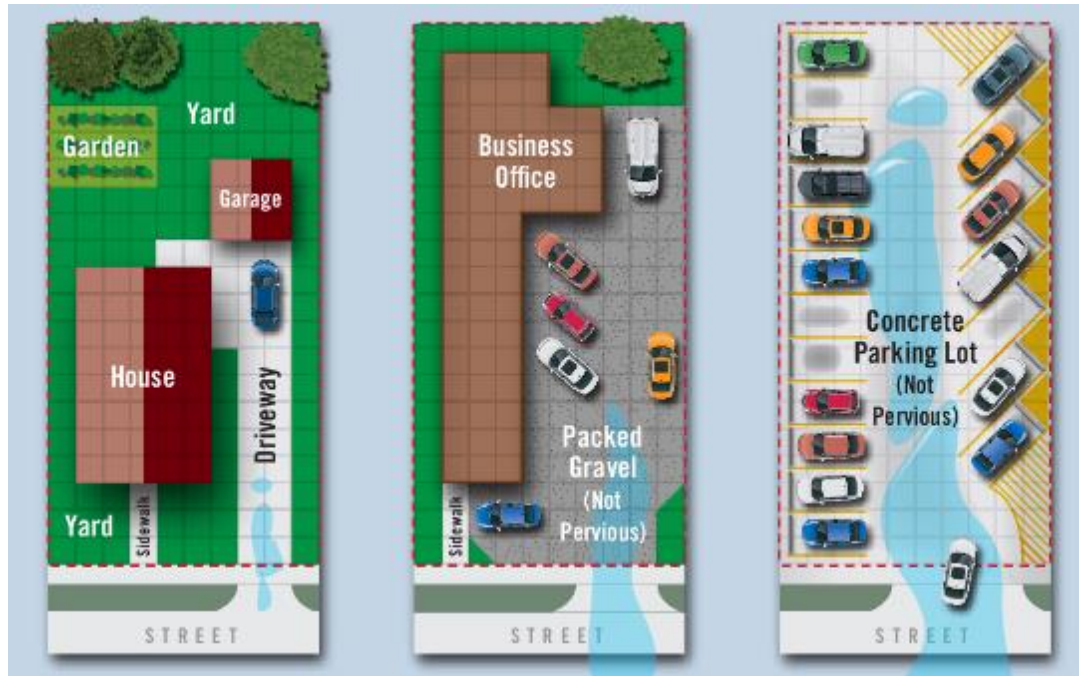
32% Estimated Rate Decrease Over 3 Years

ESTIMATED IMPERVIOUS PER ACRE CHARGE FY '16 – FY '21 ⁽¹⁾



(1) Before application of credits

How Much Will It Cost?

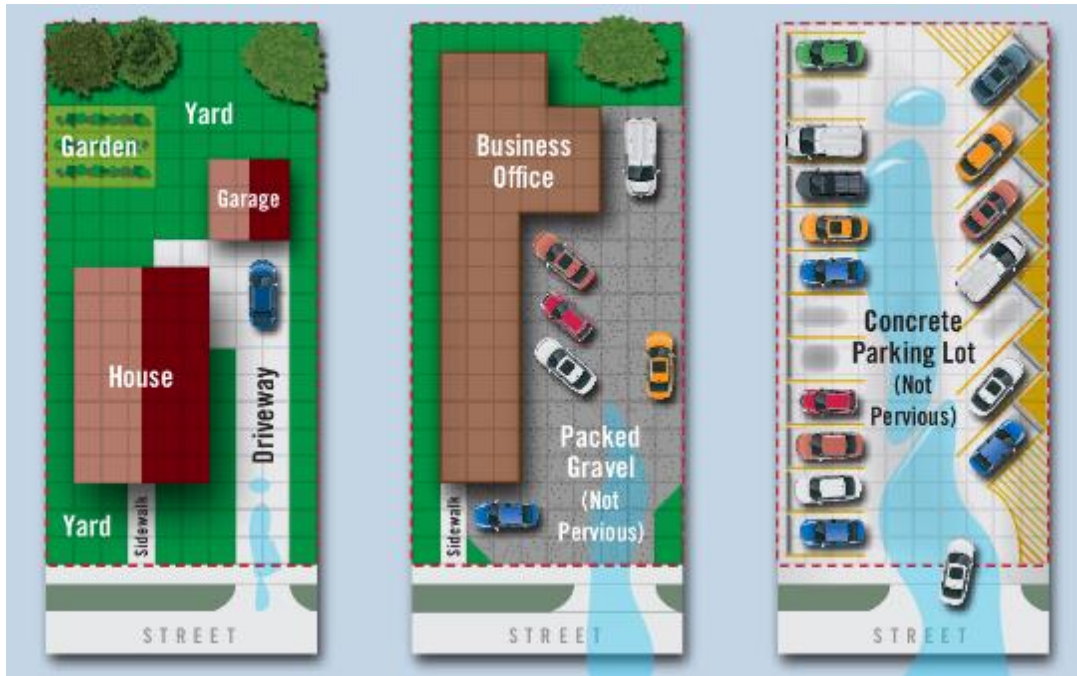


For a 1/2 acre site:
Approximate
size: 100 feet x
220 feet

| Site | Impervious Cover | Impervious Acres | Year 1 \$750/mo | Year 2 \$619/mo | Year 3 \$579/mo |
|------|------------------|------------------|--------------------|--------------------|--------------------|
| 1 | 37% | 0.18 | \$135 | \$111 | \$104 |
| 2 | 79% | 0.39 | \$292 | \$241 | \$226 |
| 3 | 100% | 0.50 | \$375 | \$310 | \$290 |

For Discussion Purposes Only

How Much Will It Cost?

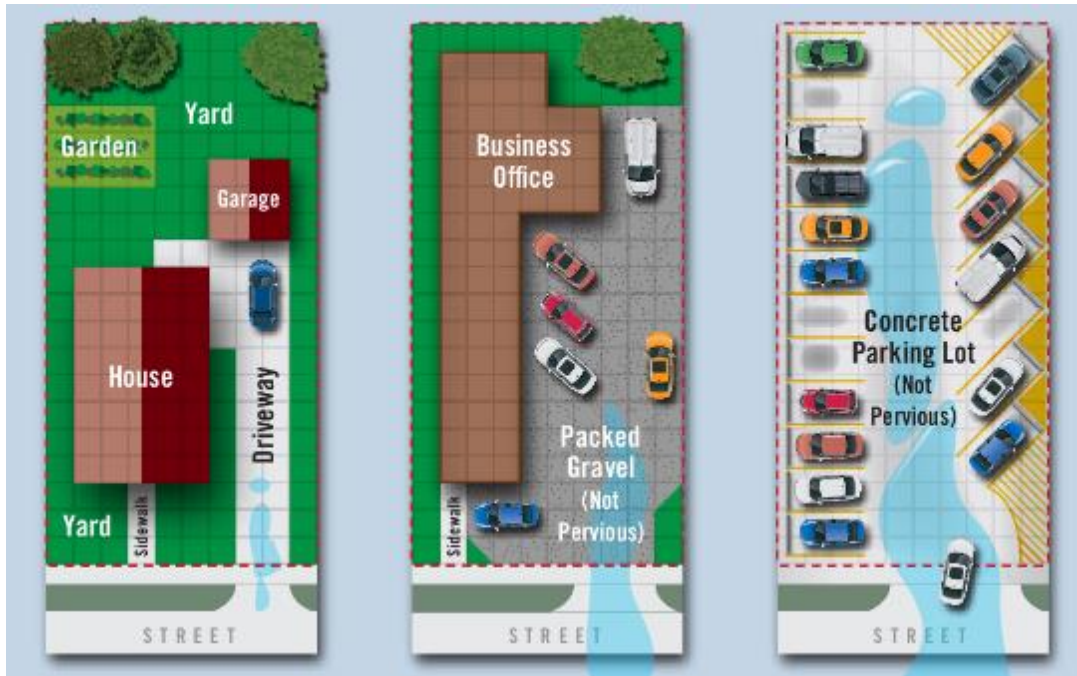


For a 1 acre site:
Approximate
size: 200 feet x
220 feet

| Site | Impervious Cover | Impervious Acres | Year 1 \$750/mo | Year 2 \$619/mo | Year 3 \$579/mo |
|------|------------------|------------------|--------------------|--------------------|--------------------|
| 1 | 37% | 0.37 | \$278 | \$229 | \$214 |
| 2 | 79% | 0.79 | \$593 | \$489 | \$457 |
| 3 | 100% | 1.0 | \$750 | \$619 | \$579 |

For Discussion Purposes Only

How Much Will It Cost?

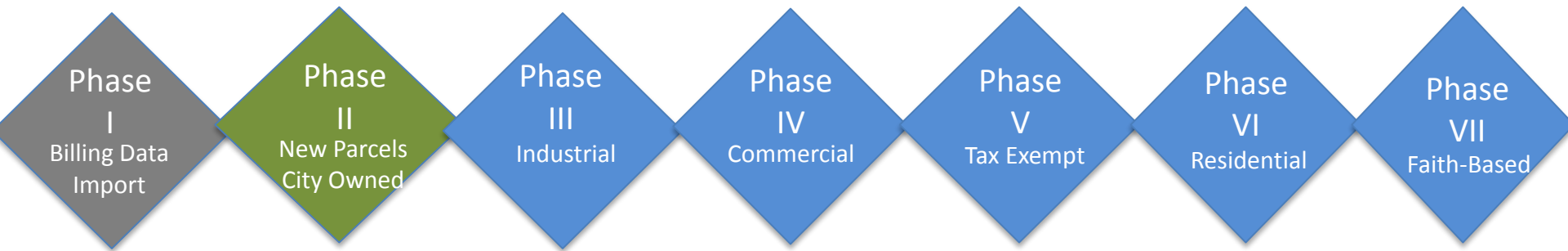


For a 10 acre site:
 Approximate size:
 660 feet x 660
 feet

| Site | Impervious Cover | Impervious Acres | Year 1 \$750/mo | Year 2 \$619/mo | Year 3 \$579/mo |
|------|------------------|------------------|--------------------|--------------------|--------------------|
| 1 | 37% | 3.70 | \$2,775 | \$2,290 | \$2,142 |
| 2 | 79% | 7.90 | \$5,925 | \$4,890 | \$4,574 |
| 3 | 100% | 10.00 | \$7,500 | \$6,190 | \$5,790 |

For Discussion Purposes Only

When is My Property Phased?



