PRETREATMENT RATIONALE FOR REISSUANCE

TransAmerican Waste Central Landfill Inc, Central Landfill Facility

Pearl River County

McNeill, Mississippi

Water II Branch

July 25, 2022

Permit No.: MSP092273

SIC Code: 4953

Permit Writer: Carter Cress

1. **FACILITY INFORMATION**
2. Nature of Business: Municipal solid waste landfill.
3. Process Wastewater Description: Batch discharge via truck hauling consisting of landfill leachate and wash water from equipment washing operations.
4. Proposed Flowrate: Outfall 001: 0.03 MGD Quarterly Maximum.
5. Applicable Federal Guidelines: 40 CFR Part 445: Landfills Point Source Category.
6. Process Wastewater Treatment: None.
7. **RECEIVING POTW INFORMATION**
8. POTW Name; AI No.; and Permit No.: Pearl River County Utility Authority, Neal Road POTW; 37819; MS0061174
9. POTW Treatment Type: Oxidation ditch followed by post-aeration and UV disinfection
10. POTW Design Flowrate: 2.4 MGD Monthly Average
11. POTW Receiving Stream: Hobolochitto Creek
12. POTW Receiving Stream 7Q10 (Q7/10): 23 cfs = 15 MGD
13. **PERTINENT FLOWRATE AND LOADING DATA**
14. POTW 12-month Average Flowrate (QPOTW): 1.07 MGD

POTW Monthly Average flowrate in Million Gallons per Day (MGD) using 12 months of recently-available Discharge Monitoring Reports (DMRs):

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 05/21 | 06/21 | 07/21 | 08/21 | 09/21 | 10/21 | 11/21 | 12/21 | 01/22 | 02/22 | 03/22 | 04/22 |
| 1.31 | 1.4 | 1.2 | 1.1 | 1.2 | 0.892 | 0.754 | 0.919 | 0.929 | 1.1 | 0.955 | 1.1 |

1. Industrial Facilities Maximum Average Flow (QIND) for Contributing Pollutants (obtained from year 2021 annual DMR):

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Facility**  **(Permit No., AI No.)** | **Maximum Average Flow (QIND), MGD** | | | | | | | | |
| **Cd** | **Cr** | **Cu** | **Pb** | **Ni** | **Ag** | **Zn** | **CN** | **Hg** |
| TransAmerican Waste Central Landfill Inc, Central Landfill Facility  (MSP092273, 55) | --- | --- | --- | --- | --- | --- | --- | --- | .023496 |
| Total, ΣQIND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .023496 |

1. Industrial Facilities Permitted/Requested Flow (QW):

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Facility**  **(Permit No., AI No.)** | **Industrial Users Permitted/Requested Flows (QW), MGD** | | | | | | | | |
| **Cd** | **Cr** | **Cu** | **Pb** | **Ni** | **Ag** | **Zn** | **CN** | **Hg** |
| TransAmerican Waste Central Landfill Inc, Central Landfill Facility  (MSP092273, 55) | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| Total, ΣQT | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |

1. **BACKGROUND/DOMESTIC LOADING CALCULATIONS**

*Background Loading (BGL), lb/day = 8.34 x BGC (mg/L)x (QPOTW - ΣQINDUSTRIAL) (MGD)*

BGC = Background concentration of domestic sewage. Calculated from actual POTW data as shown in Appendix A.

ΣQINDUSTRIAL = (QIND1 + QIND2 + …) = Summation of maximum average flows from existing industrial dischargers (IUs) contributing a Pollutant of Concern (POC) to the POTW. Maximum daily flow data may be used when average data is not available.

