BOROUGH OF WYOMISSING, BERKS COUNTY, PENNSYLVANIA

ORDINANCE NO. 1419-2021

AN ORDINANCE OF THE BOROUGH OF WYOMISSING, BERKS COUNTY, PENNSYLVANIA, TO AMEND THE CODE OF ORDINANCES OF THE BOROUGH OF WYOMISSING, CHAPTER 20A ENTITLED "STORMWATER MANAGEMENT", BY AMENDING PART 4 ENTITLED "STORMWATER PLAN REQUIREMENTS", BY ADDING A NEW SECTION 408, ENTITLED "SMALL RESIDENTIAL PROJECT STORMWATER DESIGN REGULATIONS".

WHEREAS, the Council of the Borough of Wyomissing desires to amend the Code of the Borough of Wyomissing to provide small residential project stormwater design regulations to provide greater ease in complying with stormwater requirements for certain small residential projects; and

BE AND IT IS HEREBY ORDAINED AND ENACTED by the Borough Council of the Borough of Wyomissing, Berks County, Pennsylvania, pursuant to the authority conferred by the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. 20-A-7 Section 680.1, et seq., as amended, the "Storm Water Management Act" and the Pennsylvania Borough Code, 8 Pa.C.S.A. Section 101, et seq., as follows:

SECTION 1. The Code of the Borough of Wyomissing Chapter 20A entitled "Stormwater Management", Part 4 entitled "Stormwater Plan Requirements", is hereby amended by adding a new Section 408 entitled "Small Residential Project Stormwater Design Regulations", which shall read as follows:

§408. Small Residential Project Stormwater Design Regulations.

The Small Project Design Regulations have been developed to assist those proposing small residential projects to comply with the requirements of the Wyomissing Borough Stormwater Management Ordinance, Chapter 20-A without having to hire professional services to draft a formal stormwater management plan. These Small Residential Project Design Regulations are only permitted for projects with proposed impervious areas greater than 500 square feet and less than 1,500 square feet.

Regulated activities that result in an impervious area greater than 500 square feet and less than 1,500 square feet can comply with Chapter 20-A, "Stormwater Management" using the "Small Residential Project Stormwater Design Regulations". Projects less than 500 square feet of impervious area are exempt from stormwater management requirements. The applicant can use the protocols in the "Small Residential Project Stormwater Design Ordinance", in lieu of the otherwise applicable regulations of Chapter 20-A, Stormwater Management.

Listed below are circumstances where this ordinance is not applicable:

- Proposed impervious area greater than 1,500 square feet **must** comply with requirements of the Chapter 20-A, "Stormwater Management".
- Projects requiring subdivision or land development approval **must** comply with requirements of Chapter 20-A, "Stormwater Management".
- Properties (parcels) with a cumulative impervious area greater than 1,500 square feet built after the date of adoption of this ordinance must comply with Chapter 20-A, Stormwater Management.

A. What is an applicant required to submit?

Stormwater drainage plan requirements shall include a brief description of the proposed stormwater facilities, including types of materials, total square footage of proposed impervious areas, volume calculations, and a simple sketch plan showing the following information:

- Location of existing lot lines and proposed structures, driveways, or other paved areas with approximate surface area in square feet.

- Location of any existing or proposed onsite septic system and/or potable water wells showing proximity to infiltration facilities.

- Location of existing or proposed utilities including water, sewer, electric, gas, and other utilities that might exist on the property.

- Berks County Conservation District erosion and sediment control "Adequacy" letter is a requirement for disturbances greater than 5,000 square feet.

B. Determination of Required Volume Control and Sizing Stormwater Facilities

By following the simple steps outlined below in the provided example, an applicant can determine the runoff volume that is necessary to control stormwater runoff and how to choose the appropriate stormwater facility to permanently remove the runoff volume from the site. Impervious area calculations must include all areas on the lot proposed to be covered by roof area or pavement which would prevent rain from naturally percolating into the ground, including impervious surfaces such as sidewalks, driveways, parking areas, patios, or swimming pools. Sidewalks, driveways, or patios that have been designed and constructed to allow for infiltration are not included in this calculation.