Target Dates:

July 2016 **October 2016** January 2017 April 2017 June 2017 October 2017 January 2018

- Parcels will convert to impervious acreage billing based on use classification
- Parcel based data – DWSD seeks owner input.
- The bill is issued the month following the accrual of charges
- Non-residential customers currently billed on a flat rate will receive a transition credit during the 2017 and 2018 fiscal years. All transition credits end in FY 2019.

IA = Impervious Acres. ISF = Impervious Square Foot



ADJUSTMENTS TO YOUR BILL

Impervious Area Changes



- If your site has changed or some area needs to be reclassified:
 - ✓ Complete Adjustment Form
 - ✓ Fill out Site Survey Form
 - ✓ Include Site Photos

Adjustment Forms



- ❑ Complete necessary forms
- ❑ Prepare supporting documentation
- ❑ DWSD makes necessary adjustments
- ❑ DWSD may perform a site visit to verify



Detroit Water and Sewerage Department
735 Randolph Street, Room 806
Detroit, MI 48226
313.267.8000 | drainage@detroitmi.gov

Drainage Charge Adjustment Application
(Please fill out one form per property)

Contact Information *(Please print or type)*

Property Owner: _____

Mailing Address: _____

Street Address City Zip

Phone: _____ Email: _____

Must match owner name in Assessor's parcel database. If different than owner, must provide Power of Attorney or proof of tenant.

Service Location Information *(Please print or type; use back if necessary)*

Service Address: _____

Parcel ID and _____

DWSD Account No: _____

For Non-Residential Customers: Please provide copy of Articles of Incorporation or equivalent document and EIN or TIN Number: _____

Reason for Adjustment Request:

Feel free to provide a brief description of the adjustment(s) you are requesting in the space below. Refer to the following page for common appeal types and required back-up documentation.

Impervious Cover Adjustment

Reference: A Guide to Drainage Charge Adjustments



DETROIT Water & Sewerage Department
 735 Randolph Street, Room 606
 Detroit, MI 48226
 313-267-6000 | drainage@detroitmi.gov

DRAINAGE AND GREEN CREDIT PROGRAM IMPERVIOUS COVER SURVEY FORM

SECTION 1 - PROPERTY INFORMATION

1. Name of the Firm _____

2. Address _____ Zip code _____ (area code) Phone _____ Principal Product or Business _____

3. Parcel ID _____ Account Number _____

4. Lot Size _____ feet x _____ feet
(If other than rectangular sketch all dimensions and angles on back of sheet)

OFFICE USE ONLY

SECTION 2 - BUILDING INFORMATION

| BUILDINGS | 1. | Size of Roof | Total | _____ | _____ | _____ | _____ |
|-----------|----|--------------|-------|-------|-------|-------|-------|
| | | | | feet | x | feet | |
| | 2. | Size of Roof | Total | _____ | _____ | _____ | _____ |
| | | | | feet | x | feet | |
| | 3. | Size of Roof | Total | _____ | _____ | _____ | _____ |
| | | | | feet | x | feet | |

SECTION 3 - PAVED / UNPAVED SURFACE INFORMATION

| SURFACES | PAVED | |
|----------|---|-------------|
| | _____ | _____ |
| | <input type="checkbox"/> Driveways/Parking Area | _____ |
| | <input type="checkbox"/> Sidewalks | _____ |
| | <input type="checkbox"/> Patio/Play Area | _____ |
| | Total | _____ |
| | | feet x feet |
| | UNPAVED | |
| | <input type="checkbox"/> Gravel | _____ |
| | <input type="checkbox"/> Bare Compacted Soil | _____ |
| | <input type="checkbox"/> Other _____ | _____ |
| | <input type="checkbox"/> Other _____ | _____ |
| | Total | _____ |
| | | feet x feet |

Give dimensions if 2 or more surfaces are checked. (1/over)



Direct River Discharge



- If you have a private storm sewer that discharges to the Detroit River or Rouge River:
 - ✓ Complete Adjustment Form
 - ✓ Fill out Site Survey Form
 - ✓ Include Site Photos



HOW TO: DATA REVIEW AND CORRECTION

Starting with Correct Data



- Data issues:
 - Parcel information (Assessor data base)
 - Ownership information (Assessor data base)
 - DWSD Account information (Owner name)
- Identification of Impervious Cover
- Changes in Impervious Cover

Data Action Plan

- Verify ownership and account information
- Understand your transition timing
- Determine eligibility for adjustments
- Submit forms to DWSD for account and impervious cover data fixes
- Contact Assessor Office for ownership data fixes

Step 1: Verify Ownership and Account Info



- Know what parcels you own and gather your bills
- Confirm a DWSD account for each parcel (*each parcel should have an existing account OR have received a new parcel letter*)
- Did you get a notification for a parcel you do NOT own?
- Confirm DWSD account information is correct

This may involve an iterative process between the customer, DWSD and the Assessor's office

Step 2: Understand Your Transition Timing



- For each parcel you own
 - Do you know the use class?
 - Review when it should be billed
 - Assist DWSD to identify faith based functioning parcels
- Consider consolidation if you own multiple parcels
- Schedule detailed review if necessary (complex sites, multiple parcels)

Step 3: Determine Eligibility for Adjustments



- Compare your data to what you know about your site
 - Look up site on parcel viewer
 - Type of cover
 - Impervious cover measurement
 - GIS Polygon offset
- Identify change in impervious cover
 - Modifications to site
 - Type of cover
 - Impervious cover measurement
 - GIS Polygon offset
- Identify direct discharge to surface waters

Step 4: Submit Forms



- Complete necessary forms
- Prepare supporting documentation
- DWSD makes necessary adjustments
- Determine if site visit is necessary



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Drainage Charge Adjustment Application
(Please fill out one form per property)

Contact Information *(Please print or type)*

Property Owner: _____

Mailing Address: _____

Street Address _____ City _____ Zip _____

Phone: _____ Email: _____

Must match owner name in Assessor's parcel database. If different than owner, must provide Power of Attorney or proof of tenant.

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OVERVIEW OF THE DRAINAGE CHARGE CREDIT PROGRAM

Detroit Drainage Credit System Purpose



Provide incentives for property owners to control storm water flows on site AND opportunities for property owners to reduce their bills

Detroit Drainage Credit System Benefits

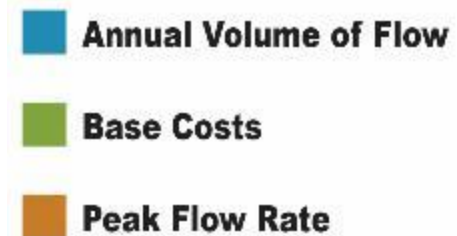
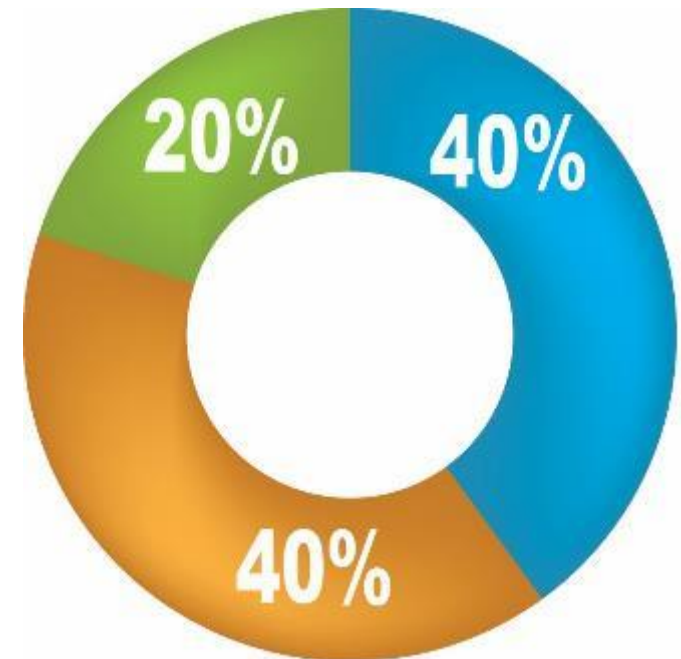


- The “System” Benefit
 - Reduce the amount of storm water that is treated at the Wastewater Treatment Plant
 - Reduce the amount of storm water that is treated at Combined Sewer Overflow (CSO) facilities
 - Defer additional CSO investment
 - Reduce overloading of sewer system
- Property Owner Benefit
 - Reduced drainage charge
 - Improved on site level of service
 - Contributes to a reduction in overall cost for DWSD – helps control future increases

