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OHIO EPA

**Ohio EPA**
**Sanitary Sewer Extension**
**General Permit to Install – Attachment 4**

**For Sanitary Sewer Extensions in CSO Communities**

If you have combined sewer overflow, plant bypasses, primary or secondary bypasses, then all sewer extensions to your community may be subject to the Antidegradation Rule which requires a public notification process whenever an increase in pollutants to waters of the state are expected. In order to avoid this requirement, the entity must remove 3.33gpd of clean water from their sanitary sewerage system for every gallon of sanitary sewerage that you intend to add based on average daily design flow estimates. The following is a list of accepted removal projects and ERUs (Equivalent Residential Unit):

**Ohio EPA approved Chimney Seal** = 1,332gpd = One Equivalent Residential Unit (ERU), 2 ERUs for Separate Sanitary Sewer Systems (SSSS)

**Ohio EPA approved Chimney Seal Plus Total Manhole Rehabilitation** = 1.5 ERUs, 3 ERUs for SSSS

**Ohio EPA approved Manhole Dish** = 220gpd = 1/6 ERU, 1/3 ERU for SSSS

**Removal of Sump Pump** = 1,332gpd = 1 ERU, 2 ERUs for SSSS

**Flex Seal Utility Sealant by SSI** = 1,332gpd = 1 ERU, 2 ERUs for SSSS

**Manhole Chimney Seal no. f-88 by Sauereisen** = 1,332gpd = 1 ERU, 2 ERUs for SSSS

**HDPE Manhole Adjustment Rings** = 666gpd = 0.5 ERU, 1 ERU for SSSS

**NPC Manhole FlexRib Seals** = 1,332gpd = 1 ERU, 2 ERUs for SSSS

**TUFF-N-DRY & WATCHDOG (new construction only)=** 1,332gpd = 1 ERU, 2 ERUs for SSSS

**Mar-Flex (new construction only)** = 1,332gpd = 1 ERU, 2 ERUs for SSSS

**Ohio EPA approved Manhole Rehab. (Sealing cracks & joints) =** 666gpd = 0.5 ERU, 1 ERU for SSSS

**Cured in Place Chimney Seals by Otis, Inc. =** 1,332gpd = 1 ERU, 2 ERUs for SSSS

## Flow Tradeoff Credits

**INFILTRATION: (Calculations are based on 3.33:1 average flow ratio)**

Step 1. Calculate the net reduction in clean water that results from the rehabilitation project:

Infiltration rates for manholes, sewer lines and other sewer infrastructure should be calculated using standard design documents. Two documents for manholes, for example, are the American Society of Civil Engineers (ASCE) Manual of Engineering Practice No. 92, entitled Manhole Inspection and Rehabilitation and Neenah Foundry Company's report on Inflow of Surface Water through Manhole Covers. Use these reports to calculate a gallon per minute (gpm) reduction that could be achieved by the rehabilitation work. For example, analysis of an existing manhole indicates that 5gpm 'clean water' is infiltrating into the manhole (when surrounded by high ground water) based on the analysis techniques in the referenced technical documents and field analysis of the condition of the manhole. After rehabilitation, the infiltration will reduce to 2gpm 'clean water'. The net reduction is 3gpm of 'clean water' (5 minus 2).

Step 2. Calculate the average daily design flow rate of new sanitary waste

Use standard design procedures for calculating average daily design flow, e.g. for a home, use 400 gallons per day which translates to 0.28gpm.

Step 3. Apply the Tradeoff Ratio of 3.33:1

Apply a tradeoff of 3.33gpm of clean water removal to allow 1gpm of new sanitary. For the above example, 3gpm of clean water has been removed thereby allowing 3.2 homes for each MH rehab (3gpm/ (0.28gpm*3.33) =3.2).

**INFLOW: (Calculations are based on a 3.33:1 peak flow ratio)**

Step 1. Calculate the peak flow rate from a 10 yr. 1 hr. storm

As an example, a city will remove a storm sewer serving 1 acre of storm drainage area from the combined sewer. Using standard design methodology, e.g. TR55, calculate a peak flow rate from a 10 yr, 1-hr storm. Run TR55. For this example, assume, TR55 gives you a peak flow of 500gpm in the storm sewer [TR55 was not run, this number was

made up based on:  1.8 inches of total rain (10 yr 1-hr from NWS) multiplied by 1 acre for volume multiplied by 61% actual runoff (estimate) divided by 1 hr].

Step 2.  Calculate the peak sanitary flow

Calculate by multiplying the ADF by 3.33.  In the above example, 400gpd times 3.33 equals 1332gpd peak flow from a home, which equals 0.92gpm.

Step 3.  Apply a tradeoff ratio of 3.33:1

Divide the 'clean water' peak flow rate removed from the CSO by 3.33 times the new peak sanitary flow.  In the above example, 500gpm/ (3.33*0.92gpm) =163 new homes can be added for every acre of storm drainage removed.