Site Plan Example: Controlling runoff volume from a proposed home site

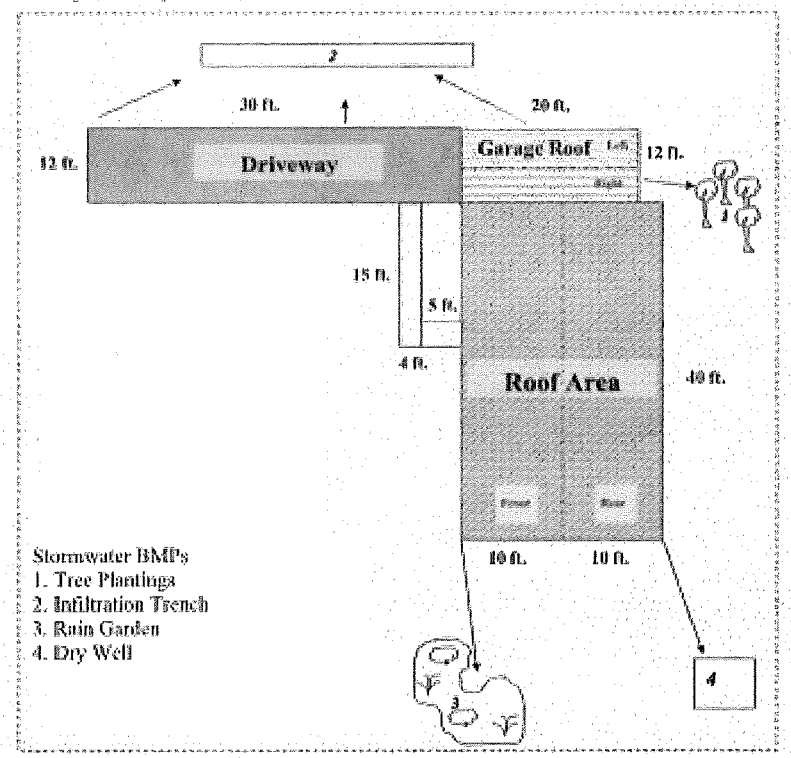
Step 1: Determine Total Impervious Surfaces

Impervious Surface			Area (sq. ft.)
House Roof (Front)	10 ft. x 40 ft.	=	400 sq. ft.
House Roof (Rear)	10 ft. x 40 ft.	=	400 sq. ft.
Garage Roof (Left)	6 ft. x 20 ft.	=	120 sq. ft.

Garage Roof (Right)	6 ft. x 20 ft.	=	120 sq. ft.
Driveway	12 ft. x 30 ft.	=	360 sq. ft.
Walkway	4 ft. x 20 ft.	=	80 sq. ft

	Total Impervious		1,480 sq. ft.

Figure 1: Sample Site Sketch Plan



Step 2: Determine Required Volume Control (cubic feet) using the following equation:

Volume (cu. ft.) = (Total impervious area in square feet x 2 inches of rainfall) / 12 inches / foot
Volume (cubic feet) = (1,480 sq. Ft. x 2 inches of rainfall) / 12 inches = 247 cu. ft.

Step 3: Sizing the Selected Volume Control BMP

Several Best Management Practices (BMPs), as described below, are suitable for small stormwater management projects. However, their application depends on the volume required to control, how much land is available, and the site constraints. Proposed residential development activities can apply both nonstructural and structural BMPs to control the volume of runoff from the site. A number of different volume control BMPs are described below. Note that Figure 1 is an example of how these BMPs can be utilized in conjunction to control the total required volume on one site.

Structural BMPs

1. Infiltration Trench

An Infiltration Trench is a linear stormwater BMP consisting of a continuously perforated pipe at a minimum slope in a stone-filled trench. During small storm events, infiltration trenches can significantly reduce volume and serve in the removal of fine sediments and pollutants. Runoff is stored between the stones and infiltrates through the bottom of the facility and into the soil matrix. Runoff should be pretreated using vegetative buffer strips or swales to limit the amount of coarse sediment entering the trench which can clog and render the trench ineffective. In all cases, an infiltration trench should be designed with a positive overflow.