Drainage Credit Components



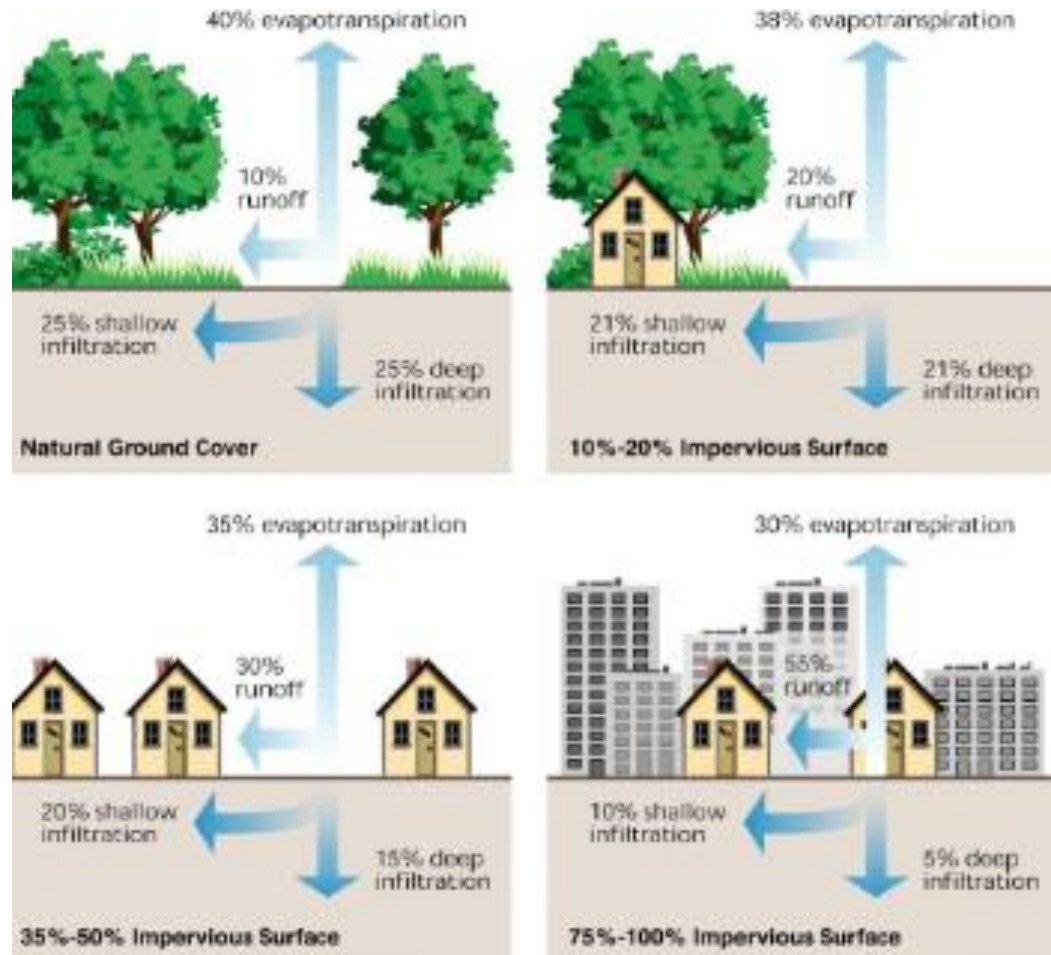
- Annual Volume of Flow
 - Reduced volume results in less treatment of storm water at the WWTP, and operation costs.
- Peak Flow Rate
 - Control of peak flows reduces the frequency at which CSO facilities operate and defers the need for additional facilities.
- Base Costs
 - DWSD must provide a sewer system, CSO and treatment capabilities for residual or potential discharges to the sewer system.



Annual Volume Explained

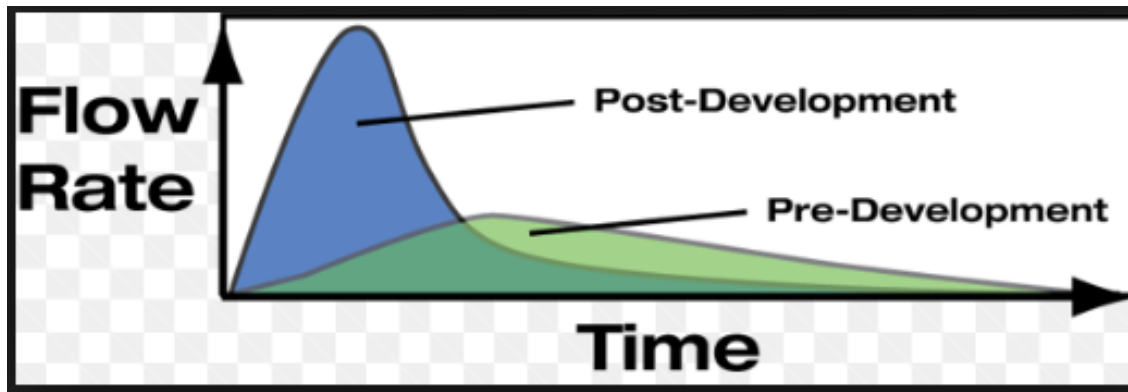


- Total yearly rainfall in Detroit: 31.90 inches
- Approximately 70 “events” per year
- 90% of these events (63) are less than 1-inch of rainfall
- Some of the rainfall is converted to runoff



Peak Flow Explained

- How fast the storm water runoff leaves your site and enters the sewer
- CSO Control is based on a 10-year storm event
- Flood control/level of service



Drainage Credit Methods

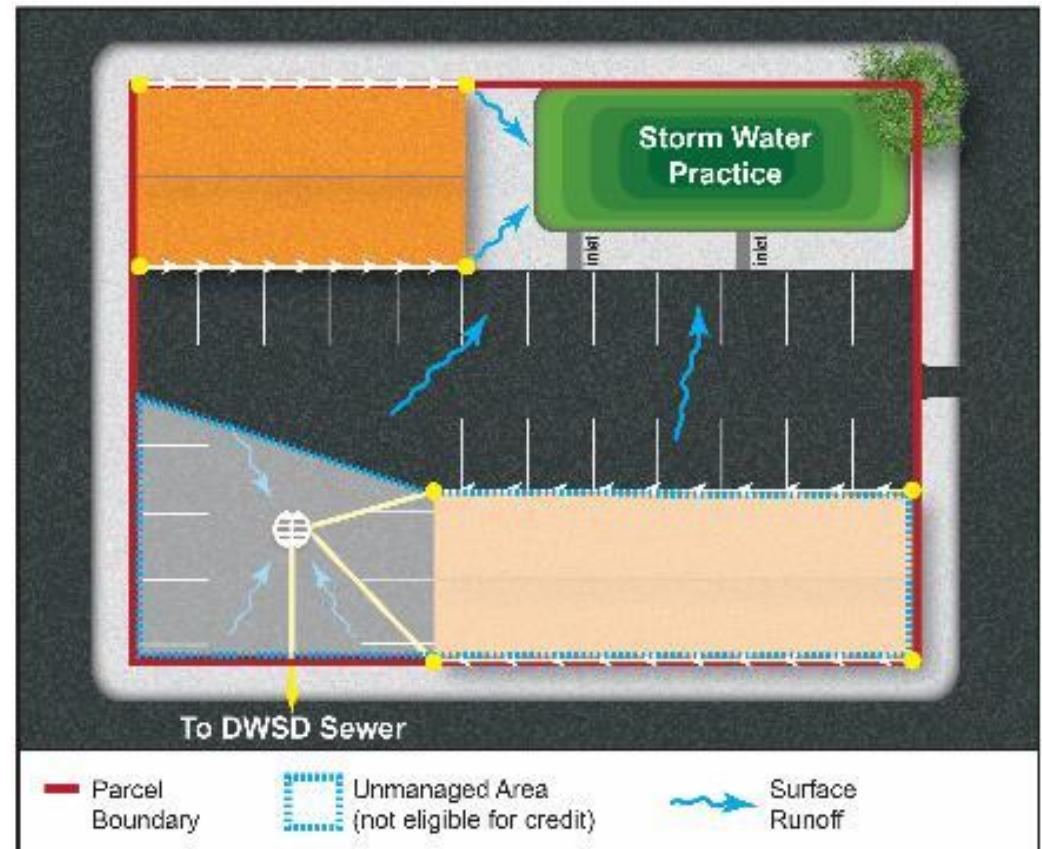


| | Volume Credit | Peak Flow Credit |
|-----------------------|---|---|
| Purpose | Reduce amount of storm water flow treated at WWTP | Reduce combined sewer overflows and operation of CSO facilities |
| How | Infiltrate, evaporate, reuse | Store temporarily, control flow rate to the sewer system |
| Based On | Average annual runoff removed (controlled) | Detention provided |
| How is it calculated? | $\frac{\text{Annual volume removed}}{\text{Annual volume generated}}$ | $\frac{\text{Detention provided}}{100 \text{ year detention required}}$ |

Drainage Credit Flexibility



- Partial Site
- Partial Control
- Volume management, peak flow management or both
- Multiple practices
- Credit is sliding scale



Drainage Credits for Various Storm Water Practices



Reference: A Guide to Drainage Charge Credits, pg.6

| Practice Type | Volume Credit | Peak Flow Credit | Potential Credit for Area Managed (%) |
|---|---------------|------------------|---------------------------------------|
| Downspout disconnection | X | | 0-40 |
| Disconnected impervious area | X | | 0-40 |
| Bioretention | X | X | 0-80 |
| Detention basins | | X | 0-40 |
| Subsurface detention storage | | X | 0-40 |
| Permeable pavements | X | X | 0-80 |
| Green roof | X | | 0-30 |
| Water harvesting* | X | X | 0-80 |
| *For water harvesting, peak flow volume evaluated on a case-by-case basis | | | |

Disconnected Downspouts

Potential Credit Value: 0-40%

- Redirect roof runoff to pervious area (lawn or bioretention)

Cannot:

- Create flooding OR
- discharge to right of way (ROW) OR
- discharge to neighboring property



Credit Tip: A downspout can go to lawn or a bioretention practice. Bioretention will have a greater credit for the same footprint.

