Stormwater Code & Ordinance Review & Update Project: Stakeholder & Agency Group Meeting

March 24, 2021

Agenda

1) Welcome
2) Project update
3) Final code/policy recommendations
4) Next steps

Project Objectives

- **Update City Stormwater Management Code (Title 13)**
  - Consolidate stormwater related content scattered throughout City Code
  - Eliminate conflicts and overlap
  - Align development requirements with City/PWSA goals and objectives including regulatory compliance goals
- **Develop New Technical Resources for Stormwater**
  - Stormwater Design Manual
  - Updates to PWSA Developer Manual
- **Provide Process Improvement Recommendations and Cost Evaluation**
  - Stormwater Plan Review, Inspection, and Enforcement
  - Other stormwater-related roles and responsibilities between agencies

Project Update - Schedule

Project Update – Work to Date

- Review of SWM-related code and technical guidance
- Review of regulatory requirements including new 2020 MS4 permit
- Mapping and analysis of current review/approval processes related to SWM and land development approvals
- Mapping and analysis of current SWM construction closeout, inspection, and enforcement processes
- Agency staff and stakeholder input:
  - Agency Workgroup meetings
  - Agency staff interviews
  - Stakeholder Group meeting, survey, and focus group
  - Public-facing project website with survey
- Technical analysis and development of policy recommendations
- **Final policy recommendations incorporating feedback, comments, and additional analysis**

Code/Policy Recommendation Topics

Process improvements

Technical changes

Alternative compliance, trading, equity, and incentives

Inspection and enforcement

Two-Step Approval Process

Recommendation

Two-step stormwater plan review/approval process:

1. Conceptual review – Prerequisite for ROZA
2. Final technical review – Prerequisite for Building or Land Ops Permit

Why?

- Early identification of opportunities and deficiencies associated with current one-step process.
- Eliminate need for final stormwater design to get ROZA.

Changes to Recommendation

- No changes to prerequisite requirements for ROZA, Building Permits, or Land Ops Permits.

Coordination with Plumbing Permit Requirements

Recommendation

Improve SW Plan review coordination with ACHD plumbing code/permit requirements:

- Alignment and referencing of design requirements.
- Pre-plumbing permit application coordination.
- Prerequisite SWM approval for plumbing permit.

Why?

Eliminate changes to SWM designs that occur after city approval to receive plumbing permits.

Changes to Recommendation

No changes to recommendations.

Land Operations Permit

Recommendation

Clarify and better align Land Operations Permit requirements with stormwater code:

- Add 10,000 SF of earth disturbance and 5,000 SF increase in impervious area as permit thresholds.
- Add references of overlap with SWM thresholds in Building Code (Title 10) and city website.
- Add SW Plan review sign-off to land operations permit application.

Why?

Clarify relationship between land operations and SWM code requirements and align thresholds.

Changes to Recommendation

- No changes to Land Ops Permit thresholds.
- No changes to prerequisite requirements for Land Ops Permits.

Small Project Stormwater Review

Recommendation

Eliminate small project stormwater review or encourage in-lieu fee for projects of this size.

Perform additional analysis on the need for lower earth disturbance thresholds in targeted areas with flooding and basement backup issues.

Why?

- Smaller BMPs are more expensive to build and maintain per area managed then larger BMPs.
- Reduce risks of long-term performance and O&M issues and related burden on city inspection and enforcement resources for limited benefit.

Changes to Recommendation

- No in-lieu fee requirement for projects that previously triggered small project stormwater review.

Discussion: Process Improvements

Recommendations

- Two-step stormwater plan review/approval process.
- Improve SW Plan review coordination with ACHD plumbing code/permit requirements.
- Clarify and better align Land Operations Permit requirements with stormwater code.
- Eliminate small project stormwater review or encourage in-lieu fee for projects of this size.
- Perform additional analysis on the need for lower earth disturbance thresholds in targeted areas with flooding and basement backup issues.

Filtration in Separate Sewer Areas

Recommendation

Add filtration requirement to code for non-infiltrating BMPs, with design guidance in Stormwater Design Manual to target Commonwealth designated pollutants of concern for impaired waters in Pittsburgh.

Why?

Align developer requirements with City/PWSA regulatory requirements.

Ensure receiving waters are not impaired by MS4 discharges from developers and Pittsburgh/PWSA MS4 investments are not negated by discharges from development.