Design Considerations:

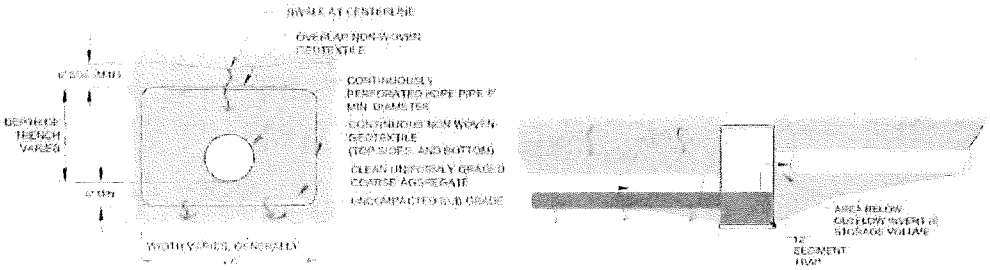
- Although the width and depth can vary, it is recommended that Infiltration Trenches shall not exceed a depth of two (2) feet of stone.
- Trench is wrapped in nonwoven geotextile (top, sides, and bottom).
- Trench needs to be placed on uncompacted soils.
- Slope of the Trench bottom should be level or with a slope no greater than 1%.
- A minimum of 8" of topsoil is placed over trench and vegetated.
- The discharge or overflow from the Infiltration Trench should be properly designed to drain away from buildings and other impervious structures.
- Cleanouts or inlets should be installed at both ends of the Infiltration Trench and at appropriate intervals to allow access to the perforated pipe.
- Volume of facility = Depth x Width x Length x Void Space of the gravel bed (assume a void space of 0.40)

Maintenance:

- Catch basins and inlets should be inspected and cleaned at least two times a year.
- The vegetation along the surface of the infiltration trench should be maintained in good condition and any bare spots should be re-vegetated as soon as possible.

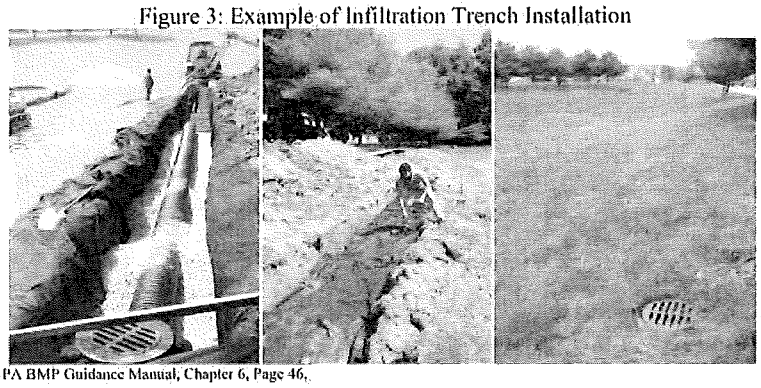
- Vehicles should not be parked or driven on the trench and care should be taken to avoid soil compaction by lawn mowers.

Figure 2; Infiltration Trench Diagram



Source: PA BMP Guidance Manual, Chapter 6, page 42.

Figure 3: Example of Infiltration Trench Installation



Source: PA BMP Guidance Manual, Chapter 6, Page 46.

Sizing Example for Infiltration Trench

1. Determine Total Impervious Surface to drain to Infiltration Trench:

Garage Roof (Left)	6 ft. x 20 ft.	=	120 sq. ft.
Driveway	12 ft. x 30 ft.	=	360 sq. ft.
Walkway	4 ft. x 20 ft.	=	80 sq. ft.
			560 sq. ft.

2. Determine the required infiltration volume:
   (560 sq. ft. x 2 inches of runoff) /12 inches/ft = 93.3 cu. ft.
   Use 94 cu ft.