Disconnected Impervious Area

Potential Credit Value: 0-40%

- Runoff from roofs, parking lots, sidewalks, driveways directed to pervious areas (lawn or landscaped area)

Cannot:

- create flooding OR
- discharge to right of way (i.e. street) OR
- discharge to neighboring property



Credit Tip: Larger ratios of pervious area to impervious area will result in higher credit percentages

Bioretention

Potential Credit Value: 0-80%



- Depressed area with layer of engineered soil, mulch, and/or vegetation to capture and infiltrate runoff
- May include underdrain
- Must drain below the ground within 24 hours



Credit Tip: Larger ratios of bioretention area to managed parcel area will result in higher credit percentages



Detention Basins

Potential Credit Value: 0-40%



Dry or wet ponds designed to temporarily store and slowly release runoff to the combined sewer system with a controlled outlet.



Credit Tip: Increase basin size; use stored water for irrigation to obtain a volume credit (up to additional 40%)



Subsurface Storage

Potential Credit Value: 0-40%



Serves same function as a detention basin but is located below ground in vaults, large-diameter or low profile storage pipes.



Credit Tip: Increase storage size; use stored water for irrigation to obtain a volume credit (up to additional 40%).

Permeable Pavement

Potential Credit Value: 0-80%



- Permeable pavement layer with an aggregate stone layer to infiltrate runoff
- May include underdrain
- Max standard (non-permeable) pavement to permeable pavement ratio is 4:1



Credit Tip: The more stone storage provided below pavement surface, the larger the credit can be.



Green Roof

Potential Credit Value: 0-30%

- Roof top with vegetation to absorb and filter rainfall
- May be connected to other storm water practices
- Must ensure roof can structurally support the vegetated system



Credit Tip: Increase the depth of the soil media to receive a larger credit.

Water Harvesting/Reuse

Potential Credit Value: 0-80%

- Large cisterns or rain barrels used to store runoff from impervious areas
- Water can be used for watering vegetation or greywater systems
- May be either above or below ground



Credit Tip: To increase the credit for a reuse system, implement multiple ways to reuse the water.

Identify Existing Credit Opportunities



CAYMC Green Roof



WCCC dry detention pond



Disconnected Imperviousness



Water Reuse

Existing Practices

- Do you have disconnected impervious area? It qualifies for a credit.
- Sites may already have some of the following:
 - Detention
 - Bioretention
 - Green Roofs
 - These require more involved calculations. See the reference material or speak to DWSD.



HOW TO: DISCONNECTED IMPERVIOUS CREDITS

Important Note



**Disconnected impervious areas
earn a **credit**.**

**Disconnected impervious areas
are **still charged** for drainage.**

A disconnected impervious surface allows runoff to flow onto lawn or other pervious surface.

As a result, some of the storm water soaks into the ground.



Example Impervious Surface Disconnection

Impervious Surface Disconnection Design Criteria Checklist

- Maximum Drainage Area length < 75 feet
- Minimum flow path at least 25 feet
- Has the practice area been calculated?
- Minimum practice ratio > 0.33 without gravel verge
- Minimum practice ratio > 0.15 with gravel verge
- Is impervious area entering the pervious area via sheet flow?
- Are any nuisance or hazardous conditions created?
- Is the impervious surface slope < 5%?
- Is the pervious practice area slope < 5%?
- Is the pervious practice area well vegetated?

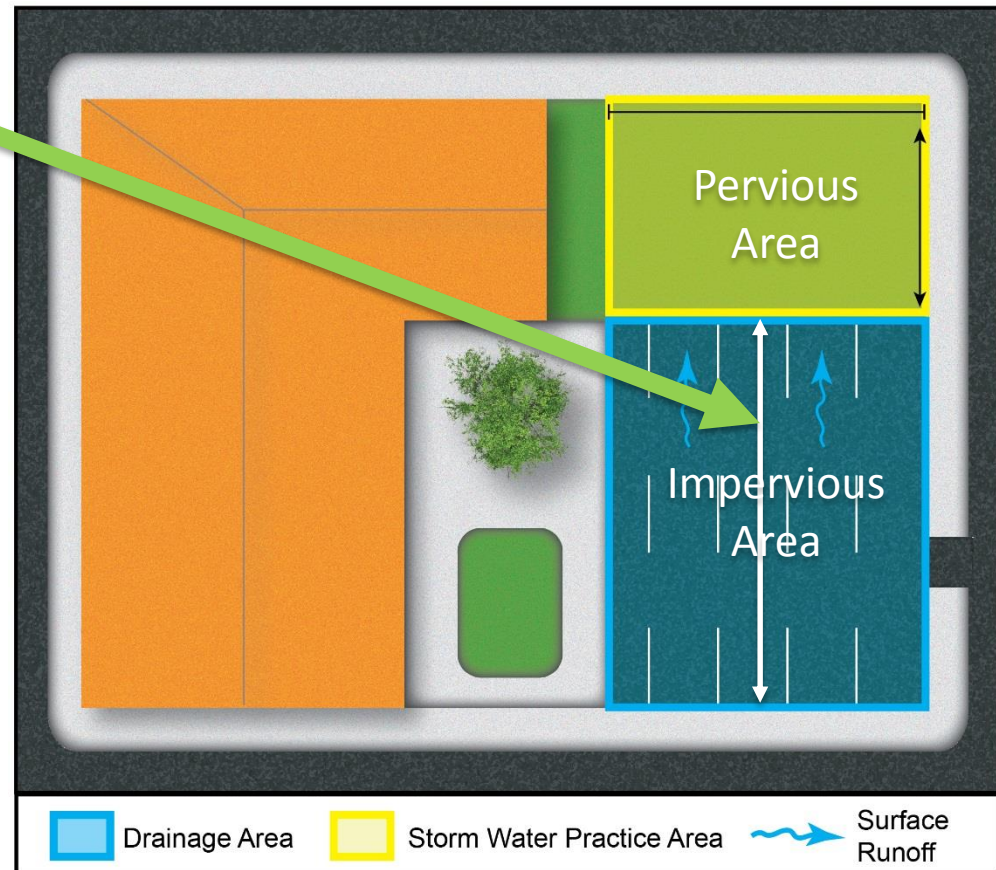
Maximum Drainage Area Length



Reference: A Guide to Credits for Commonly Used Storm Water Practices

1. Is the length of the impervious surface less than 75 feet?

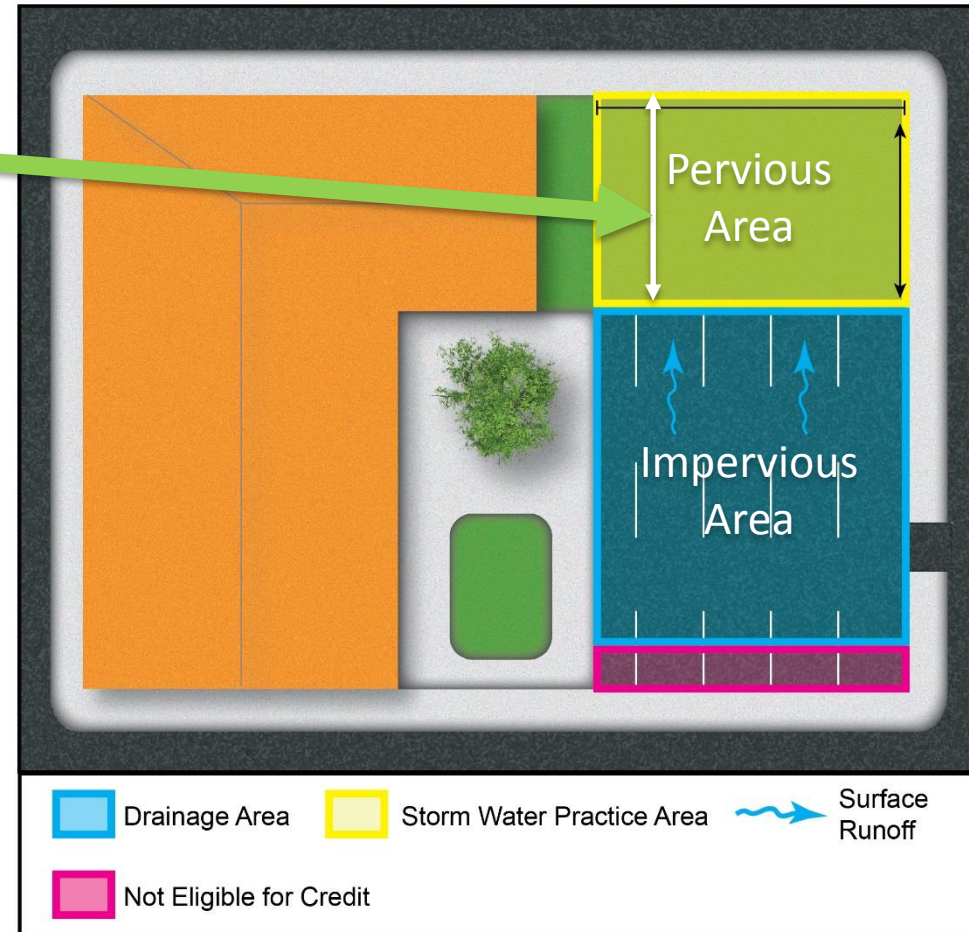
- If yes, then proceed to step 2.
- If no, then mark the 75 foot location and compute credit based on that portion of the impervious area.