Changes to Recommendation

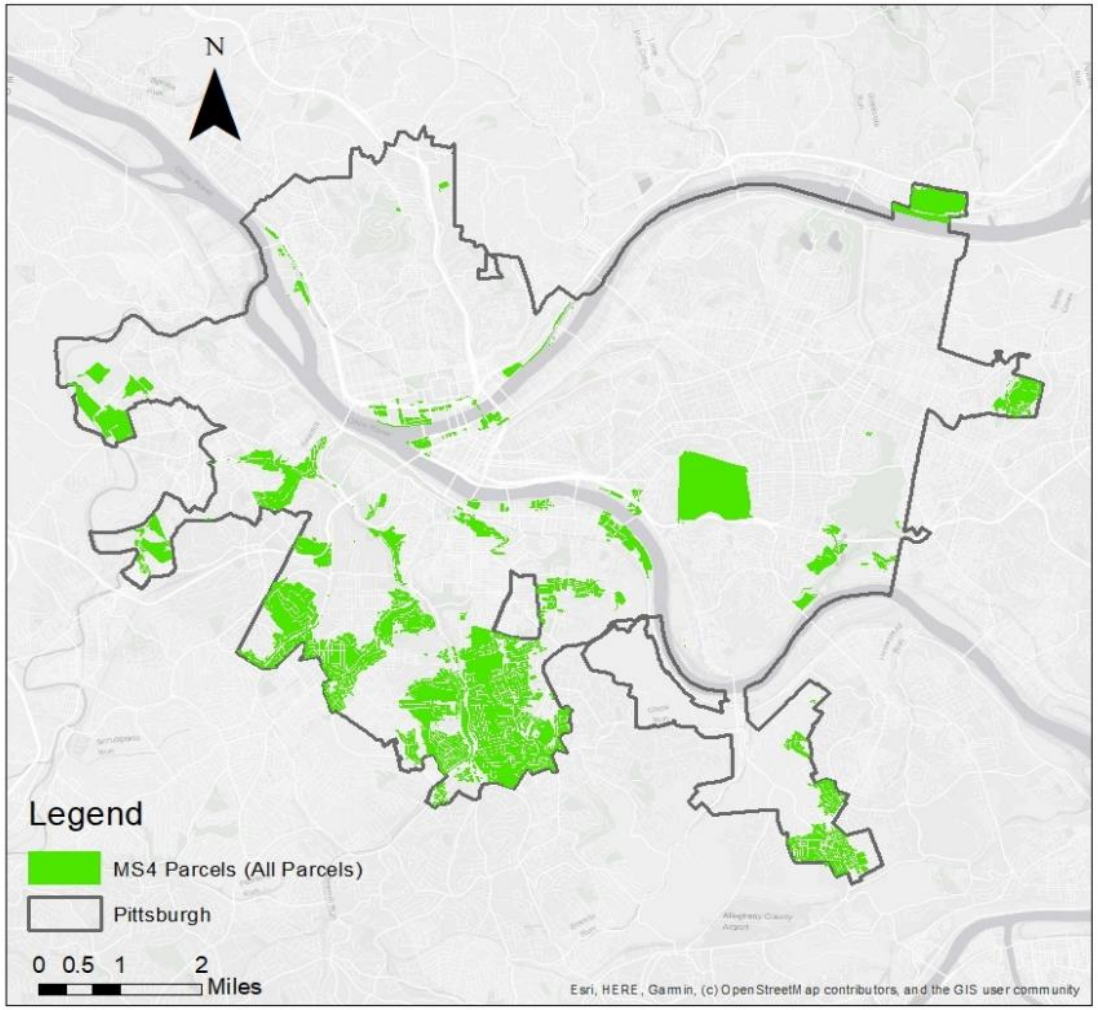
No update to recommendation.

Cost analysis of filtration devices performed.

Filtration in Separate Sewer Areas

Mapped locations of parcels in City of Pittsburgh MS4 areas.

Approximately 15% of the City.



Filtration in Separate Sewer Areas Cost Analysis

Cost analysis scenario

- Discharge to a MS4/stream with a TMDL for nutrients (i.e. Saw Mill Run watershed)
- Subsurface soils unable to infiltrate on site (cannot remove the stormwater)
- Subsurface modular storage system to meet volume and rate requirements (No physical space for surface green infrastructure features to achieve filtration)
- Subsurface modular system would be unable to treat nutrients by itself.

Example Filtration Device	Install Location	Installed Cost 0.10 Ac	Installed Cost 0.99 Ac
Jellyfish® Filter	After Storage	$29,000	$33,000
StormFilter®	After Storage	$29,000	$40,000
StormBasin™ Plus - Heavy Metals or Nutrient Cartridges	Storm Catch Basin	$2,000	$25,000
StormBasin™ BMP - Heavy Metals or Nutrient Cartridges	Storm Catch Basin	$3,000	$30,000

Assumptions for StormBasin Devices:
1 catch basin needed for 0.10 Ac Site
5 catch basins needed for 0.99 Ac Site

Sanitary Sewer Inflow

Initial Recommendation

Add code to require upkeep of private laterals (Title 4 with reference in Title 13).

Require liners, utility offsets, and other best practices in areas of high inflow and infiltration in Stormwater Design Manual.

PWSA develop mapping of areas of high inflow and infiltration for inclusion within Stormwater Design Manual.

Why?

Reduce stormwater contributions to inflow and infiltration.

Changes to Recommendation

Focus on utility protection guidance rather than rely on area wide I&I mapping.

Climate Change

Recommendation

Require the use of future climate rainfall projections for design of SWM BMPs.

- 8% to 23% increase in rainfall depth depending on storm frequency (CMU).
- 13% increase of 95th percentile rainfall depth.

Consider developer incentives to meet longer term climate projections.