3. Sizing the infiltration trench facility:
   Required Infiltration Volume = Volume of Facility = Depth x Width x Length x Void Space of Gravel

   94 cu. ft = Depth x Width x Length x Void Space

   Set Depth to 2 feet and determine required surface area of trench.

   94 cu ft = 2 ft. x Width x Length x 0.4
   117.50 sq ft. = Width x Length

The width of the trench should be greater than 2 times its depth (2 x D), therefore in this example the trench width of 4 feet selected.

Determine trench length: L = 117.50 sq. ft. / 4 ft. = 29.4 ft., make trench 30-feet in length.

Final infiltration trench dimensions: 2 ft. (D) x 4 ft. (W) x 30 ft. (L)

2. Rain Garden

A Rain Garden is a planted shallow depression designed to catch and filter rainfall runoff. The garden captures rain from a downspout or a paved surface. The water sinks into the ground, aided by deep rooted plants that like both wet and dry conditions. The ideal location for a rain garden is between the source of runoff (roofs and driveways) and the runoff destination (drains, stream, low spots, etc.).

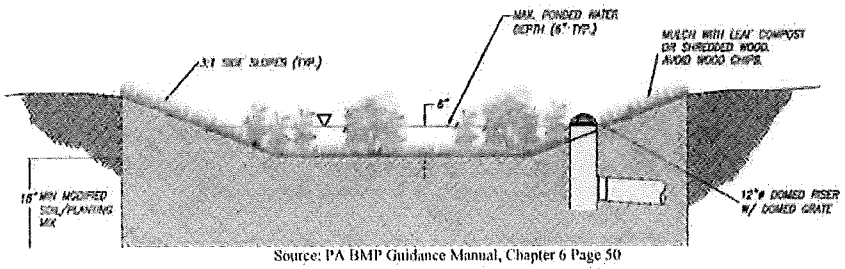
Design Considerations:

- A maximum of 3:1 side slope is recommended.
- The depth of a rain garden can range from 6-8 inches. Ponded water should not exceed 8-inches.
- The rain garden should drain within 72 hours.
- The garden should be at least 10-20 feet from a building's foundation and 25 feet from septic system drainfields and wellheads.
- If the site has clay soils, soil should be amended with compost or organic material.
- Choose native plants.
  To find native plant sources go to https://uswildflowers.com/wfquery.php.
- At the rain garden location, the water table should be at least 2' below the soil level. If water stands in an area for more than one day after a heavy rain you can assume it has a higher water table and is not a good choice for a rain garden.

Maintenance:

- Water plants regularly until they become established.
- Inspect twice a year for sediment buildup, erosion and vegetative conditions.
- Mulch with hardwood when erosion is evident and replenish annually.
- Prune and remove dead vegetation in the spring season.
- Weed as you would any garden.
- Move plants around if some plants would grow better in the drier or wetter parts of the garden.

Figure 4: Rain Garden Diagram



Source: PA BMP Guidance Manual, Chapter 6 Page 50

2Sizing Example for Rain Garden

1. Pick a site for the rain garden between the source of runoff and a low-lying area, a.k.a., a drainage area.
2. Perform an infiltration test to determine the depth of the rain garden:
   - Dig a hole 8"(L) by 8"(W) by 8"(D)
   - Fill with water and put a popsicle stick at the top of the water level.
   - Measure how far it drains down after a few hours (ideally 4 hours).
   - Calculate the depth of water that will drain out over 24 hours.

3. Determine total impervious surface area to drain to rain garden:

House Roof (Front)	10 ft. x 40 ft.	=	400 sq. ft.

4. Sizing the rain garden:
   For this example, let's say the infiltration test determined 6" of water drained out of a hole in 24 hours. The depth of the rain garden should be set to the results of the infiltration test, so 6" is the depth of the rain garden. Under no circumstances, should the rain garden depth be greater than 8-inches. The sizing calculation below is based on controlling 1" of runoff. First divide the impervious surface by the depth of the rain garden.