Minimum Flow Path (Length)

2. Is the flow length across the pervious area at least 25' in length?

- If yes, then proceed to step 3.
- If no, then revise impervious drainage area length to equal the available pervious length



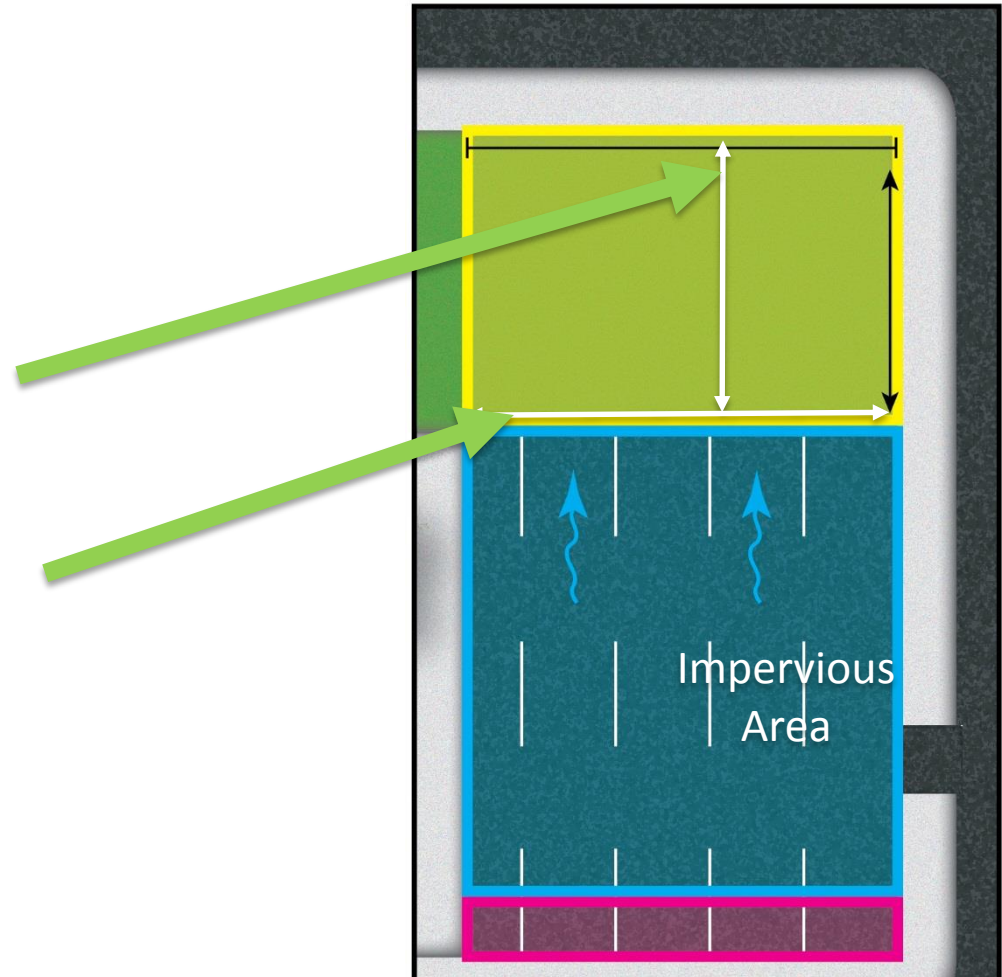
Practice Area Calculation



3. Determine the practice area

- Practice flow length: 25 feet
- Practice width (width of effective pervious area): 40 feet

The practice area must be on your property

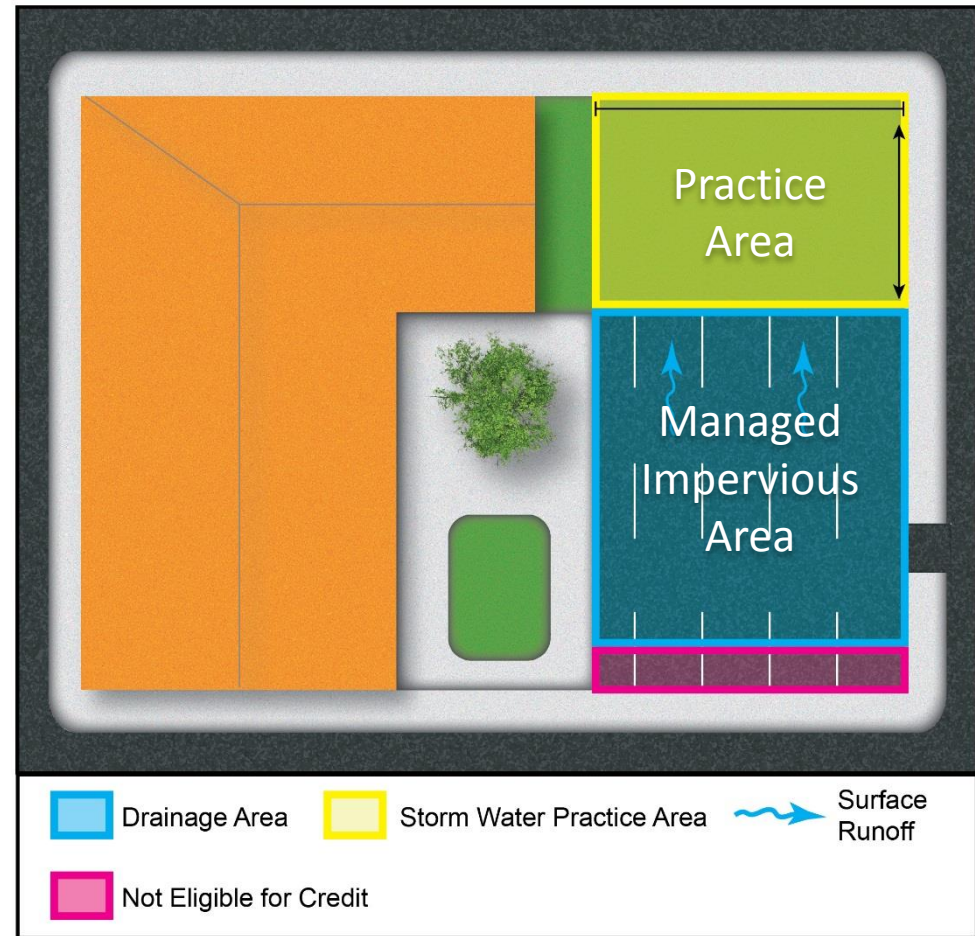


$$\text{Practice Area} = 25 \text{ feet} \times 40 \text{ feet} = 1,000 \text{ square feet}$$

Minimum Practice Ratio



4. Is the pervious (practice) area divided by the managed impervious area > 0.33 ?
- If yes, then proceed to step 5.
 - If no, then must decrease the tributary impervious area until the ratio is > 0.33 .



$$\frac{\text{Practice Area}}{\text{Managed Impervious Area}} = \frac{25 \text{ feet} \times 40 \text{ feet}}{75 \text{ feet} \times 40 \text{ feet}} = \frac{1,000}{3,000} = 0.33$$



Sheet Flow Conditions

5. Is the flow path from the impervious area to the pervious area sheet flow?
- If yes, then proceed to step 6.
 - If no, then a level spreader (flow dissipation) must be installed.



Check for Nuisance or Hazardous Conditions



6. Ensure that disconnected impervious practice is not a nuisance or hazard
 - a. Will flooding be a problem?
 - b. Will the practice create icing hazards?
 - c. Does the practice remain on private property?

Note: impervious area draining to the street is NOT disconnected imperviousness.

Slope Evaluation



7. Check to ensure that the slope of the impervious area AND the pervious area are less than 5% (1ft:20ft).



*The impervious area must drain ONTO the pervious area, as in shown in the photo on the left.

Practice Area Vegetation

8. Is the pervious area that is receiving the runoff from the impervious area well vegetated?





HOW TO: EASY RETROFITS

Easiest things you can do

Remove impervious cover

100%
Credit!



Photo Credit: www.depave.org

Easiest things you can do

Limit impervious cover on a site to what is needed



Easiest things you can do



Direct roof runoff to lawns or bioretention areas





HOW TO: GET INFORMATION

Technical Resources



1. Drainage Charge Manuals and documentation
2. Drainage Charge & Credit Workshops
3. Credit Calculator
4. Data Review Meetings & Data Packages
5. Technical Assistance “Office Hours” with DWSD
6. Site Assessments



DWSD “Office Hours”

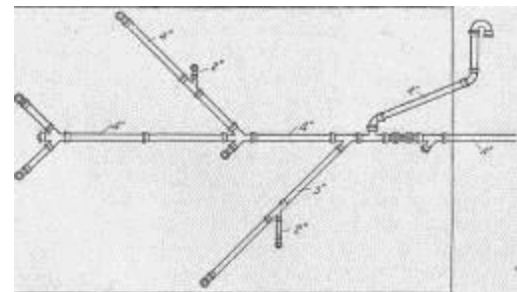


- What are office hours?
 - Opportunity for a property owner to come with information and ideas
 - Approximately one hour of time to brainstorm with an experienced storm water engineer about what you could do with your site
 - Property owner responsibility – come prepared
 - DWSD will help provide ideas and suggestions

Gathering Records and Information

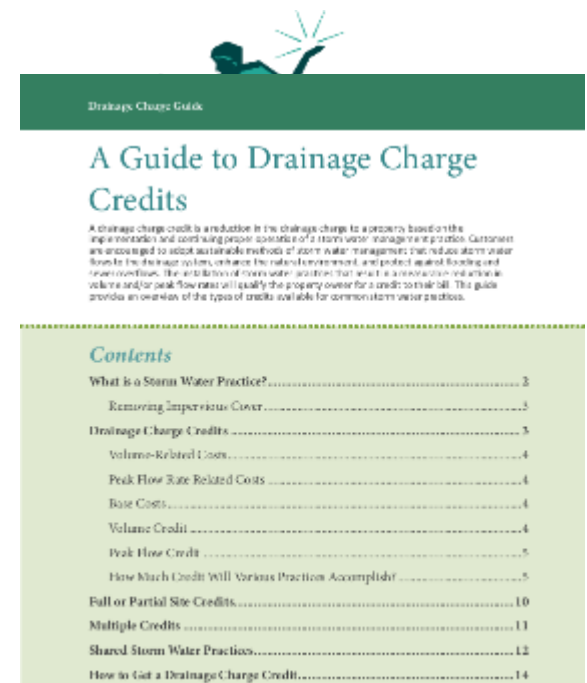


- Existing site plans
- Drawing(s) of the site's sewer system
- Building plumbing system(s)
- Documentation from soil infiltration testing or geotechnical testing
- Documentation from any environmental studies conducted at the site
- Construction documentation if site already has constructed storm water practices



