West Easton Borough
NPDES Permit
Renewal

Pollution Reduction Plan (PRP)
Purpose of Presentation

• To provide overview of the Borough’s current PAG-13 NPDES Permit
• Review upcoming changes to this Federal Mandated MS4 program
• Proposed measures to meet the new 2018 – 2023 permit requirements

What Does MS4 Mean?

• MS4 = Municipal Separate Storm Sewer System
• How the Borough manages its infrastructure to collect, convey and discharge stormwater

Why Care?

• Flooding issues
• Pollutants reaching surface waters
• Recharge of groundwater
• Volume and velocity of runoff
• Compliance with Federal Mandate
Important Upcoming MS4 Dates and Tasks:

2013 – 2018  **West Easton’s Current MS4 NPDES permit**

7/24/17   Public Presentation of PRP
          Public Comment Period

8/30/17   Revised and Final PRP Plan from comments received

9/15/17  **MS4 NPDES Renewal Permit due to DEP**
          Pollution Reduction Plan (PRP) due
          Updated Stormwater Map due

2018 – 2023  **Next MS4 NPDES Permit Cycle**
          Stormwater BMPs to be installed
          Stormwater Ordinance to be updated
MS4 Basics

Quick Recap

LOCAL: Fry’s Run Watershed & Lehigh River Watershed
Ongoing MS4 NPDES Permit Requirements

Minimum Control Measures

• Public Education

• Public Participation

• Illicit Discharge Detection and Elimination

• Construction Site Runoff Control

• Post Construction Site Runoff Control

• Pollution Prevention and Good Housekeeping
So What’s New for 2018-2023?

Focus on streams that are impaired due to different pollutant factors

(sediment, low oxygen, metals, acid mine drainage, etc.)

Water Quality Requirements

• reduce sediment loads being discharged by 10%

Prepare a Pollution Reduction Plan (PRP)
Describes how the MS4 plans to address its impaired streams and met its required pollutant reduction.
The Purpose of Mapping & Pollution Reduction Planning

- Understand how stormwater run-off is entering the Borough and where it is discharging.
- How is the water impacted when traveling through the Borough?
- Is it collected and conveyed by pipes, or directed to stormwater BMPs.
- How surrounding land uses are impacting the water quality of its storm run-off.
Putting the Puzzle Pieces Together

MS4 Pollution Reduction Plan Components

Understanding how stormwater travels through the Borough

- **Storm Sewer System**: Where and how is stormwater collected and conveyed
- **Drainage Areas**: LIDAR topo downloaded to assist identifying drainage areas
- **Land Uses**: WikiWatershed online program used to categorize land use areas
### Existing Pollution Loads - Lehigh River Discharge

<table>
<thead>
<tr>
<th>LAND USE CATEGORY</th>
<th>AREA (SF)</th>
<th>CONV. TO ACRES (AC)</th>
<th>STROUD TOOL IMPERV. (%)</th>
<th>IMPERVIOUS (AC)</th>
<th>LOADING RATE (LB/AC) (^2)</th>
<th>EXITING LOAD (LBS)</th>
<th>LOADING RATE (LB/AC) (^3)</th>
<th>EXITING LOAD (LBS)</th>
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<tbody>
<tr>
<td>OPEN WATER</td>
<td>704,465.23</td>
<td>16.17</td>
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<tr>
<td>DEVELOPED, WOODED</td>
<td>1,514,651.34</td>
<td>34.77</td>
<td>0.00</td>
<td>0.00</td>
<td>241.88</td>
<td>0.00</td>
<td>0.327</td>
<td>0.00</td>
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<tr>
<td>DEVELOPED, OPEN SPACE</td>
<td>1,335,487.72</td>
<td>30.66</td>
<td>0.19</td>
<td>5.83</td>
<td>241.88</td>
<td>1408.98</td>
<td>0.327</td>
<td>1.90</td>
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<tr>
<td>DEVELOPED, LOW INTENSITY</td>
<td>2,153,577.14</td>
<td>49.44</td>
<td>0.49</td>
<td>24.23</td>
<td>241.88</td>
<td>5859.61</td>
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<td>7.92</td>
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<td>DEVELOPED, MEDIUM INTENSITY</td>
<td>1,143,369.07</td>
<td>26.25</td>
<td>0.79</td>
<td>20.74</td>
<td>241.88</td>
<td>5015.63</td>
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<tr>
<td>DEVELOPED, HIGH INTENSITY</td>
<td>1,298,542.13</td>
<td>29.81</td>
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<td>29.81</td>
<td>241.88</td>
<td>7210.55</td>
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<td>9.75</td>
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<tr>
<td>REMAINING STREETS/ROADWAYS</td>
<td>1,934,825.60</td>
<td>44.42</td>
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<td>44.42</td>
<td>241.88</td>
<td>10743.70</td>
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<tr>
<td><strong>TOTALS</strong></td>
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<td></td>
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<tr>
<td>SEDIMENT</td>
<td>30238.47</td>
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<tr>
<td>PHOS.</td>
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<td></td>
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<td></td>
<td>40.88</td>
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</tbody>
</table>