400 sq. ft. / 6 (depth of rain garden in inches) = 66.67 sq. ft./in

In order to control 2" of runoff volume, the rain garden area is multiplied by 2.

66.67 sq. ft./in * 2 in = 133.33 sq. ft.

The rain garden should be about 134 sq. ft. in size and 6" deep.

3. Dry Well (a.k.a., Seepage Pit)

A Dry Well, sometimes called a Seepage Pit, is a subsurface storage facility that temporarily stores and infiltrates stormwater runoff from the roofs of structures. By capturing runoff at the source, Dry Wells can dramatically reduce the increased volume of stormwater generated by the roofs of structures. Roof leaders connect directly into the Dry Well, which may be either an excavated pit filled with uniformly graded aggregate wrapped in non-woven geotextile, or a

prefabricated storage chamber or pipe segment. Dry Wells discharge the stored runoff via infiltration into the surrounding soils. In the event that the Dry Well is overwhelmed in an intense storm event, an overflow mechanism (surcharge pipe, connection to a larger infiltration system, etc.) will ensure that additional runoff is safely conveyed downstream.

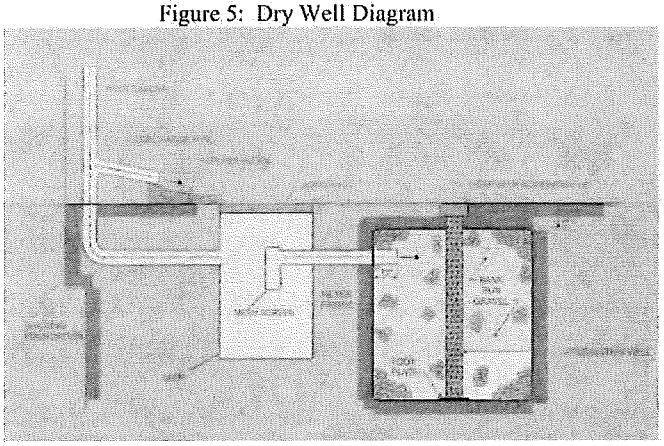
Design Considerations:

- Dry Wells typically consist of 18 to 48 inches of clean washed, uniformly graded aggregate with 40% void capacity (AASHTO No. 3, or similar). "Clean" gravel fill should average one and one-half to three (1.5 - 3.00) inches in diameter.
- Dry Wells are not recommended when their installation would create a significant risk for basement seepage or flooding. In general, 10 – 20 feet of separation is recommended between Dry Wells and building foundations.
- The facility may be either a structural prefabricated chamber or an excavated pit filled with aggregate.
- Depth of dry wells in excess of three-an-a-half (3.5) feet should be avoided unless warranted by soil conditions.
- Stormwater dry wells must never be combined with existing, rehabilitated, or new septic system seepage pits. Discharge of sewage to stormwater dry wells is strictly prohibited.
- As shown in Figure 5, the installation should include a surcharge or overflow pipe.

Maintenance:

- Dry wells should be inspected at least four (4) times annually as well as after large storm events.
- Remove sediment, debris/trash, and any other waste material from a dry well.
- Regularly clean out gutters and ensure proper connections to the dry well.
- Replace the filter screen that intercepts the roof runoff as necessary.

Figure 5: Dry Well Diagram



Source: PA BMP Guidance Manual, Chapter 6, Page 65.

Sizing Example for Dry Wells:

1. Determine contributing impervious surface area:

House Roof (Rear)	10 ft. x 40 ft.	=	400 sq. ft.

2. Determine required volume control:

   (400 sq. ft. x (2 inches of runoff) / 12 inches/ft.) = 66.67 cu. ft.

3. Sizing the dry well:

   Set the depth to 2 ft.; Factor in a 0.40 void space of stone; Set the width equal to the length for a square chamber.