Why?

Reduce flooding and basement backups.

Changes to Recommendation

Performed marginal cost analysis between existing rainfall estimates and future climate change rainfall estimates.

Climate Change

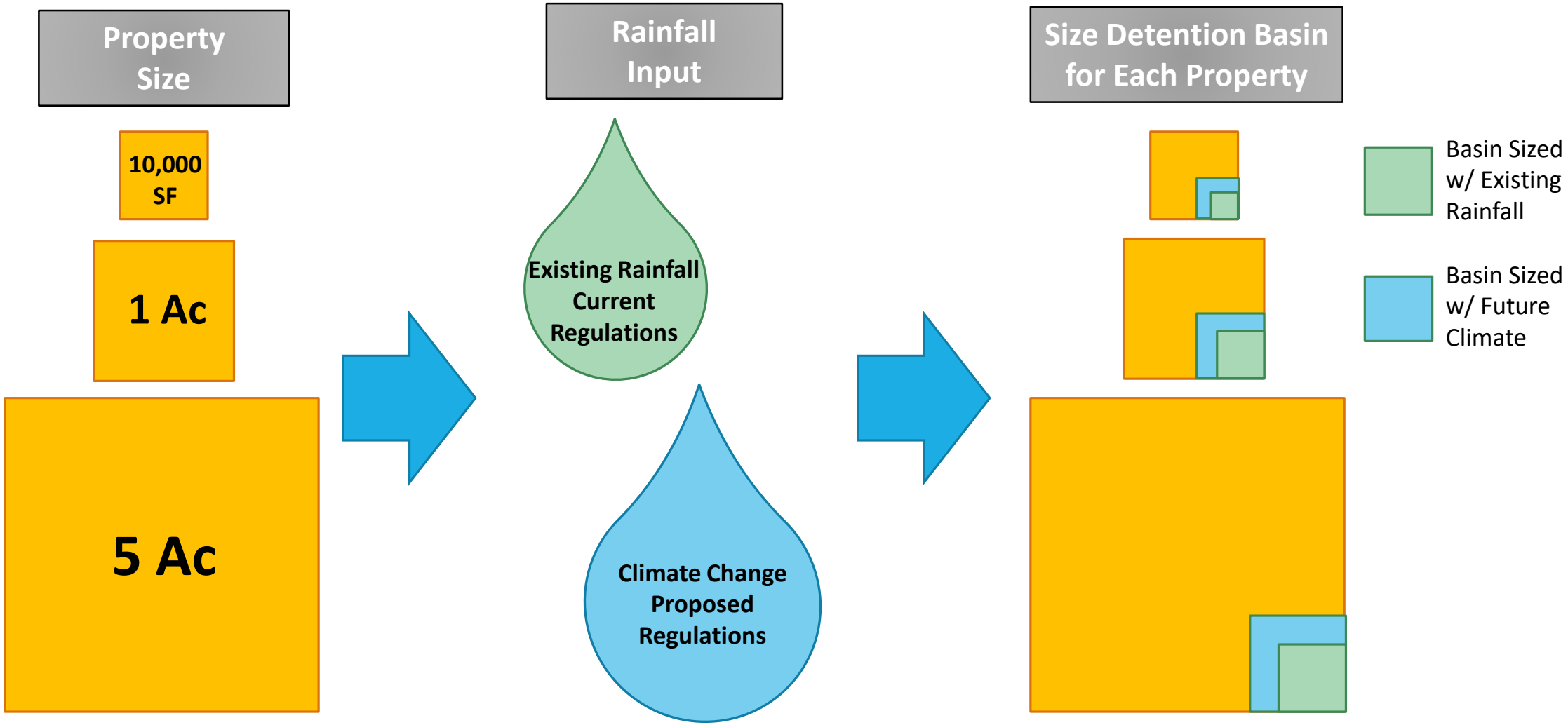
§ 1303.03 Volume Controls:

Require the 95th percentile with future climate change projection for all regulated activities.

§ 1303.04 Rate Controls:

Peak flow rate for the post development using future climate change rainfall projections shall not exceed peak flow rate for the pre-development using NOAA Atlas 14 for the 1 through 100-year, 24 hour rainfall events.

Climate Change Cost Analysis Methodology



Climate Change Marginal Cost Analysis

Cost Increase Results

Property Size	Cost Increase	Cost Increase Per Acre
10,000 sq. ft.	$9,000 - $10,000	$39,000 - $44,000
1 Acre	$20,000 - $38,000	$20,000 - $38,000
5 Acre	$94,000 - $157,000	$19,000 - $31,000

Note:
The low value represents a low existing impervious area lot with a 25% increase in impervious area post development.
The high value represents a high existing impervious area lot with a 100% increase in impervious area post development.

Public Health and Safety Release Rate

Recommendation

Additional peak rate controls for target watersheds prone to flooding and basement backups.

Regulated activities would be required to reduce post development 10-year, 24-hour peak flow with climate change projections to the pre-development 2-year, 24-hour event peak flow using existing rainfall estimates.

Why?