Thinking About What You Want to do With Your Site

- Review “A Guide to Drainage Charge Credits”
- Areas of your site that cause issues (i.e. low areas in parking lots)
- Determine any spacing limitations or minimum size requirements
- Identify grassy areas that could serve as a drainage area



Creating a Site Plan



- Google earth image or better (can use parcel viewer) for disconnected surface areas
- ALTA survey, if available, can be used as base for site plan but not required
- Develop scaled plan with dimensions of existing land uses (i.e. buildings, parking lots, storage areas, landscaped areas)
- Identify impervious and pervious areas and general direction of flow
- Identify existing property lines

Site Evaluation Checklist



- ✓ Are there existing storm water practices?
- ✓ Consider areas where impervious cover can be removed
- ✓ Can impervious cover be disconnected? How does it slope?
- ✓ Can storm water from roof areas or parking areas be directed to pervious areas?
- ✓ Are there opportunities for new storm water practices?
- ✓ Are you interested in and ready for “office hours”?



HOW TO: SELF SITE EVALUATION

Looking at Your Roof


- Non-residential buildings often have various roof lines.
- Identify distinct sections of a building.
- Identify how they are drained.





MICHIGAN
DENTAL
ASSOCIATION



 CAPITOL BANCORP
CORPORATION

Roof Drain Types

External downspout...



Roof Drain Types



Wall discharge



Internal





Can often trace the pipes visually inside the building



Roof and Sanitary Pipes



Separate leaving building...



Combined within building...



... Separate within building,
combined leaving

DRIVE →
TO #220/214

PARKING AREA / ST. PAUL'S

28.6' x 53'

4" or 6" TRAPPED

- CONFIRMED LEADS IN CB'S
- DISCHARGE OUTLET UNKNOWN
- INLET SOURCE(S) UNKNOWN
- DOES NOT OUTLET TO OTTAWA SANITARY

DOWNSPOUT TO SANITARY

AS TO LOWER ROOF

ROOF APERTURE FLAT

CHECK ROOF AREA FOR DRAINS

#214

#220

COURTYARD

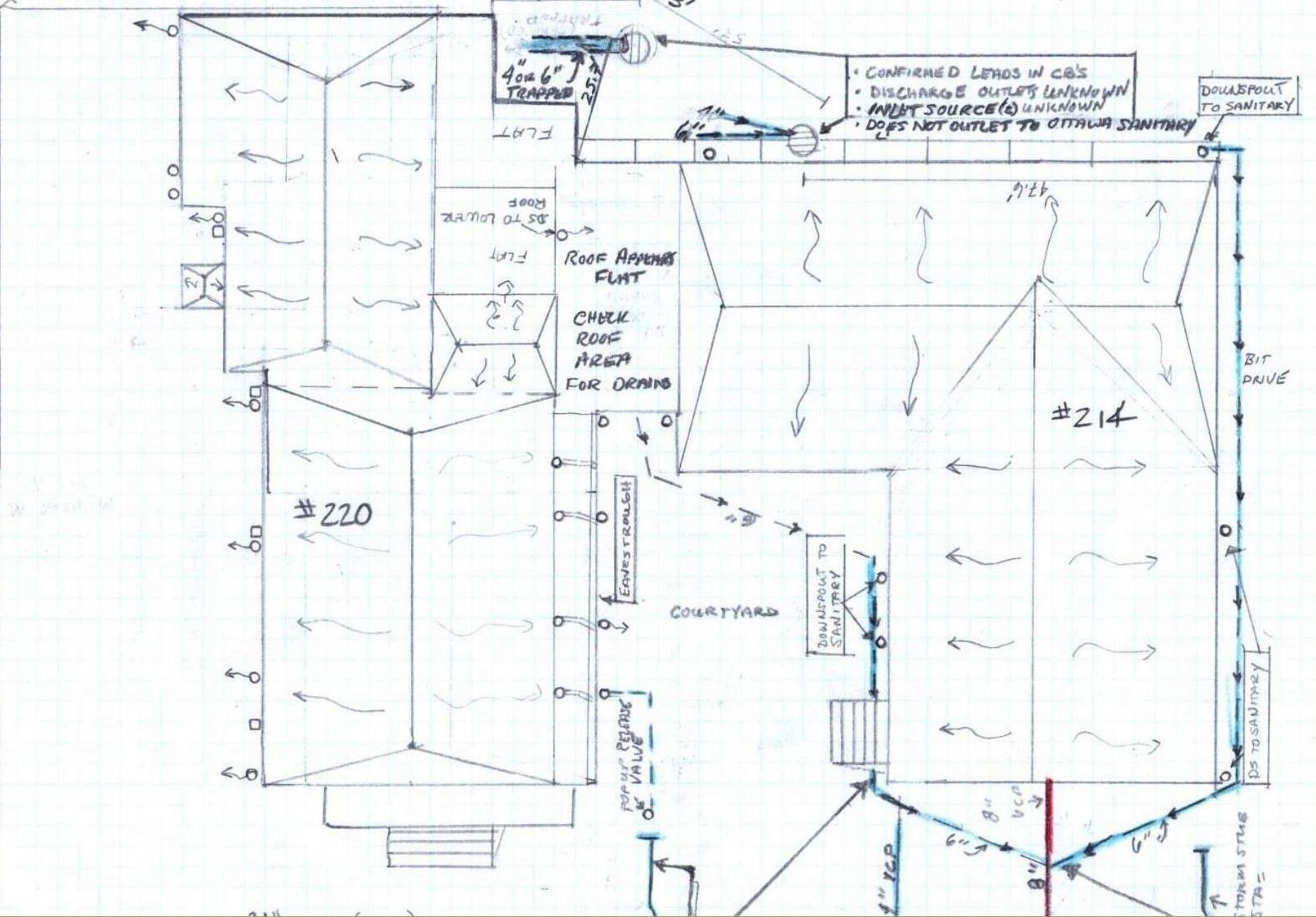
DOWNSPOUT TO SANITARY

POP UP RELEASE VALVE

DS TO SANITARY

FORM STUB STR =

BIT DRIVE



Summary of Roof Inspection



- Assess whether your roof is pitched or flat
- Identify downspouts and roof drains
- Look at how internal plumbing tracks through your building
- Draw a map
- BE SAFE!
- Get a plumbers help if needed



What Can You Do With the Water from a Roof?



- Consider which areas are easiest to address
- Redirect discharge to:
 - Lawn
 - Cistern
 - Infiltration trench
 - Bioretention
 - Permeable pavement aggregate
 - Detention pond



For Discussion Pur



Looking at Your Parking



- Location of drainage structures/catch basins
- Determine direction of flow (on the surface of the parking area)
- Note any noticeable hills, or dips or where storm water ponds



How Does your Lot Drain?



- Does it slope to the interior?
- Does it slope to the exterior?



- Are the site sewers separate or combined sewers?
- Are they private or public sewers?



Understanding Your Parking Lot



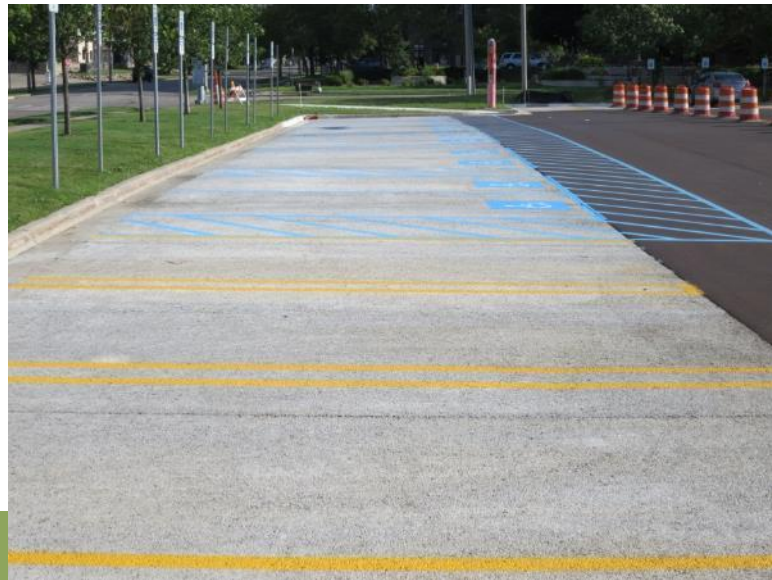
- Verify number of spaces in parking lot and size of each parking space.
- Compare to City requirements for minimum number of parking spaces required for your land use
- <http://www.detroitmi.gov/Portals/0/docs/BSEE%20-%20Zoning/Ch61Mar012016.pdf> The parking schedule is in Sec. 61.14.21. Parking space dimension information is found at Sec. 61.14.151.

What Can You Do With the Storm Water from a Parking Lot?