BGL (Cd) = 8.34\*0.0007\*(1.07 – 0) = 0.00625 lb/day

BGL (Cr) = 8.34\*0.0012\*(1.07 – 0) = 0.0107 lb/day

BGL (Cu) = 8.34\*0.0136\*(1.07 – 0) = 0.121 lb/day

BGL (Pb) = 8.34\*0.001\*(1.07 – 0) = 0.00892 lb/day

BGL (Ni) = 8.34\*0.00450\*(1.07 – 0) = 0.0402 lb/day

BGL (Ag) = 8.34\*0.0005\*(1.07 – 0) = 0.00446 lb/day

BGL (Zn) = 8.34\*0.194\*(1.07 – 0) = 1.73 lb/day

BGL (CN) = 8.34\*0.0025\*(1.07 – 0) = 0.0223 lb/day

BGL (Hg) = 8.34\*0.000017\*(1.07 – 0.023496) = 0.000148 lb/day

1. **ALLOWABLE HEADWORKS LOADING CALCUATIONS**

Instream Wastewater Concentration (*IWC), % = [QPOTW / (QPOTW + Q7/10)] x 100*

IWC *=* [1.07/(1.07 + 15)]\*100 = 6.7 %

Acute and chronic screening will be developed since IWC > 1 %.

1. AHL, Water Quality Criteria Based (AHLWQC)

*AHLWQC, lb/day = 8.34 x CCRITERIA (mg/L) x (Q7/10 + QPOTW, MGD) / (1 – RPOTW)*

CCRITERIA = Water Quality Criteria; obtained from State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters: Freshwater Acute and Chronic Values.

RPOTW = Removal efficiency, in decimal form. Values obtained from Appendix B.

**Chronic Analysis, AHLCWQC:**

AHLCWQC (Cd) = 8.34\*0.00015\*(15 + 1.07)/(1 – 0.63) = 0.0543 lb/day

AHLCWQC (Cr) = 8.34\*0.042\*(15 + 1.07)/(1 – 0.771) = 24.58 lb/day

AHLCWQC (Cu) = 8.34\*0.0050\*(15 + 1.07)/(1 – 0.870) = 5.15 lb/day

AHLCWQC (Pb) = 8.34\*0.00118\*(15 + 1.07)/(1 – 0.659) = 0.464 lb/day

AHLCWQC (Ni) = 8.34\*0.029\*(15 + 1.07)/(1 – 0.706) = 13.22 lb/day

AHLCWQC (Ag) = No Criteria = No data

AHLCWQC (Zn) = 8.34\*0.065\*(15 + 1.07)/(1 – 0.770) = 37.88 lb/day

AHLCWQC (CN) = 8.34\*0.0052\*(15 + 1.07)/(1 – 0.62) = 1.83 lb/day

**Acute Analysis, AHLAWQC:**

AHLAWQC (Cd) = 8.34\*0.00103\*(15 + 1.07)/(1 – 0.63) = 0.373 lb/day

AHLAWQC (Cr) = 8.34\*0.323\*(15 + 1.07)/(1 – 0.771) = 189.04 lb/day

AHLAWQC (Cu) = 8.34\*0.0070\*(15 + 1.07)/(1 – 0.870) = 7.22 lb/day

AHLAWQC (Pb) = 8.34\*0.030\*(15 + 1.07)/(1 – 0.659) = 11.79 lb/day

AHLAWQC (Ni) = 8.34\*0.260\*(15 + 1.07)/(1 – 0.706) = 118.52 lb/day

AHLAWQC (Ag) = 8.34\*0.00098\*(15 + 1.07)/(1 – 0.75) = 0.525 lb/day

AHLAWQC (Zn) = 8.34\*0.065\*(15 + 1.07)/(1 – 0.770) = 37.88 lb/day

AHLAWQC (CN) = 8.34\*0.0220\*(15 + 1.07)/(1 – 0.62) = 7.76 lb/day

1. AHL, POTW Inhibition Based (AHLINH)

*AHLINH, lb/day = 8.34 x QPOTW (MGD) x CINH (mg/L)*

CINH = Activated Sludge Inhibition Levels, from *EPA Guidance Manual on the* *Development and Implementation of* *Local Discharge Limitations Under the Pretreatment Program:* Table 3-2Activated Sludge Inhibition Levels. For the silver and mercury parameters, the minimum reported inhibition threshold is utilized. For all other parameters, 1.0 mg/L is used since this value is near the minimum side of the minimum reported range of inhibition threshold levels.

AHLINH (Cd) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (Cr) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (Cu) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (Pb) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (Ni) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (Ag) = 8.34\*1.07\*0.25 = 2.23 lb/day

AHLINH (Zn) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (CN) = 8.34\*1.07\*1.0 = 8.92 lb/day

AHLINH (Hg) = 8.34\*1.07\*0.1 = 0.892 lb/day

1. AHL, POTW NPDES Permit Limit Based (AHLNPDES)

Not applicable.