To reduce flooding and to protect health and safety of downstream residents in known flood prone areass.

Public Health and Safety Release Rate

Summary of Methodology

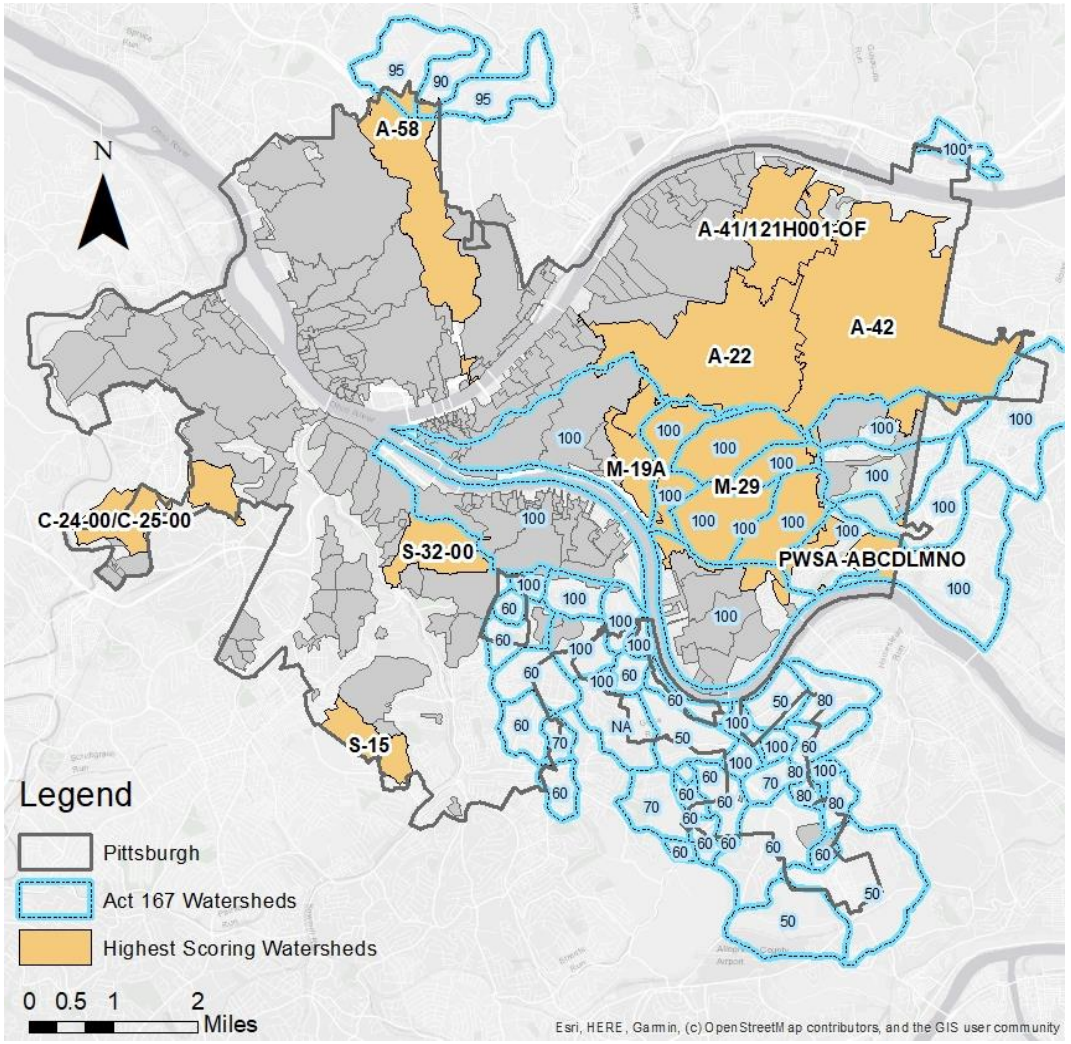
Ranked the combined watersheds using a flood susceptibility score that used:

- PWSA flooding complaint database
- Existing hydraulic model capacity analysis

Highest scoring watersheds subject to public health and safety release rate requirements. ~25% of the area of the City.

Overlap with Act 167 watersheds.

- Already have release rate in place
- Public Health and Safety to supplement, not replace, Act 167 regulations



Public Health and Safety Release Rate

Public Health and Safety Release Rate Requirements

Post-development peak flow 10 year, 24-hour Using Climate Change	<= Less than or equal to	Pre-development peak flow 2 year, 24-hour Using Existing Rain

Recommend that target design rain events are re-evaluated as system improvements and level of service studies occur.

Public Health and Safety Release Rate

Cost Increase Results

Applied same methodology as climate change modeling analysis but layered on peak flow matching requirement component.