   0.40 x 2 ft. x L x L = 66.67 cu. ft.; LxL = 66.67cu. ft. /(0.40 * 2 ft).; thus LxL=83.3 sq. ft.; L=9.5 (approx.)*

   Dimensions = 2 ft. (D) x 9.5 ft. (L) x 9.5 ft. (W)

Non Structural BMPs

1. Tree Plantings

Trees and forests reduce stormwater runoff by capturing and storing rainfall in the canopy and releasing water into the atmosphere through evapotranspiration. Tree roots and leaf litter also create soil conditions that promote the infiltration of rainwater into the soil. In addition, trees and forests reduce pollutants by taking up nutrients and other pollutants from soils and water through their root systems. A development site can reduce runoff volume by planting new trees or by preserving trees which existed on the site prior to development. The volume reduction calculations determine a volume reduction credit which can be used to reduce the size of any one of the planned structural BMPs on the site.

Tree Credit Considerations:

- Existing trees must have at least a 4" trunk caliper or larger.
- Existing tree canopy must be within 100 ft. of impervious surfaces.
- A tree canopy is classified as the continuous cover of branches and foliage formed by a single tree or collectively by the crowns of adjacent trees.
- New tree plantings must be at least 6 ft. in height and have a 2" trunk caliper.
- All existing and newly planted trees must be native to Pennsylvania. See http://elibrary.dcnr.pa.gov/GetDocument?docId=1742149&DocName=sf-CommonTrees2014_online.pdf

Determining the required number of planted trees to reduce the runoff volume:

1. Determine contributing impervious surface area:

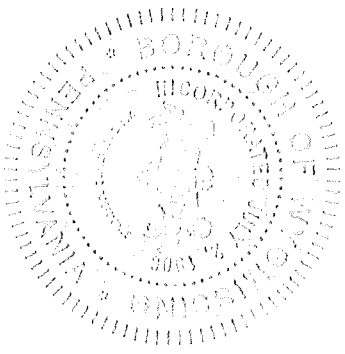
Garage Roof (Right)	6 ft. x 20 ft.	=	120 ft.

2. Calculate the required control volume:
   (120 sq. ft. x 2 inches of runoff) / 12 inches/foot = 20 cu. ft.

3. Determine the number of tree plantings:
    - A newly planted deciduous tree can reduce runoff volume by 6 cu. ft./ tree.
    - A newly planted evergreen tree can reduce runoff volume by 10 cu. ft. / tree.

    20 cu. ft. / 6 cu. ft. = 4 Deciduous Trees

BMPs not discussed in this worksheet may be proposed and will be evaluated on a case-by-case basis.



Sizing an Infiltration Trench / Bed Facility

Step 1. Required Infiltration Volume (Determined from Worksheet #1) = _____ cubic feet

Step 2. Depth = _____ feet

(Maximum allowable infiltration trench depth is 2-feet)

Step 3. Minimum Trench Width = 2 * Depth (Value from Step 2) =_____ Feet

Step 4. Trench Length = Required Infiltration Volume from Step 1/ (Trench Depth from Step 2 * Trench Width from Step #3* 0.4) = _____ Feet.

Sizing a Rain Garden

Maximum allowable depth water depth in a rain garden is 6-inches.

Step 1. Proposed Impervious Area = _____ square feet (Determined from Worksheet #1)

Step 2 Depth of water in rain garden = _____ inches.

Step 3. Required Rain Garden Area = (Proposed Impervious Area from Step 1) ÷ Rain Garden depth in inches (From Step #2)_____ square feet

Step 4. To control 2-inches of rainfall:

Multiply Required Rain Garden Area (Step 3) _____* 2 = _____Required Rain Garden Surface area in square feet.

Sizing a Dry Well

Use this calculation procedure with concrete or plastic tanks or proprietary stormwater devices.

Step 1. Required Infiltration Volume =_____ (Determined from Worksheet 1)

*IF the dry well will consists of stone gravel utilizing porous volume to store stormwater, divide Step 1 by 0.4 to determine the required volume.

Step 2. Depth = _____ feet (Maximum allowable Dry Well depth is 3.5-feet)

Step 3. Required Area = Required Infiltration Volume (Step 1) ÷ Depth (Step 2.) = _____ square feet.