1. **MAXIMUM ALLOWABLE HEADWORKS LOADINGS AND LIMITING CASE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **AHLINH (lb/day)** | **AHLCWQC (lb/day)** | **AHLAWQC (lb/day)** | **AHLCNPDES (lb/day)** | **AHLANPDES (lb/day)** | **MAHLC**  **(lb/day)** | **MAHLA**  **(lb/day)** | **BGL (lb/day)** | **LC**  **(lb/day)** | **Allocation Available**  **(BGL < LC)** |
| Cd | 8.92 | 0.0543 | 0.373 | --- | --- | 0.0543 | 0.373 | 0.00625 | 0.0543 | Allocation |
| Cr | 8.92 | 24.58 | 189.04 | --- | --- | 8.92 | 8.92 | 0.0107 | 8.92 | Allocation |
| Cu | 8.92 | 5.15 | 7.22 | --- | --- | 5.15 | 7.22 | 0.121 | 5.15 | Allocation |
| Pb | 8.92 | 0.464 | 11.79 | --- | --- | 0.464 | 8.92 | 0.00892 | 0.464 | Allocation |
| Ni | 8.92 | 13.22 | 118.52 | --- | --- | 8.92 | 8.92 | 0.0402 | 8.92 | Allocation |
| Ag | 2.23 | --- | 0.525 | --- | --- | --- | 0.525 | 0.00446 | 0.525 | Allocation |
| Zn | 8.92 | 37.88 | 37.88 | --- | --- | 8.92 | 8.92 | 1.73 | 8.92 | Allocation |
| CN | 8.92 | 1.83 | 7.76 | --- | --- | 1.83 | 7.76 | 0.0223 | 1.83 | Allocation |
| Hg | 0.892 | --- | --- | --- | --- | 0.892 | 0.892 | 0.000148 | 0.892 | Allocation |

MAHLC = smallest chronic AHL = comparison of AHLINH, AHLCWQC, and AHLCNPDES

MAHLA = smallest acute AHL = comparison of AHLINH, AHLAWQC, and AHLANPDES

LC = smallest of MAHLC and MAHLA

1. **DEVELOPMENT OF ALLOWABLE CONCENTRATIONS**

The remaining industrial wasteload allocation will be used in calculating allowable acute and chronic concentrations using the “Industrial User (IU) Contributory Flow” method as described in EPA’s *Local Limits Development Guidance* (EPA 833-R-04-002A, July 2004).