Sources:
1. Wiki Watershed, Model My Watershed Online Tool, Site Storm Model Scenario
2. Wiki Watershed, Stream Reach Assessment Tool, Local Catchment Stats for Lehigh River, (Sediment: 241.88 lbs/acre, TP: 0.327 lb/yr)
**Required Pollutant Load Reductions**

**Sediment (Siltation)**

Existing Pollutant Load = 30,238 lb/yr  
Required Reduction = 10%  
Minimum Pollutant Reduction Required = 3,024 lb/yr

**Phosphorous (Organic Enrichment)**

Existing Pollutant Load = 40.88 lb/yr  
Required Reduction = 5%  
Minimum Pollutant Reduction Required = 2.04 lb/yr
Two methods used for assessing BMPs to meet the reduction requirements

Review existing drainage areas for improvements
Methods used for assessing BMPs to meet the reduction requirements

Review types of BMPs for new installation projects

- Infiltration Beds
- Buffer Easements
- Rain Gardens
- Wet Ponds
Proposed BMP Option #1 – Open Channel Restoration
Industrial/Commercial Land Use (Private Property)

Proposed BMPs for Pollution Reduction

Proposed Project Area

Drainage Area
Proposed BMP Option #1 – Open Channel Restoration
Industrial/Commercial Land Use (Private Property)

• On private property and will require legal agreements and maintenance easement
• Stabilization of eroded slopes, in floodplain
• Clearing sediment from channel floor and clearing of debris
• Long term stream health can still be impacted by the adjacent parking lot
### Proposed BMP Option #1 – Open Channel Restoration
Industrial/Commercial Land Use (Private Property)

<table>
<thead>
<tr>
<th>LAND USE CATEGORY</th>
<th>AREA (SF)</th>
<th>CONVERSION ACRES (AC)</th>
<th>STRoud TOOL IMPERVIOUS (%)</th>
<th>IMPERVIOUS (AC)</th>
<th>LOADING RATE (LB/AC)</th>
<th>EXISTING LOAD (LBS)</th>
<th>LOADING RATE (LB/AC)</th>
<th>EXISTING LOAD (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEVELOPED, WOODED</td>
<td>193,663.56</td>
<td>4.45</td>
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<td>0.00</td>
<td>241.88</td>
<td>0.00</td>
<td>0.327</td>
<td>0.00</td>
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<tr>
<td>DEVELOPED, OPEN SPACE</td>
<td>42,699.02</td>
<td>0.98</td>
<td>0.19</td>
<td>0.19</td>
<td>241.88</td>
<td>45.05</td>
<td>0.327</td>
<td>0.06</td>
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<tr>
<td>DEVELOPED, LOW INTENSITY</td>
<td>447,710.09</td>
<td>10.28</td>
<td>0.49</td>
<td>5.04</td>
<td>241.88</td>
<td>1218.16</td>
<td>0.327</td>
<td>1.65</td>
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<tr>
<td>DEVELOPED, MEDIUM INTENSITY</td>
<td>363,763.23</td>
<td>8.35</td>
<td>0.79</td>
<td>6.60</td>
<td>241.88</td>
<td>1595.72</td>
<td>0.327</td>
<td>2.16</td>
</tr>
<tr>
<td>DEVELOPED, HIGH INTENSITY</td>
<td></td>
<td>-</td>
<td>1.00</td>
<td>0.00</td>
<td>241.88</td>
<td>0.00</td>
<td>0.327</td>
<td>0.00</td>
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<tr>
<td>REMAINING STREETS/ROADWAYS</td>
<td>294,512.71</td>
<td>6.76</td>
<td>1.00</td>
<td>6.76</td>
<td>241.88</td>
<td>1635.37</td>
<td>0.327</td>
<td>2.21</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td></td>
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<td></td>
<td><strong>SEDIMENT</strong> 4494.31</td>
<td><strong>PHOS.</strong> 6.08</td>
<td></td>
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</table>
Proposed BMP Option #2 – Adamson & Main St Streetscape
Road Improvements

- Rainwater to travel through vegetated and stone bed along curb
- Curb cuts allow flow from road into channel, and place for snow in winter
- Sidewalks preserved, gives buffer between traffic and pedestrians
- Road width appears reduced which slows vehicles through Main Street

Outfalls and labels turned off map for clearer view of the pipes and drainage lines
Proposed BMP Option #2 – Adamson & Main St Streetscape
Road Improvements