Property Size	Cost Increase	Cost Increase Per Acre
10,000 sq. ft.	$0	$0
1 Acre	$6,000	$6,000
5 Acre	$35,000	$7,000

Discussion: Technical Changes (Part 1)

Recommendations

- Add filtration requirement to code for non-infiltrating BMPs, with design guidance in Stormwater Design Manual.
- Add code to require upkeep of private laterals (Title 4 with reference in Title 13).
- Require liners, utility offsets, and other best practices in areas of high inflow and infiltration in Stormwater Design Manual.
- PWSA develop mapping of areas of high inflow and infiltration for inclusion within Stormwater Design Manual.
- Require the use of future climate rainfall projections for design of SWM BMPs.
- Consider developer incentives to meet longer term climate projections.
- Public Health and Safety Release Rates

Pretreatment

Recommendation

Include code requiring stormwater BMP pretreatment, with design standards provided in the Stormwater Design Manual.

Why?

Enhance BMP performance and longevity through sediment removal.

Changes to Recommendation

Code and guidance to follow PA BMP Manual guidelines for pollutant hotspots.

Performed cost review of proprietary pretreatment devices.

Pretreatment Costs

Pretreatment Technology	Target Pollutants Removed	Estimated Cost per Acre ($)
ACF StormSack (Geotextile filter bag)	Trash, debris, floatables	$9,600
Contech Hydrodynamic Separator	Trash, debris, sediment, and hydrocarbons	$16,100
ACF StormBasin Rectangular Insert Filter Media	Trash, debris, particle-bound nutrients, hydrocarbons, dissolved metals	$17,600
ACF Enhanced Metals Inlet Insert (2' x 4' inlet)	Trash, debris, fine sediment, metals	$30,400

Non-sewer Areas/ROW Discharges/Landslides

Recommendation

Establish hierarchy for stormwater discharges in non-sewer areas:

- New stormwater outfall
- Extend existing sewers
- Surface discharge to public right-of-way

Require downstream hydraulic analysis for discharges to right-of-way.

Include comprehensive design requirements for hillside areas in Stormwater Design Manual and reference in code.

Why?

Reduce impacts of stormwater discharges to right-of-way and hillside areas.

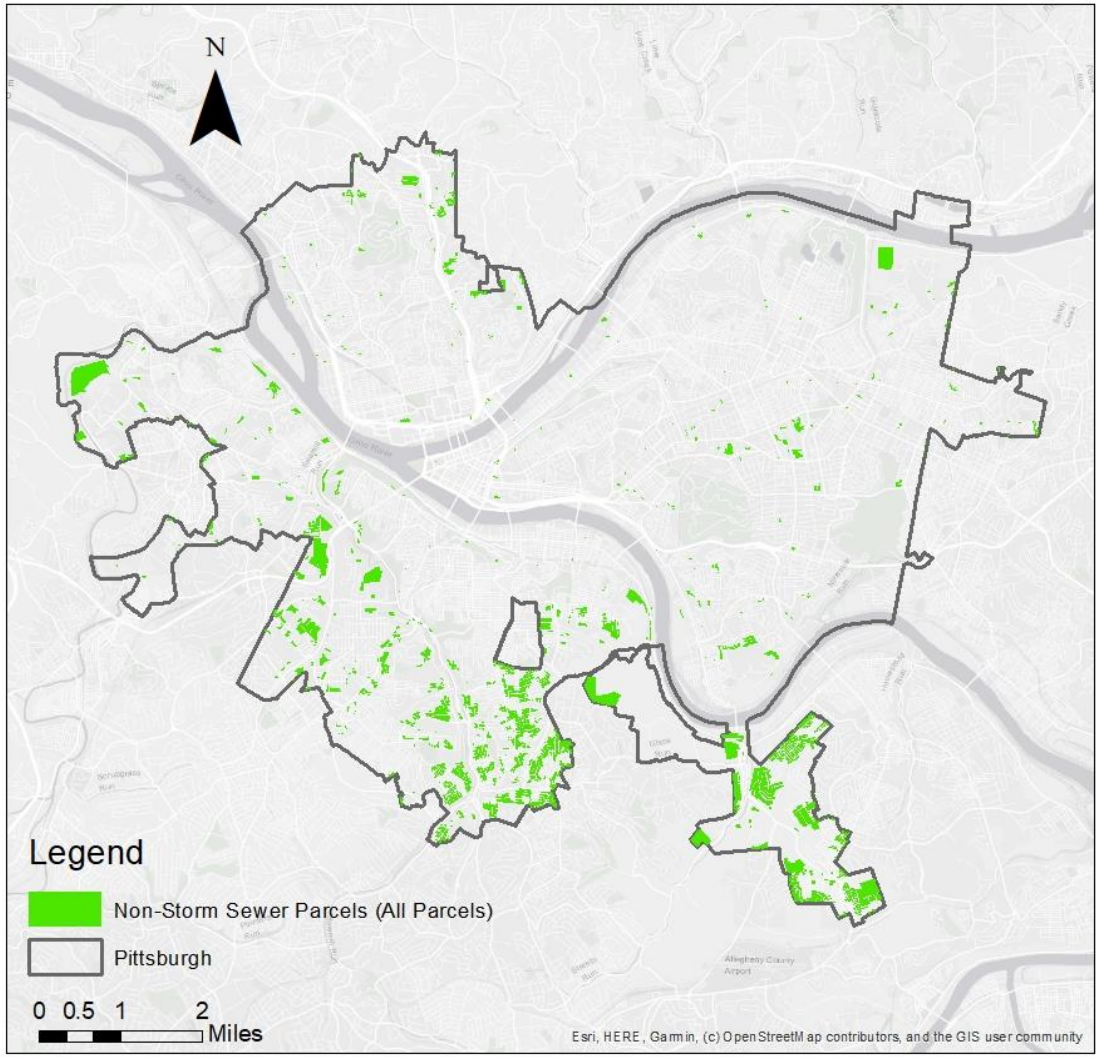
Changes to Recommendation

Mandatory connection distance requirements analysis performed.