*PAI, lb/day = (MAHL, lb/day – BGL, lb/day) x (QW, MGD / QT, MGD)*

*CALLOW, mg/L = (PAI, lb/day) / (8.34 x QW, MGD)*

PAI = Permit allocation for indirect discharger

CALLOW = Allowable concentration for indirect discharger

QW = Applicant’s permitted/requested process discharge

QT = Total industrial contributory flow for pertinent pollutants

MAHL = MAHLC to be used for chronic and MAHLA to be used for acute

BGL = Background/domestic loading

**CHRONIC (Average):**

PAI (Cd) = (0.0543 – 0.00625)\*(0.03/0.03) = 0.0481 lb/day

CALLOW (Cd) = 0.0481/(8.34\*0.03) = 0.192 mg/L

PAI (Cr) = (8.92 – 0.0107)\*(0.03/0.03) = 8.91 lb/day

CALLOW (Cr) = 8.91/(8.34\*0.03) = 35.61 mg/L

PAI (Cu) = (5.15 – 0.121)\*(0.03/0.03) = 5.03 lb/day

CALLOW (Cu) = 5.03/(8.34\*0.03) = 20.10 mg/L

PAI (Pb) = (0.464 – 0.00892)\*(0.03/0.03) = 0.455 lb/day

CALLOW (Pb) = 0.455/(8.34\*0.03) = 1.82 mg/L

PAI (Ni) = (8.92 – 0.0402)\*(0.03/0.03) = 8.88 lb/day

CALLOW (Ni) = 8.88/(8.34\*0.03) = 35.49 mg/L

PAI (Ag) = No Criteria = No data

PAI (Zn) = (8.92 – 1.73)\*(0.03/0.03) = 7.19 lb/day

CALLOW (Zn) = 7.19/(8.34\*0.03) = 28.74 mg/L

PAI (CN) = (1.83 – 0.0223)\*(0.03/0.03) = 1.81 lb/day

CALLOW (CN) = 1.81/(8.34\*0.03) = 7.23 mg/L

PAI (Hg) = (0.892 – 0.000148)\*(0.03/0.03) = 0.892 lb/day

CALLOW (Hg) = 0.892/(8.34\*0.03) = 3.57 mg/L

**ACUTE (Maximum):**

PAI (Cd) = (0.373 – 0.00625)\*(0.03/0.03) = 0.367 lb/day

CALLOW (Cd) = 0.367/(8.34\*0.03) = 1.47 mg/L

PAI (Cr) = (8.92 – 0.0107)\*(0.03/0.03) = 8.91 lb/day

CALLOW (Cr) = 8.91/(8.34\*0.03) = 35.61 mg/L

PAI (Cu) = (7.22 – 0.121)\*(0.03/0.03) = 7.10 lb/day

CALLOW (Cu) = 7.10/(8.34\*0.03) = 28.38 mg/L

PAI (Pb) = (8.92 – 0.00892)\*(0.03/0.03) = 8.91 lb/day

CALLOW (Pb) = 8.91/(8.34\*0.03) = 35.61 mg/L

PAI (Ni) = (8.92 – 0.0402)\*(0.03/0.03) = 8.88 lb/day

CALLOW (Ni) = 8.88/(8.34\*0.03) = 35.49 mg/L

PAI (Ag) = (0.525 – 0.00446)\*(0.03/0.03) = 0.521 lb/day

CALLOW (Ag) = 0.521/(8.34\*0.03) = 2.08 mg/L

PAI (Zn) = (8.92 – 1.73)\*(0.03/0.03) = 7.19 lb/day

CALLOW (Zn) = 7.19/(8.34\*0.03) = 28.74 mg/L

PAI (CN) = (7.76 – 0.0223)\*(0.03/0.03) = 7.74 lb/day

CALLOW (CN) = 7.74/(8.34\*0.03) = 30.94 mg/L

PAI (Hg) = (0.892 – 0.000148)\*(0.03/0.03) = 0.892 lb/day

CALLOW (Hg) = 0.892/(8.34\*0.03) = 3.57 mg/L

1. **EFFLUENT LIMITATION GUIDELINES AND CATEGORICAL LIMITATIONS**

40 CFR Part 445 – Landfills Point Source Category

40 CFR 445.3 – General Pretreatment Standards:

“*Any source subject to this part that introduces wastewater pollutants into a publicly owned treatment works (POTW) must comply with 40 CFR Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution.*”

1. **PROPOSED PERMIT LIMITATIONS – OUTFALL 001**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Allowable**  **(ALL)** | | | | **Current Permit Limits**  **(CPL)** | | | | **Proposed Permit Limits**  **(PPL)** | | | | **Sampling Frequency** | **Sample Type** | **Basis of Decision** |
| **Avg.**  **lb/day** | **Max.**  **lb/day** | **Avg.**  **mg/L** | **Max.**  **mg/L** | **Avg.**  **lb/day** | **Max.**  **lb/day** | **Avg.**  **mg/L** | **Max.**  **mg/L** | **Avg.**  **lb/day** | **Max.**  **lb/day** | **Avg.**  **mg/L** | **Max.**  **mg/L** |
| Cadmium, TR | 0.0481 | 0.367 | 0.192 | 1.47 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Chromium, TR | 8.91 | 8.91 | 35.61 | 35.61 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Copper, TR | 5.03 | 7.10 | 20.10 | 28.38 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Lead, TR | 0.455 | 8.91 | 1.82 | 35.61 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Nickel, TR | 8.88 | 8.88 | 35.49 | 35.49 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Silver, TR | --- | 0.521 | --- | 2.08 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Zinc, TR | 7.19 | 7.19 | 28.74 | 28.74 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Cyanide, T | 1.81 | 7.74 | 7.23 | 30.94 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | BTJ |
| Mercury, TR | 0.892 | 0.892 | 3.57 | 3.57 | --- | --- | Report | Report | --- | --- | --- | --- | --- | --- | BTJ |
| Ammonia, T | --- | --- | --- | --- | --- | --- | Report | Report | --- | --- | Report | Report | Quarterly | Grab | CPL |
| Oil and Grease | --- | --- | --- | --- | --- | --- | Report | Report | --- | --- | Report | Report | Quarterly | Grab | CPL |