- Rainwater to travel through vegetated and stone bed along curb
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Outfalls and labels turned off map for clearer view of the pipes and drainage lines
Proposed BMP Option #3 – Keystone Ave & Ridge Street Property Streetscape and Bioretention Area

- Same streetscape benefits as mentioned on Main Street
- Ridge St property owned by Borough, space for bioswale or large rain gardens
- Capture and treat the rainwater from Ridge St before it reaches Spring St
- Need more survey information on the existing pipes, depths and connections
Proposed BMP Option #3 – Keystone Ave & Ridge Street Property
Streetscape and Bioretention Area

- Same streetscape benefits as mentioned on Main Street
- Ridge St property owned by Borough, space for bioswale or large rain gardens
- Capture and treat the rainwater from Ridge St before it reaches Spring St
- Need more survey information on the existing pipes, depths and connections
Proposed BMP Option #4 – Ridge Street & Industrial Property
Road and Parking Lot Improvements

- Same Ridge St benefits as mentioned prior
- Remove impervious surface and storage areas along channel in parking lot
- Install 30’ wide vegetated filter strip along channel edge (increase pervious area)
- Requires agreements with private property owner
Proposed BMP Option #4 – Ridge Street & Industrial Property Road and Parking Lot Improvements

- Same Ridge St benefits as mentioned prior
- Remove impervious surface and storage areas along channel in parking lot
- Install 30’ wide vegetated filter strip along channel edge (increase pervious area)
- Requires agreements with private property owner
### LEHIGH RIVER – BMP OPTION #1
#### PROPOSED

<table>
<thead>
<tr>
<th>Proposed Load</th>
<th>BMP Effectiveness Value</th>
<th>Sediment Load Reduction</th>
<th>BMP Effectiveness Value</th>
<th>Phosphorous Load Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Channel Improvements</td>
<td>4494.31 lb/yr</td>
<td>70%</td>
<td>3146.0 lb/yr</td>
<td>45%</td>
</tr>
</tbody>
</table>

### LEHIGH RIVER – BMP OPTION #2
#### PROPOSED

<table>
<thead>
<tr>
<th>Proposed Load</th>
<th>BMP Effectiveness Value</th>
<th>Sediment Load Reduction</th>
<th>BMP Effectiveness Value</th>
<th>Phosphorous Load Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Street Filter Beds</td>
<td>1791.99 lb/yr</td>
<td>80%</td>
<td>1257.93 lb/yr</td>
<td>75%</td>
</tr>
<tr>
<td>Inlet Filter Bags (27)</td>
<td>1766.57 lb/yr</td>
<td>80%</td>
<td>1413.26 lb/yr</td>
<td>-</td>
</tr>
</tbody>
</table>

Required Pollutant Load Reduction = 3,024 lb/yr
**Required Pollutant Load Reduction = 3,024 lb/yr**

### LEHIGH RIVER – BMP OPTION #3  
**KEYSTONE AVE & RIDGE ST**

<table>
<thead>
<tr>
<th>PROPOSED</th>
<th>Proposed Load</th>
<th>BMP Effectiveness Value</th>
<th>Sediment Load Reduction</th>
<th>BMP Effectiveness Value</th>
<th>Phosphorous Load Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keystone Ave Streetscape Filter Beds</td>
<td>958.12 lb/yr</td>
<td>80%</td>
<td>766.49 lb/yr</td>
<td>85%</td>
<td>1.10 lb/yr</td>
</tr>
<tr>
<td>Rain Gardens or Bioswale</td>
<td>1672.49 lb/yr</td>
<td>80%</td>
<td>1337.99 lb/yr</td>
<td>75%</td>
<td>1.70 lb/yr</td>
</tr>
<tr>
<td>Inlet Filter Bags (27)</td>
<td>1766.57 lb/yr</td>
<td>80%</td>
<td>1413.26 lb/yr</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3517.74 lb/yr</strong></td>
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<td></td>
<td></td>
<td><strong>2.80 lb/yr</strong></td>
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</tbody>
</table>

### LEHIGH RIVER – BMP OPTION #4  
**RIDGE ST & TRUCK PARKING LOT**

<table>
<thead>
<tr>
<th>PROPOSED</th>
<th>Proposed Load</th>
<th>BMP Effectiveness Value</th>
<th>Proposed Load Reduction</th>
<th>BMP Effectiveness Value</th>
<th>Phosphorous Load Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rain Gardens or Bioswale</td>
<td>1672.49 lb/yr</td>
<td>80%</td>
<td>1337.99 lb/yr</td>
<td>75%</td>
<td>1.70 lb/yr</td>
</tr>
<tr>
<td>Truck Parking Filter Strip</td>
<td>716.42 lb/yr</td>
<td>80%</td>
<td>573.136 lb/yr</td>
<td>65%</td>
<td>0.58 lb/yr</td>
</tr>
<tr>
<td>Inlet Filter Bags (27)</td>
<td>1766.57 lb/yr</td>
<td>80%</td>
<td>1413.26 lb/yr</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3324.38 lb/yr</strong></td>
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<td></td>
<td></td>
<td><strong>2.28 lb/yr</strong></td>
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</table>
## Identify Potential Funding Sources

Show DEP where funding may come from in order to install and maintain each BMP.