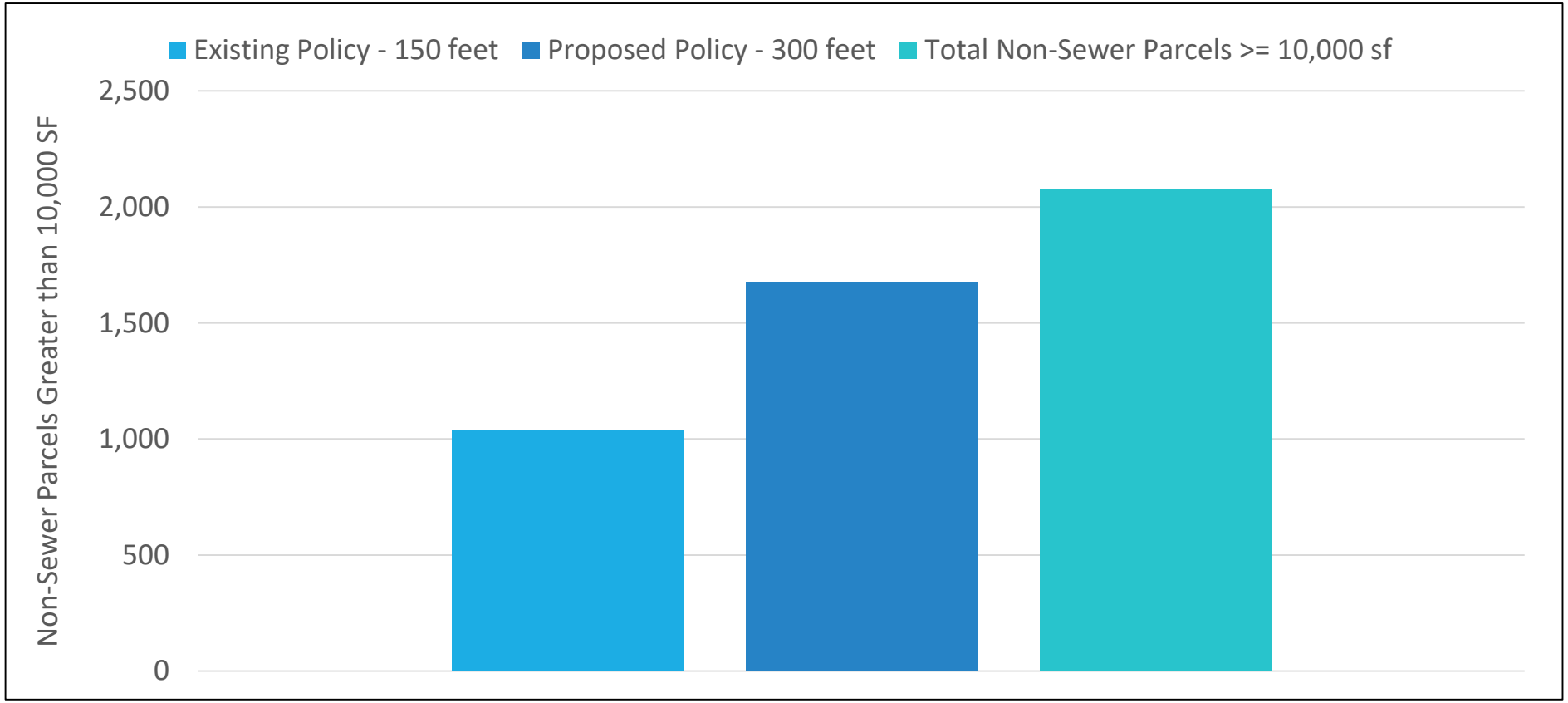
Non-sewer area parcels

Mapped locations of parcels in City greater than 150 feet in distance from a storm sewer or surface water.