TR = Total Recoverable; T = Total; BTJ = Best Technical Judgment

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | **Current Permit Limits**  **(CPL)** | | **Proposed Permit Limits**  **(PPL)** | | **Sampling**  **Frequency** | **Sample**  **Type** | **Basis of**  **Decision** |
| **Avg.** | **Max.** | **Avg.** | **Max.** |
| Flow | Report MGD | 0.03 MGD | Report MGD | 0.03 MGD | Quarterly | Batch | CPL |
| pH | 6.0 SU (min.) | 9.0 SU | 6.0 SU (min.) | 9.0 SU | Quarterly | Grab | CPL |

Flow, pH, ammonia, and oil and grease analyses shall be submitted on an annual DMR.

**X. STATEMENT OF BASIS (narrative)**

In the permit application, the facility requested the removal of mercury as a monitored parameter for its process wastewater discharge due to its non-detection status for several years. A review of the last five annual DMRs submitted by the facility reveal “NODI=B” for mercury. NODI=B is an EPA indicator code that means “below detect limit/no detect.” The calculated allowable limitations for mercury contained in this document do not reveal any concerns. Therefore, mercury has been removed as a monitored parameter for this permit reissuance.

The proposed permit limits for flow, pH, ammonia, and oil and grease shall remain unchanged in this permit reissuance. Due to the removal of mercury as a monitored parameter, a public notice shall be required.

Condition S-1 on page 21 shown below is included in the reissued permit:

“A copy of each Discharge Monitoring Report (DMR) form shall also be submitted annually by the 28th of January to the POTW at the following address:

Mr. Ray Scott

Executive Director

Pearl River County Utility Authority

PO Box 699

Picayune, MS 39466” [11 Miss. Admin. Code Pt. 6, Ch. 1, Subch. 1.]

**APPENDIX A**

**BACKGROUND CONCENTRATION OF DOMESTIC SEWAGE**

Cadmium (Cd): BGC = 0.0007 mg/L

Chromium (Cr): BGC = 0.0012 mg/L

Copper (Cu): BGC = 0.0136 mg/L

Lead (Pb): BGC = 0.001 mg/L

Nickel (Ni): BGC = 0.00450 mg/L

Silver (Ag): BGC = 0.0005 mg/L

Zinc (Zn): BGC = 0.194 mg/L

Cyanide (CN): BGC = 0.0025 mg/L

Mercury (Hg): BGC = 0.000017 mg/L

The above values were summarized from the nine following tables.

Formulas used on subsequent pages:

For each analysis: Total Flow = POTW flow, MGD – ΣIU flow, MGD

For each analysis: Total Load = POTW load, lb/day – ΣIU load, lb/day

For each analysis: Total Conc. = (Total Load) / (Total Flow \*8.34)

BGC = Σ monthly concentrations / # of concentration values

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cadmium (Cd)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00259 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |  |  |  |
| Load, lb/day: | 0.0058 | 0.0058 | 0.0050 | 0.0050 | 0.0046 | 0.0238 | 0.0050 | 0.0050 | 0.0037 | 0.0037 | 0.0031 | 0.0031 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.00259** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0058** | **0.0058** | **0.0050** | **0.0050** | **0.0046** | **0.0238** | **0.0050** | **0.0050** | **0.0037** | **0.0037** | **0.0031** | **0.0031** |  |  |  |
| **Average Domestic Concentration = 0.0007 mg/L** | | | | | | | | | | | | |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Chromium (Cr)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.0005 | 0.00117 | 0.0005 | 0.0005 | 0.00112 | 0.0005 | 0.0005 | 0.0005 | 0.00214 | 0.00209 | 0.0044 | 0.0005 |  |  |  |
| Load, lb/day: | 0.0058 | 0.0137 | 0.0050 | 0.0050 | 0.0103 | 0.0046 | 0.0050 | 0.0050 | 0.0159 | 0.0155 | 0.0277 | 0.0031 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.0005** | **0.00117** | **0.0005** | **0.0005** | **0.00112** | **0.0005** | **0.0005** | **0.0005** | **0.00214** | **0.00209** | **0.0044** | **0.0005** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0058** | **0.0137** | **0.0050** | **0.0050** | **0.0103** | **0.0046** | **0.0050** | **0.005** | **0.0159** | **0.0155** | **0.0277** | **0.0031** |  |  |  |
| **Average Domestic Concentration = 0.0012 mg/L** | | | | | | | | | | | | |  |  |  |