<table>
<thead>
<tr>
<th>Source/ Group</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMP OPTION 1 – Channel Restoration</strong></td>
<td></td>
</tr>
<tr>
<td>DEP – Growing Greener Grant</td>
<td>FUNDING SOURCE - Conservation &amp; Environmental Projects focused on water quality for planning and installation, requires 15% match</td>
</tr>
<tr>
<td>PENNDOT – Stormwater Management Grant</td>
<td>FUNDING &amp; PLANNING SOURCE – (alternative to DEP grant source) Stream channel stabilization projects eligible, in addition to mitigating hazards in flood prone areas.</td>
</tr>
<tr>
<td>PENN VEST – Green Initiatives</td>
<td>FUNDING SOURCE – encourage innovative green solutions for water quality management, including projects to reduce sediment and nutrient contamination</td>
</tr>
<tr>
<td>Fry’s Run Watershed Association</td>
<td>PLANNING &amp; EDUCATIONAL OUTREACH SOURCE – Work with the watershed association in achieving goals outlined in their comprehensive plan; utilize watershed staff for educational handouts and materials on the project</td>
</tr>
<tr>
<td>Private Property Owner and West Easton Borough</td>
<td>PLANNING &amp; MAINTENANCE RESOURCE - Preparation of a stormwater management agreement between the property owner and the Borough</td>
</tr>
<tr>
<td>Lehigh Valley Greenways Conservation Landscape (D&amp;L National Heritage Corridor)</td>
<td>FUNDING SOURCE – Mini Grant for restoring stream buffers and best management practices, requires 1:1 match</td>
</tr>
<tr>
<td>Borough of West Easton</td>
<td>FUNDING SOURCE - Budget funds</td>
</tr>
</tbody>
</table>
## Identify Potential Funding Sources

Show DEP where funding may come from in order to install and maintain each BMP

<table>
<thead>
<tr>
<th>Source/ Group</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMP OPTION 2 &amp; 3 - Streetscape &amp; Stormwater Filter Beds</strong></td>
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</tr>
<tr>
<td>PENNDOT – TAP Grant Transportation Alternatives Program</td>
<td>FUNDING SOURCE – Eligible projects include improvements to pedestrian and bicycle facilities, promoting safety and mobility, environmental mitigation and stormwater improvements</td>
</tr>
<tr>
<td>PENN VEST – Green Initiatives</td>
<td>FUNDING SOURCE – encourage innovative green solutions for water quality management, including projects to reduce sediment and nutrient contamination</td>
</tr>
<tr>
<td>Chamber Foundation MSLV</td>
<td>FUNDING SOURCE – Maximum Grant $2000, for the visual improvements to traditional neighborhoods, including landscaping</td>
</tr>
<tr>
<td>Lehigh Valley Master Watershed Steward Program Volunteers</td>
<td>LABOR SOURCE - Volunteers to assist with the installation of plantings</td>
</tr>
<tr>
<td>Boy Scouts and Girl Scout Troops</td>
<td>LABOR SOURCE - Volunteers to assist with the installation of plantings</td>
</tr>
<tr>
<td>Business/Company Sponsorship</td>
<td>FUNDRAISING SOURCE – opportunity for local businesses and organizations to donate towards plantings</td>
</tr>
<tr>
<td>Borough of West Easton</td>
<td>FUNDING SOURCE - Budget funds</td>
</tr>
</tbody>
</table>
Operations & Maintenance of the BMPs

Prepare a list of anticipated maintenance tasks to keep the BMPs working efficiently

- Identify the party(ies) responsible for ongoing Operations and Maintenance (O&M)
- The activities involved with O&M for each BMP proposed
- The frequency at which O&M activities will occur
- If the Borough has a third party fulfill a portion of their O&M duties, a maintenance agreement shall be prepared between the Borough and the third party.

West Easton Borough shall identify on the O&M activities conducted in its Annual MS4 report to DEP
When does the work need completed?

The MS4 has 5 years to complete the installation of the BMPs laid out in the Pollution Reduction Plan

Work needs to be completed by September 2023

The MS4 shall prepare a summary report on how the required pollution load reduction was satisfied and submit that report to DEP
Questions?