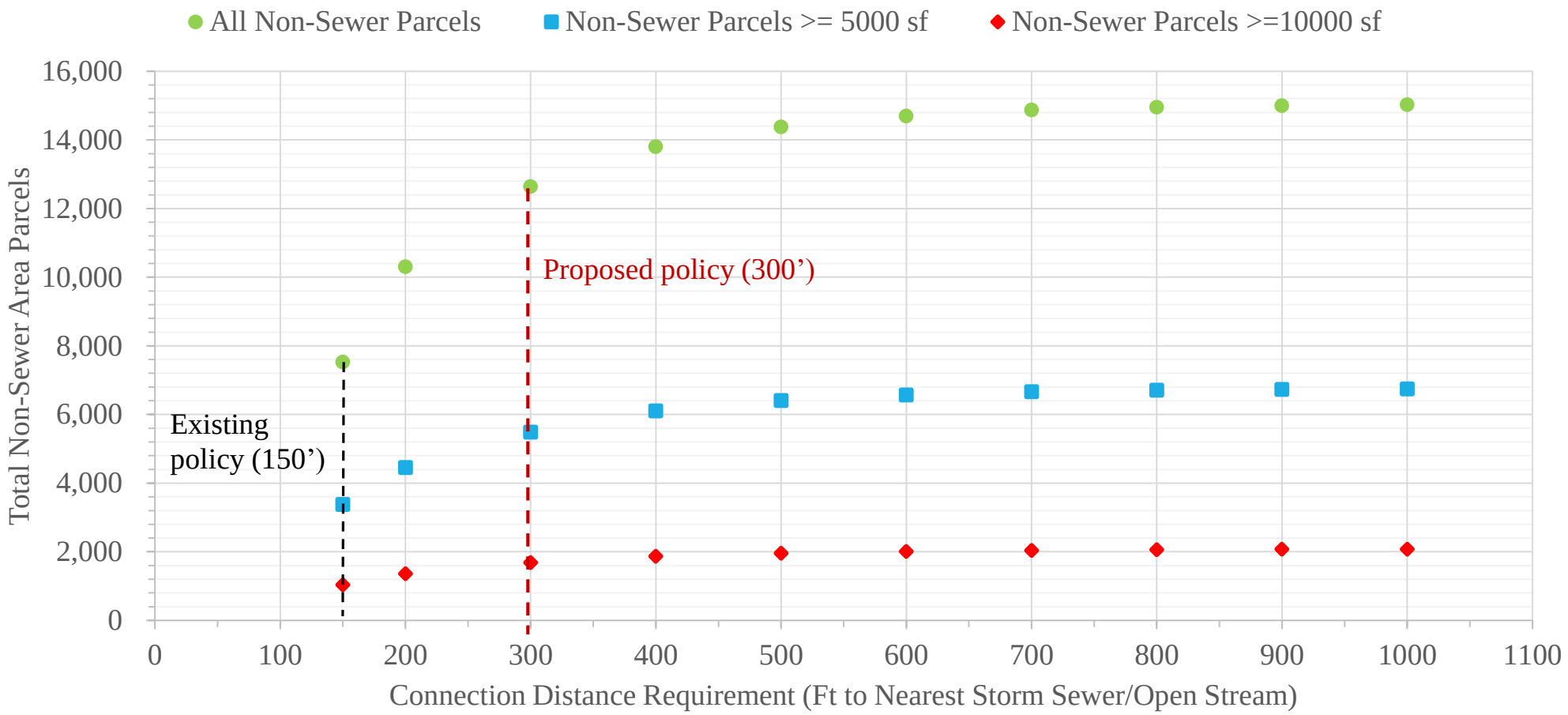
Approximately 15,000 parcels or 4% of the City.



Non-sewer area analysis/connection requirements



Non-sewer area analysis/connection requirements



Infiltration Testing and Soil Characterization

Recommendation

Add soil infiltration and testing requirements to code, with additional technical guidance in Stormwater Design Manual.

Establish clear infiltration infeasibility criteria including minimum infiltration rate.

Require infiltration waiver when infiltration infeasible.

Why?

Provide clarity around the proper use of infiltrating BMPs.

Changes to Recommendation

No update to recommendations.

Technical Infeasibility Criteria

Recommendation

Define measurable infeasibility criteria in the Stormwater Design Manual for specific conditions including slopes, groundwater, contaminated soils, undermined areas, utilities, and trees.

Why?

Provide clear guidance on technical infeasibility and pathway to use of in-lieu fee.

Changes to Recommendation

No update to recommendations.

Discussion: Technical Changes (Part 2)

Recommendations

- Include code requiring stormwater BMP pretreatment, with design standards provided in the Stormwater Design Manual.
- Establish hierarchy for stormwater discharges in non-sewer areas.
- Require downstream hydraulic analysis for discharges to right-of-way.
- Include comprehensive design requirements for hillside areas in Stormwater Design Manual and reference in code.
- Add soil infiltration and testing requirements to code, with additional technical guidance in Stormwater Design Manual.
- Establish clear infiltration infeasibility criteria including minimum infiltration rate.
- Require infiltration waiver when infiltration infeasible.
- Define measurable infeasibility criteria in the Stormwater Design Manual for specific conditions.

In-lieu Fee Compliance

Recommendation

Set in-lieu fee at $600,000 per acre-in of volume managed to reflect full life cycle cost of design, building, and maintaining offset projects.

- Construction: $285,000
- Operations and Maintenance: $145,000
- Construction Management and Inspection: $48,000
- Design: $45,000

Why?

New in-lieu fee reflects real lifecycle costs of implementing projects, but still provides alternative compliance for truly constrained sites.

Changes to Recommendation

No update to recommendations.