\*These values are the averages listed on the DMRs. Average values are preferred over maximum values because they present a more representative model of the facility’s typical effluent.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Copper (Cu)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.00847 | 0.00954 | 0.0163 | 0.0211 | 0.016 | 0.0178 | 0.0135 | 0.00783 | 0.0104 | 0.0152 | 0.0122 | 0.0149 |  |  |  |
| Load, lb/day: | 0.0989 | 0.1114 | 0.1631 | 0.2111 | 0.1467 | 0.1633 | 0.1351 | 0.0783 | 0.0773 | 0.1130 | 0.0767 | 0.0937 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.00847** | **0.00954** | **0.0163** | **0.0211** | **0.016** | **0.0178** | **0.0135** | **0.00783** | **0.0104** | **0.0152** | **0.0122** | **0.0149** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0989** | **0.1114** | **0.1631** | **0.2111** | **0.1467** | **0.1633** | **0.1351** | **0.0783** | **0.0773** | **0.1130** | **0.0767** | **0.0937** |  |  |  |
| **Average Domestic Concentration = 0.0136 mg/L** | | | | | | | | | | | | |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Lead (Pb)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.00144 | 0.00162 | 0.00158 | 0.00106 | 0.0005 | 0.0005 | 0.00142 | 0.00169 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |  |  |  |
| Load, lb/day: | 0.0168 | 0.0189 | 0.0158 | 0.0106 | 0.0046 | 0.0046 | 0.0142 | 0.0169 | 0.0037 | 0.0037 | 0.0031 | 0.0031 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.00144** | **0.00162** | **0.00158** | **0.00106** | **0.0005** | **0.0005** | **0.00142** | **0.00169** | **0.0005** | **0.0005** | **0.0005** | **0.0005** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0168** | **0.0189** | **0.0158** | **0.0106** | **0.0046** | **0.0046** | **0.0142** | **0.0169** | **0.0037** | **0.0037** | **0.0031** | **0.0031** |  |  |  |
| **Average Domestic Concentration = 0.001 mg/L** | | | | | | | | | | | | |  |  |  |

\*These values are the averages listed on the DMRs. Average values are preferred over maximum values because they present a more representative model of the facility’s typical effluent.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Nickel (Ni)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.00238 | 0.00278 | 0.00385 | 0.00503 | 0.00279 | 0.00348 | 0.00215 | 0.00165 | 0.00587 | 0.0092 | 0.012 | 0.00285 |  |  |  |
| Load, lb/day: | 0.0278 | 0.0325 | 0.0385 | 0.0503 | 0.0256 | 0.0319 | 0.0215 | 0.0165 | 0.0437 | 0.0684 | 0.0754 | 0.0179 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.00238** | **0.00278** | **0.00385** | **0.00503** | **0.00279** | **0.00348** | **0.00215** | **0.00165** | **0.00587** | **0.0092** | **0.012** | **0.00285** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0278** | **0.0325** | **0.0385** | **0.0503** | **0.0256** | **0.0319** | **0.0215** | **0.0165** | **0.0437** | **0.0684** | **0.0754** | **0.0179** |  |  |  |
| **Average Domestic Concentration = 0.00450 mg/L** | | | | | | | | | | | | |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Silver (Ag)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |  |  |  |
| Load, lb/day: | 0.0058 | 0.0058 | 0.0050 | 0.0050 | 0.0046 | 0.0046 | 0.0050 | 0.0050 | 0.0037 | 0.0037 | 0.0031 | 0.0031 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** | **0.0005** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0058** | **0.0058** | **0.0050** | **0.0050** | **0.0046** | **0.0046** | **0.0050** | **0.0050** | **0.0037** | **0.0037** | **0.0031** | **0.0031** |  |  |  |
| **Average Domestic Concentration = 0.0005 mg/L** | | | | | | | | | | | | |  |  |  |