- Identify which areas are easiest to address
- Consider:
 - Smaller parking lot
 - Bioretention
 - Permeable pavement
 - Detention pond

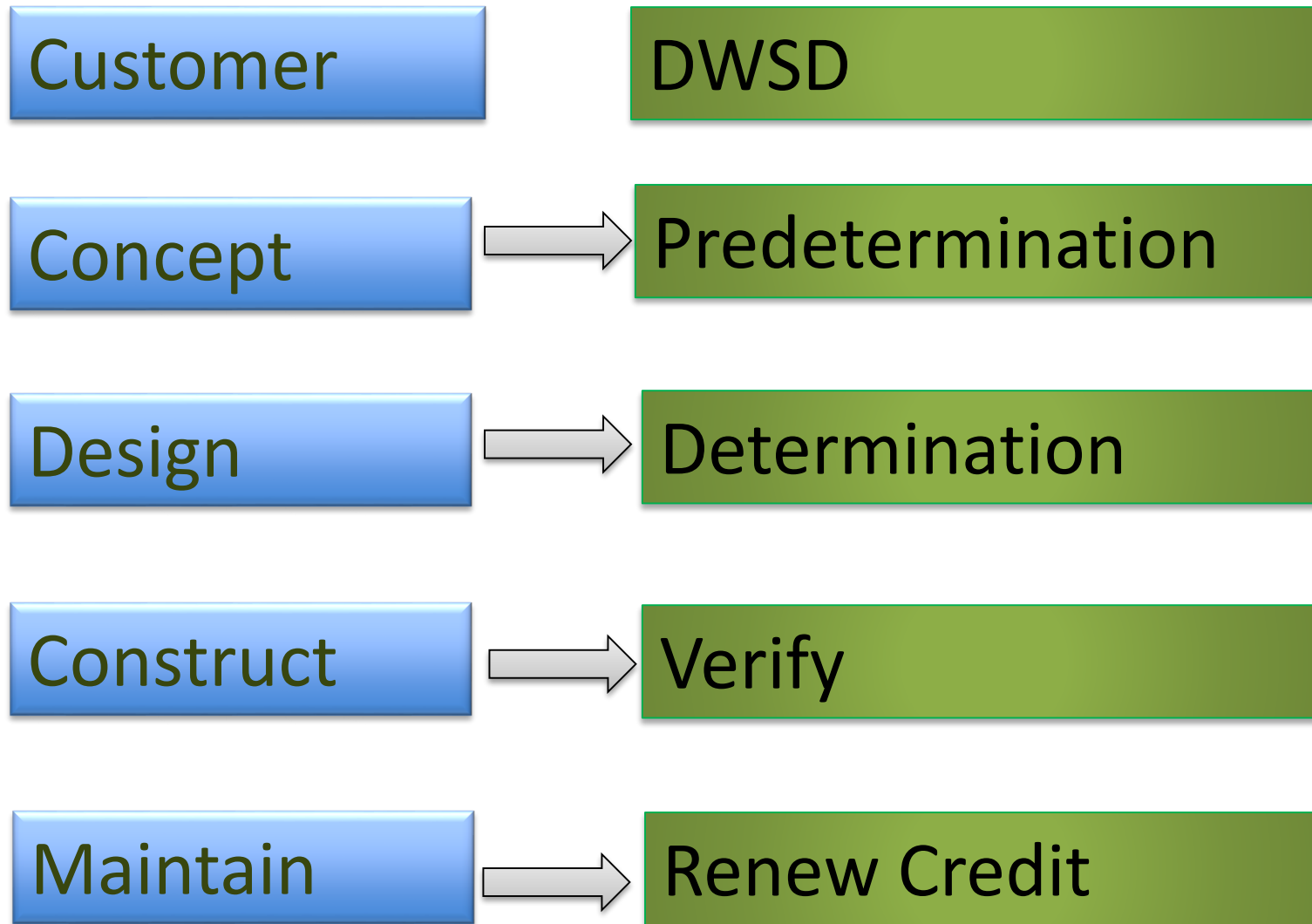
Parking Lot Management





HOW TO: APPLY FOR A CREDIT

General Process (New Practices)



Credit Application Data



Applicant and Property Information

- Property owner information
- Service location, include parcel ID, account #

Credit Summary Data

- Storm water practice(s) information
- Calculated credit percentages, peak flow and volume

Supporting Documentation

- Calculations, including infiltration rates, groundwater depth
- Construction plans

What to Provide

- ✓ Scaled site plan delineating drainage areas to each practice (sketch for disconnected impervious areas.)
- ✓ Plumbing drawings for roof drainage modifications.
- ✓ Sewer system defined. Detailed plan of proposed sewers and proposed connection(s) to DWSD sewers.
- ✓ Geotechnical investigation results.
- ✓ Environmental history of the site.
- ✓ Complete engineering drawings, details, specifications.
- ✓ List of required permit(s).



YOUR CREDIT ACTION PLAN

Your Credit Action Plan

- Validate Parcel and Billing Property Data
- Make Impervious Adjustments
- Apply for Credits for Which You Currently Qualify
- Do a Self Site Assessment
- Meet with DWSD During Office Hours
- Assess New Storm Water Management Opportunities
 - Identify the Area of Your Property You Can or Want to Manage (Green More, Pay Less)
 - Identify the storm water practices you can use
- Prepare and Submit Credit Application



Website:

www.detroitmi.gov/drainage

Email (recommended):

drainage@detroitmi.gov

Phone Number:

313-267-8000, follow prompts



facebook.com/DWSDDetroit



@DetroitWaterDep



@detroitwatersewerage

Extra Slides



DRAINAGE CHARGE PROGRAM OVERVIEW

The New DWSD



Detroit, suburbs reach water deal



Detroit Water and Sewerage Department is offering **Lead and Copper Testing**



Detroit Water & Sewerage New Customer Care Policies

Effective April 4, 2016

The Detroit Water and Sewerage Department (DWSD) is introducing NEW Customer Care policies for newly joining NEW users.

Required documentation:

- Valid public Government issued Driver's license, Security Number:
 - Driver's license - State issued ID
 - Passport - Military ID

Home services requirements:

- Proper home insurance registered on the account. Proof of Ownership or W/ED lease agreement to establish or to establish new service at the property.
- Landlords cannot register service in tenant's name.

How to pay bills:

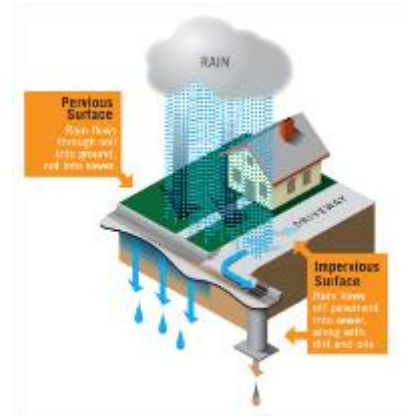
Customers can pay bills using one of the following methods:

- Call - Money Order
- Credit Card - Debit Card
- ADD (see information)

Detroit Water & Sewerage DWSD
<http://www.detroitmi.gov/dwgsd>



DWSD mobilizes city-wide effort to address flooding



Drainage Charge

Bringing Green Infrastructure to Vacant Lots in the Cody Rouge Neighborhood



“Fair Share” Video



https://youtu.be/qw-z_O6Z6fc

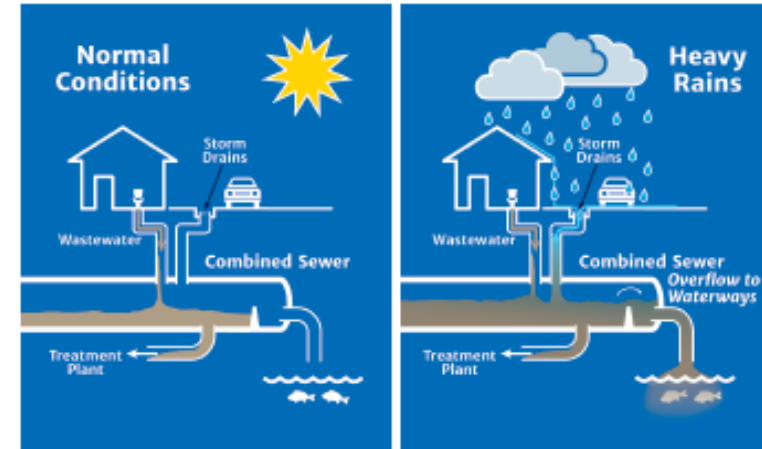
“Fair Share” Drainage Charge



Since 1975, DWSD has charged customers for drainage.

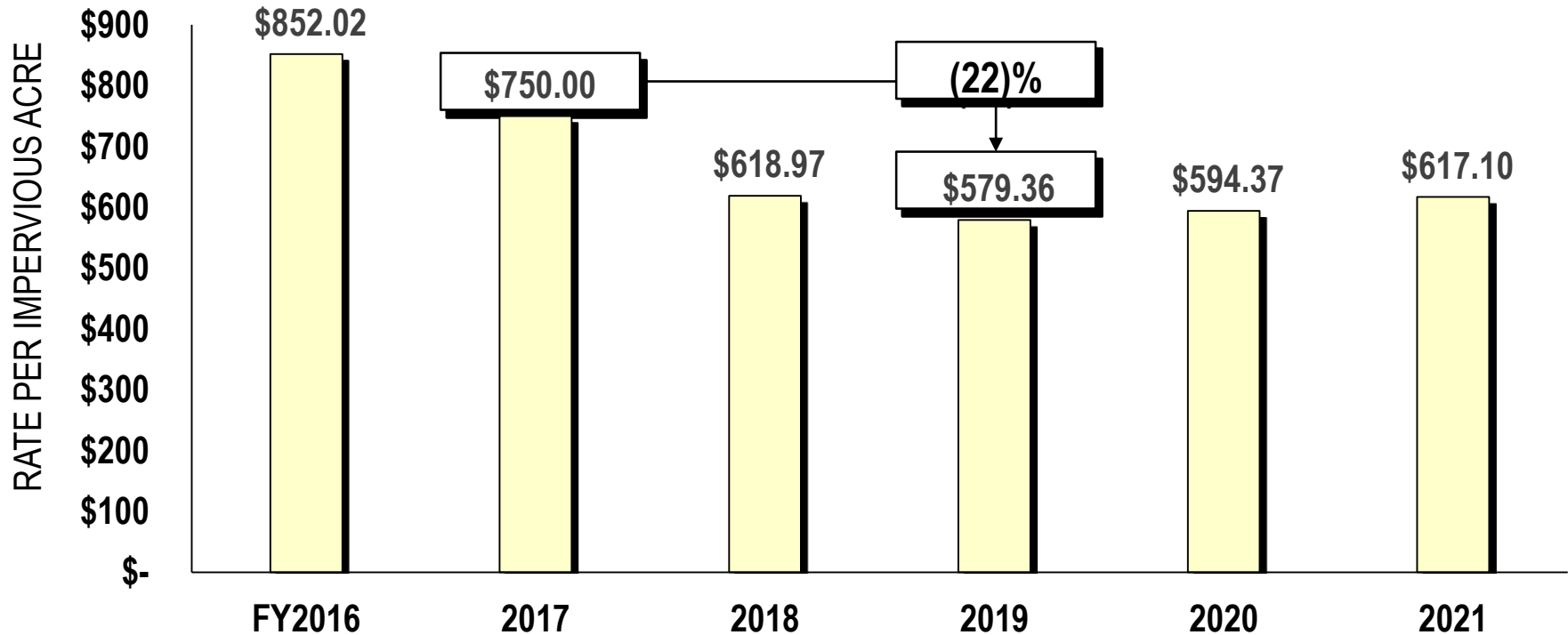
DWSD incurs **more than \$125 million each year** to store, transport and treat billions of gallons of storm water runoff and snowmelt that flow into the city’s **combined sewer system**.