Step 4. Select dry well with an area equal to or greater than the value determined in Step 3.

Tree Planting Volume Credit

Newly planted deciduous tree credit is 6 – cubic feet per tree:

Step 1. Number of deciduous trees: _____

Volume credit = Number of deciduous trees from Step 1 _____ * 6 – cubic feet per tree = _____ Cubic feet

Newly planted evergreen tree credit is 10 – cubic feet per tree:

Step 2. Number of evergreen trees: _____

Volume credit = Number of evergreen trees from Step 2 _____ * 10 – cubic feet per tree = _____ Cubic feet

Volume Credit for preserving trees within 20-feet of proposed impervious area:

Step 3. Number of trees within 20-feet of proposed impervious area: _____

Step 4. Canopy of existing trees within 20-feet of impervious area is _____ square feet.

Step 5. Volume credit = tree canopy from Step 4 * 1-inch ÷ 12 inches per foot = _____ cubic feet.

Volume Credit for preserving trees between 20 feet and 100 feet of proposed impervious area:

Step 6. Number of trees between 20 feet and 100 feet of proposed impervious area: _____

Step 7. Canopy of existing trees within 20 feet and 100 feet of proposed impervious area is _____ square feet.

Volume credit = tree canopy from Step 7 * 0.5-inch ÷ 12 inches per foot = _____ cubic feet.

SECTION 2. Repeal of Ordinances.

Any ordinance or part of ordinances conflicting with the provisions of this Ordinance is hereby repealed insofar as they are inconsistent with this Ordinance's provisions.

SECTION 3. Severability.

If any article, section, subsection, provision, regulation, limitation, restriction, sentence, clause, phrase or word in this Ordinance, is, for any reason declared to be illegal, unconstitutional or invalid, by any Court of competent jurisdiction, this decision shall not affect or impair the validity of the Ordinance as a whole, or any other article, section, subsection, provision, regulation, limitation, restriction, sentence, clause, phrase, word, or remaining portion of the within Ordinance. The Borough Council of the Borough of Wyomissing, Pennsylvania, hereby declares that it would have adopted the within Ordinance and each article, section, subsection, provision, regulation, limitation, restriction, sentence, clause, phrase and word thereof, irrespective of the limitations, restrictions, sentences, clauses, phrases, or word that may be declared illegal, unconstitutional or invalid.

SECTION 4. Effective Date.

The effective date of the within amendments shall be immediately upon its enactment and approval by the Mayor.

SECTION 5. Code of Ordinances.

The Code of Ordinances, as amended, of the Borough of Wyomissing, Berks County, Pennsylvania shall be and remain unchanged and in full force and effect except as amended, supplemented, and modified by this Ordinance. This Ordinance shall become a part of the Code of Ordinances upon adoption.

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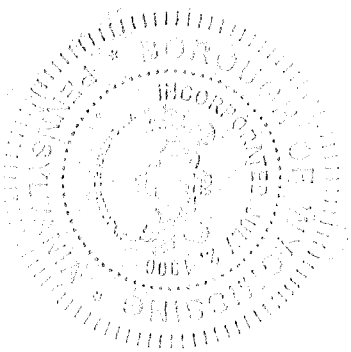

DULY ORDAINED and ENACTED as an Ordinance this 8th day of June, 2021.

BOROUGH OF WYOMISSING
Berks County, Pennsylvania

By: _____
Thomas M. Moll
President of Borough Council

Attest: _____
Melissa Miller
Secretary of the Borough

APPROVED this 8th day of June 2021.

_____
Frederick C. Levering
Mayor of the Borough

CERTIFICATE OF ENACTMENT

I hereby certify that the foregoing is a true and accurate copy of Ordinance No. 1419 - 2021 adopted by the Borough Council of the Borough of Wyomissing, Berks County, Pennsylvania at a regular meeting held on June 8th, 2021, pursuant to notice as required by law.

Melissa Miller
Secretary of the Borough