\*These values are the averages listed on the DMRs. Average values are preferred over maximum values because they present a more representative model of the facility’s typical effluent.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Zinc (Zn)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.111 | 0.212 | 0.251 | 0.387 | 0.213 | 0.254 | 0.135 | 0.0862 | 0.0874 | 0.277 | 0.151 | 0.167 |  |  |  |
| Load, lb/day: | 1.2957 | 2.4747 | 2.5114 | 3.8721 | 1.9536 | 2.3296 | 1.3507 | 0.8625 | 0.6500 | 2.0602 | 0.9493 | 1.0499 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.111** | **0.212** | **0.251** | **0.387** | **0.213** | **0.254** | **0.135** | **0.0862** | **0.0874** | **0.277** | **0.151** | **0.167** |  |  |  |
| **TOTAL Load, lb/day:** | **1.2957** | **2.4747** | **2.5114** | **3.8721** | **1.9536** | **2.3296** | **1.3507** | **0.8625** | **0.6500** | **2.0602** | **0.9493** | **1.0499** |  |  |  |
| **Average Domestic Concentration = 0.194 mg/L** | | | | | | | | | | | | |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cyanide (CN)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |  |  |  |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |  |  |  |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |  |  |  |
| Conc., mg/L: | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 |  |  |  |
| Load, lb/day: | 0.0292 | 0.0292 | 0.0250 | 0.0250 | 0.0229 | 0.0229 | 0.0250 | 0.0250 | 0.0186 | 0.0186 | 0.0157 | 0.0157 |  |  |  |
| **TOTALS** | | | | | | | | | | | | |  |  |  |
| **TOTAL Flow, MGD:** | **1.4** | **1.4** | **1.2** | **1.2** | **1.1** | **1.1** | **1.2** | **1.2** | **0.892** | **0.892** | **0.754** | **0.754** |  |  |  |
| **TOTAL Conc., mg/L:** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** | **0.0025** |  |  |  |
| **TOTAL Load, lb/day:** | **0.0292** | **0.0292** | **0.0250** | **0.0250** | **0.0229** | **0.0229** | **0.0250** | **0.0250** | **0.0186** | **0.0186** | **0.0157** | **0.0157** |  |  |  |
| **Average Domestic Concentration = 0.0025 mg/L** | | | | | | | | | | | | |  |  |  |

\*These values are the averages listed on the DMRs. Average values are preferred over maximum values because they present a more representative model of the facility’s typical effluent.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Mercury (Hg)** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** |
| **Pearl River County Utility Authority, Neal Road POTW** | | | | | | | | | | | | |
| Flow\*, MGD: | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.2 | 0.892 | 0.892 | 0.754 | 0.754 |
| Conc., mg/L: | 0.000014 | 0.000009 | 0.000011 | 0.000010 | 0.000014 | 0.000013 | 0.000011 | 0.000063 | 0.000017 | 0.000009 | 0.000016 | 0.000018 |
| Load, lb/day: | 0.00016 | 0.00011 | 0.00011 | 0.00010 | 0.00013 | 0.00012 | 0.00011 | 0.00063 | 0.00013 | 0.000067 | 0.00010 | 0.00011 |
| **TransAmerican Waste Central Landfill Inc, Central Landfill Facility** | | | | | | | | | | | | |
| Flow\*, MGD: | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 | 0.023496 |
| Conc.\*, mg/L: | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B |
| Load\*, lb/day: | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B | NODI=B |
| **TOTALS** | | | | | | | | | | | | |
| **TOTAL Flow, MGD:** | **1.376504** | **1.376504** | **1.176504** | **1.176504** | **1.076504** | **1.076504** | **1.176504** | **1.176504** | **0.868504** | **0.868504** | **0.730504** | **0.730504** |
| **TOTAL Conc., mg/L:** | **0.000014** | **0.000010** | **0.000011** | **0.000010** | **0.000014** | **0.000013** | **0.000011** | **0.000064** | **0.000018** | **0.000009** | **0.000016** | **0.000018** |
| **TOTAL Load, lb/day:** | **0.00016** | **0.00011** | **0.00011** | **0.00010** | **0.00013** | **0.00012** | **0.00011** | **0.00063** | **0.00013** | **0.000067** | **0.00010** | **0.00011** |
| **Average Domestic Concentration = 0.000017 mg/L** | | | | | | | | | | | | |

\*These values are the averages listed on the DMRs. Average values are preferred over maximum values because they present a more representative model of the facility’s

typical effluent.