DWSD invested **\$1 billion** in Combined Sewer Overflow facilities (CSOs). May be required to invest in additional facilities, costing everyone more.



32% Rate Decrease Over 3 Years

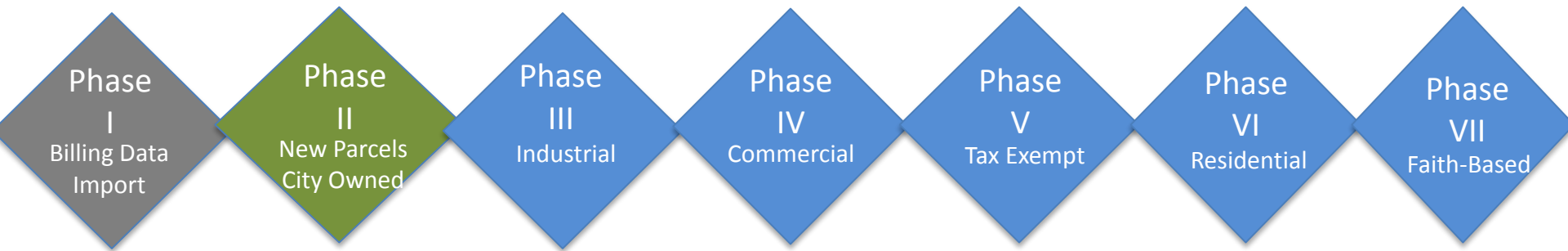
ESTIMATED IMPERVIOUS PER ACRE CHARGE FY '16 – FY '21 ⁽¹⁾



| | | | | | |
|----------------------|-------|-------|-------|-------|-------|
| Incremental Acreage | 1,937 | 4,701 | - | - | - |
| Transition Costs | \$6.5 | \$2.0 | \$0.0 | \$0.0 | \$0.0 |
| Incremental Bad Debt | \$6.5 | \$4.6 | \$4.1 | \$3.2 | \$3.4 |

⁽¹⁾ Before application of credits

Phasing Plan



Target Dates:

July 2016 October 2016 January 2017 April 2017 June 2017 October 2017 January 2018

- Parcels will convert to impervious acreage billing based on zoning classification
- “New” parcels charged \$750/IA or \$0.017/ISF per month starting October 2016
- By 2018, all customers pay same rate based on impervious acreage

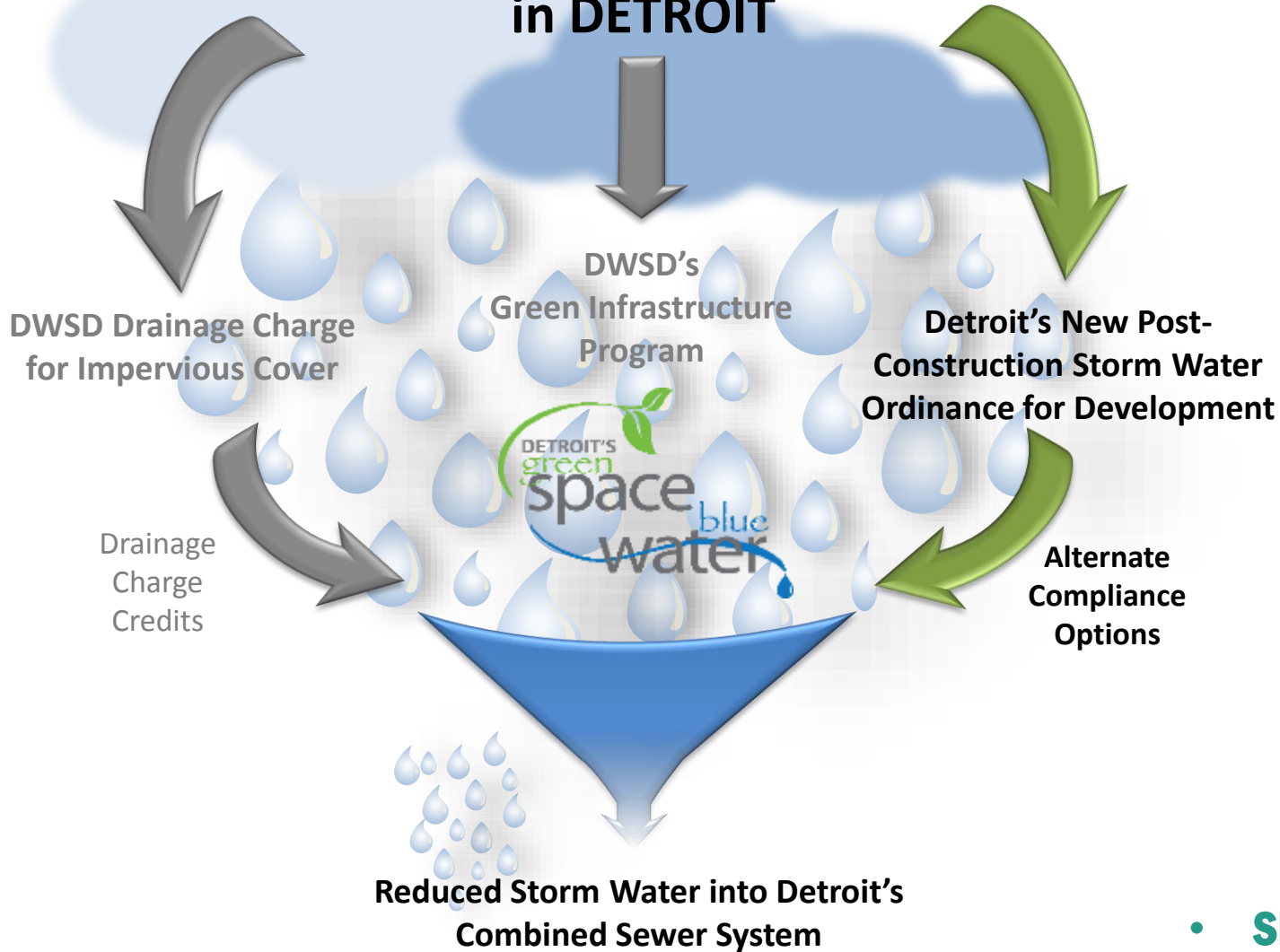
IA = Impervious Acres. ISF = Impervious Square Foot

Storm Water Vocabulary



- Storm Water – rainfall and snowmelt
- Impervious – a hard surface (rooftops, driveways, parking lots) that prevents or limit water from soaking into the ground
- Combined Sewers – the drains that collect and transport wastewater from homes and businesses along with storm water runoff from impervious surfaces (i.e. roofs and parking lots) during wet weather in a single pipe
- Drainage Charge – the component of the DWSD sewage bill that recovers property’s share of costs associated with operating Detroit’s combined sewer system and drainage infrastructure
- Green (Storm Water) Infrastructure – practices that prevent or slow storm water from entering the combined sewers; alternative to traditional pipes and underground sewers.

Programs for Better STORM WATER MANAGEMENT in DETROIT



- **LESS TREATMENT**
- **CLEANER WATER**
- **SHARED INVESTMENTS**

Consider making this table with the more detailed information as a handout and use the simplified slide (see next slide) in the presentation



Technical Support

| Technical Assistance Effort | Description | Available to |
|---|---|---|
| Manuals and documentation | DWSD Drainage Charge technical resources available | All. www.detroitmi.gov/drainage |
| Drainage Charge Workshops | Drainage charge information, adjustments and credits. | All property owners and interested parties. |
| Engineers and Design Professionals Workshop | Technical workshop on drainage charge credits | Intended for a technical audience. Open to all interested parties. |
| Data Review Meetings | Review of property data, billing history and site specific bill calculation | All property owners, prefer after drainage charge workshop. |
| Technical Assistance Meetings | Informal site specific discussion of potential options for drainage charge credits. | All property owners that have attended a drainage charge workshop. |
| Data packages for property owners | Provide data packages for property owners in a form that supports their evaluations. | All property owners of sites > 2 acres and their representatives |
| Site Assessments | No cost consulting engineering services that identify options for storm water management. | Limited availability. Customers must meet eligibility criteria. Program under development |