Waivers: Reduced Tap-in Fees

Recommendation

Reduce tap-in fees by at least 10% for affordable housing developers, M/WBE applicants, and small businesses.

Why?

Fees can be a harder hit for disadvantaged applicants, helps to offset PWSA requirements for CCTV and flow monitoring.

Minimal reduction in revenue for PWSA, but needs more analysis.

Changes to Recommendation

Policy still under agency review.

Waivers: Expedited SWM and WSU Technical Review

Recommendation

Provide 5-day technical review for affordable housing developers, small-businesses, and M/W/BE businesses.

Why?

Target applicant classes are less well resourced than larger or market rate developers. Expedited reviews help with cash flow and allow target applicants to get to construction sooner.

Small percentage of applicants in target classes means expedited reviews won't require more staffing.

Changes to Recommendation

No update to recommendations.

Same Owner Rate Control Offsets

Recommendation

Same-owner rate control offsets to allow developers to meet rate requirements at the downstream sewer connection point rather than the project boundary.

Why?

Provide flexibility in compliance for developers, encourage the use of non-structural practices like tree planting.

Changes to Recommendation

No update to recommendations.

Same Owner Volume Trading

Recommendation

Same-owner trading for volume requirement to allow developers with constrained projects to manage equivalent volume elsewhere within property holdings in the same sewershed.

Why?

Provide flexibility in compliance for developers, encourage more ground level vegetated systems

Changes to Recommendation

No update to recommendations.

Innovation Track

Recommendation

Create three innovation tracks to encourage the use of innovative technology but also require rigorous proof of performance.

1. Prior certification
2. Prior study but no certification
3. No certification or prior study

Why?

Innovative technologies can improve performance and move the industry forward. Developers and reviewers both benefit from clear ground rules on how these projects get approved.

Changes to Recommendation

No update to recommendations.

Rate and Volume Incentives

Recommendation

Fixed reimbursement grant program (per additional unit storage volume) for:

- Added volume up to 2.5 in. of precipitation from regulated or non-regulated impervious area.
- Rate control in exceedance of regulatory requirements using future precipitation estimates reflecting climate change.

Why?

Incentives grant program provides direct financial incentive for developers to provide additional level of control, and is much easier to administer than stand alone program for retrofits.

Grants are a better choice than property tax abatement, which requires state enabling legislation.

Changes to Recommendation

Adjusted policy for rate control to provide incentive for any rate control that exceeds baseline requirements.

Preferred Technology Incentives

Recommendation

Expedited 5-day SWM technical review for projects that use a combination of preferred vegetated practices, active control systems, and water reuse systems to meet the majority of the volume requirement.

- % IA Managed Using Vegetated Practices
- % IA Managed Using Active Controls
- % of WQ Volume Reused

Why?

Developers tend to build underground systems that have limited co-benefits that come with preferred technologies. Active controls tend to over-perform passive systems.

Changes to Recommendation

No update to recommendations.

Discussion: Alternative Compliance, Trading, Equity, and Incentives

Recommendations

- Set In-lieu fee at $600,000 per acre-in of volume managed to reflect full life cycle cost.
- Reduce tap-in fees by at least 10% for affordable housing developers, M/WBE applicants, and small businesses.
- Provide 5-day technical review for affordable housing developers, small-businesses, and M/W/BE businesses.
- Same-owner rate control offsets to allow developers to meet rate requirements at the downstream sewer connection point rather than the project boundary.
- Same-owner trading for volume requirement to allow developers with constrained projects to manage equivalent volume elsewhere within property holdings in the same sewershed.
- Create three innovation tracks to encourage the use of innovative technology but also require rigorous proof of performance.
- Fixed reimbursement grant program (per additional unit storage volume).
- Expedited 5-day SWM technical review for projects that use a combination of preferred vegetated practices, active control systems, and water reuse systems to meet the majority of the volume requirement.

Erosion & Sediment Control Inspection and Enforcement

Recommendation

Implement an erosion and sediment control inspection and enforcement program.

Why?

Required for MS4 permit compliance.

Changes to Recommendation

Discussion of agency roles for implementation is in process.

Post-Construction BMP Inspection and Enforcement

Recommendation

Implement a post-construction BMP inspection and enforcement program.

Why?

Required for MS4 permit compliance.

Changes to Recommendation

Discussion of agency roles for implementation is in process.

Discussion: Inspection and Enforcement

Recommendations

- Implement an erosion and sediment control inspection and enforcement program.
- Implement a post-construction BMP inspection and enforcement program.

Next Steps

March/April – Development of code revisions to implement policy recommendations

- Title Four: Public Places and Property
- Title Nine: Zoning Code
- Title Thirteen: Stormwater Management

April – Submission of amended Zoning Code (Title 9) to Planning Commission with public notice 21 days in advance of Planning Commission public hearings

May – Planning Commission public hearings for Zoning Code (Title 9) amendments

- May 4 – Initial Planning Commission briefing
- May 18 – Final Planning Commission hearing

July – Submission of amended code to City Council with public notice 21 days in advance of City Council public hearings