**APPENDIX B**

**REMOVAL EFFICIENCIES**

**PEARL RIVER COUNTY UTILITY AUTHORITY, NEAL ROAD POTW**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **[mg/L]** | **06/16/21** | **06/23/21** | **07/07/21** | **07/21/21** | **08/11/21** | **08/25/21** | **09/08/21** | **09/16/21** | **10/14/21** | **10/20/21** | **11/04/21** | **11/09/21** | **Removal Efficiency1** |
| Cd Inf. | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00259 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 63 %\* |
| Cd Eff. | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |
| Cr Inf. | 0.0005 | 0.00117 | 0.0005 | 0.0005 | 0.00112 | 0.0005 | 0.0005 | 0.0005 | 0.00214 | 0.00209 | 0.0044 | 0.0005 | 77.1 % |
| Cr Eff. | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |
| Cu Inf. | 0.00847 | 0.00954 | 0.0163 | 0.0211 | 0.016 | 0.0178 | 0.0135 | 0.00783 | 0.0104 | 0.0152 | 0.0122 | 0.0149 | 87.0 % |
| Cu Eff. | 0.00197 | 0.00158 | 0.00141 | 0.00292 | 0.0017 | 0.0023 | 0.002 | 0.00226 | 0.00145 | 0.0005 | 0.00158 | 0.00157 |
| Pb Inf. | 0.00144 | 0.00162 | 0.00158 | 0.00106 | 0.0005 | 0.0005 | 0.00142 | 0.00169 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 65.9 % |
| Pb Eff. | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |
| Ni Inf. | 0.00238 | 0.00278 | 0.00385 | 0.00503 | 0.00279 | 0.00348 | 0.00215 | 0.00165 | 0.00587 | 0.0092 | 0.012 | 0.00285 | 70.6 % |
| Ni Eff. | 0.0015 | 0.0005 | 0.00114 | 0.00154 | 0.00145 | 0.00135 | 0.0011 | 0.00117 | 0.00116 | 0.00149 | 0.00181 | 0.00167 |
| Ag Inf. | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 75 %\* |
| Ag Eff. | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 |
| Zn Inf. | 0.111 | 0.212 | 0.251 | 0.387 | 0.213 | 0.254 | 0.135 | 0.0862 | 0.0874 | 0.277 | 0.151 | 0.167 | 77.0 % |
| Zn Eff. | 0.0582 | 0.0246 | 0.0346 | 0.0512 | 0.0506 | 0.0591 | 0.0394 | 0.0307 | 0.0415 | 0.0487 | 0.0489 | 0.0488 |
| CN Inf. | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 62 %\* |
| CN Eff. | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 |
| Hg Inf. | 0.000014 | 0.000009 | 0.000011 | 0.000010 | 0.000014 | 0.000013 | 0.000011 | 0.000063 | 0.000017 | 0.000009 | 0.000016 | 0.000018 | 94.2 % |
| Hg Eff. | .0000009 | .000001 | .000001 | .0000019 | .0000011 | .000001 | .0000009 | .0000011 | .0000006 | .0000006 | .0000008 | .0000009 |

Values obtained from POTW bench sheets.

Grey-shaded values were excluded because influent < effluent for the same sample date.

Blue values were used in “non-detect” results in which the Modified Reporting Limit (MRL) was then divided by 2 to obtain the blue value.

1 Removal Efficiency = [(<inf.> - <eff.>)/<inf.>]\*100, where <inf.> is the average influent value and <eff.> is the average effluent value.

\*MDEQ-observed study removal efficiency for activated sludge systems was used due to inadequate data from the POTW. An oxidation ditch is a type of activated sludge system.