# Annual Environmental Report

# 2018


Castletroy

D0019-01

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# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0019-01, Castletroy, in Limerick in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

## 1.1 Licence specific reporting included in AER

| Assessment / Report | Included in AER |
|---|---|
| **Priority Substances Assessment** | Yes |

## 1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant CASTLETROY WWTP with a Plant Capacity PE of 45000. The treatment process includes the following:

### 1.2.1 CASTLETROY WWTP

| Treatment type | Yes / No | Details |
|---|---|---|
| **Preliminary Treatment** | Yes | Screening and grit removal |
| **Primary Treatment** | Yes | Primary solids removal (partial) |
| **Secondary Treatment** | Yes | Activated sludge |
| **Nutrient Removal** | Yes | Phosphate |
| **Tertiary Treatment** | No | |

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.2 Discharges from the agglomeration.

## 1.3 ELV Overview

### 1.3.1 CASTLETROY WWTP

| Compliance Status | |
|---|---|
| **Were all parameters compliant for CASTLETROY WWTP treatment plant** | No |
| **Where noncompliant see table 2.2.1 for details of parameters** | |

## 1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

| Treatment Plant | Sludge type | Quantity | Unit | % Dry Solids | Destination |
|---|---|---|---|---|---|
| **CASTLETROY WWTP** | Cake Sludge | 2862.72 | Weight (Tonnes) | 12 | Limerick Main Drainage D0013-01 |
| **CASTLETROY WWTP** | Cake Sludge | 13.4 | Weight (Tonnes) | 12 | Cremins composting Broadford Co limerick |

### Annual Statement of Measures

No capital works were carried out in 2018

# 2 MONITORING REPORTS SUMMARY

## 2.1 Summary report on monthly influent monitoring

A summary of influent monitoring for the treatment plant is presented in below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

### 2.1.1 Influent Monitoring Summary - CASTLETROY WWTP

| Parameters | Number of Samples | Annual Max | Annual Mean |
|---|---|---|---|
| **Total Nitrogen mg/l** | 12 | 81.4 | 36.63 |
| **COD-Cr mg/l** | 13 | 1042 | 647.12 |
| **BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l** | 13 | 590 | 275.54 |
| **Suspended Solids mg/l** | 13 | 670 | 307.2 |
| **Total Phosphorus (as P) mg/l** | 10 | 18.3 | 6.15 |
| **Hydraulic Capacity** | 0 | 23297 | 7794 |

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity as detailed further in Section 3.2. The design of the wastewater tretament plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

## 2.2 Discharges from the agglomeration

### 2.2.1 Effluent Monitoring Summary - CASTLETROY WWTP

| Parameter | WWDL ELV (Schedule A) | ELV with Condition 2 Interpretation included Note 1 | Interim % reduction from influent concentration | Number of sample results | Number of exceedences | Number of with Condition 2 Interpretation included | Annual Mean | Overall Compliance (Pass/Fail) |
|---|---|---|---|---|---|---|---|---|
| **Enterococci (Intestinal) MPN/100ml** | 0 | 0 | 0 | 2 | 0 | 0 | 2493.87 | Pass |
| **pH pH units** | 0 | 0 | 0 | 12 | 0 | 0 | 7.35 | Pass |
| **Total Nitrogen mg/l** | 0 | 0 | 0 | 12 | 0 | 0 | 13.85 | Pass |
| **Total Phosphorus (as P) mg/l** | 2 | 2.4 | 0 | 13 | 0 | 0 | 0.57 | Pass |
| **COD-Cr mg/l** | 125 | 250 | 0 | 12 | 0 | 0 | 37.07 | Pass |
| **Ammonia-Total (as N) mg/l** | 5 | 6 | 0 | 12 | 0 | 0 | 0.78 | Pass |
| **E. Coli MPN/100ml** | 0 | 0 | 0 | 2 | 0 | 0 | 7154.87 | Pass |
| **BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l** | 25 | 50 | 0 | 12 | 0 | 0 | 6.12 | Pass |
| **ortho-Phosphate (as P) - unspecified mg/l** | 1 | 1.2 | 0 | 13 | 1 | 1 | 0.41 | Fail |
| **Suspended Solids mg/l** | 35 | 87.5 | 0 | 12 | 0 | 0 | 16.38 | Pass |

| Parameter | WWDL ELV (Schedule A) | ELV with Condition 2 Interpretation included Note 1 | Interim % reduction from influent concentration | Number of sample results | Number of exceedences | Number of with Condition 2 Interpretation included | Annual Mean | Overall Compliance (Pass/Fail) |
|---|---|---|---|---|---|---|---|---|
| **Coliform Bacteria (Total) MPN/100ml** | 0 | 0 | 0 | 2 | 0 | 0 | 31553.82 | Pass |

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 - For parameters where a mean ELV applies

Cause of Exceedance(s):

Dosing pump issue

Significance of Results:

The WWTP is not compliant with the ELV's set in the Wastewater Discharge Licence.

## 2.3 Ambient monitoring summary

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

### 2.3.1 Ambient Monitoring Report Summary - CASTLETROY WWTP

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

| Ambient Monitoring Point from WWDL (or as agreed with EPA) | Irish Grid Reference | Code | Bathing Water | Drinking Water | FWPM | Shellfish | WFD Status |
|---|---|---|---|---|---|---|---|
| **Upstream** | 161040, 158657 | TPEFF1900D0019SW001 | No | No | No | No | Unassigned |
| **Downstream** | 160519, 158489 | TPEFF1900D0019SW001 | No | No | No | No | Unassigned |

### 2.3.2 Ambient Monitoring Parameter Summary - CASTLETROY WWTP

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

| Parameter Name | Upstream Monitoring Point Location | Upstream Monitoring Point Annual Mean | Downstream Monitoring Point Location | Downstream Monitoring Point Annual Mean | EQS | % of EQS |
|---|---|---|---|---|---|---|
| **pH pH units** | RS25S012561 | 8.25 | RS25S012570 | 8.18 | | |
| **BOD - 5 days (Total) mg/l** | RS25S012561 | 1.38 | RS25S012570 | 1.11 | 2.6 | -10.4 |
| **E. Coli MPN/100ml** | RS25S012561 | 984.42 | RS25S012570 | 583.67 | | |
| **Coliform Bacteria (Total) MPN/100ml** | RS25S012561 | 3705.67 | RS25S012570 | 3118.08 | | |
| **Dissolved Oxygen % O2** | RS25S012561 | 98.58 | RS25S012570 | 98.76 | | |
| **ortho-Phosphate (as P) - unspecified mg/l** | RS25S012561 | 0.02 | RS25S012570 | 0.02 | 0.08 | -2 |
| **Ammonia-Total (as N) mg/l** | RS25S012561 | 0.02 | RS25S012570 | 0.03 | 0.14 | 2.4 |
| **Temperature °C** | RS25S012561 | 11.82 | RS25S012570 | 11.7 | | |
| **Enterococci (Intestinal) MPN/100ml** | RS25S012561 | 71.5 | RS25S012570 | 98.5 | | |

## Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The parameters which exceeded the EQS and may be causing an are: None.

Any other know impacts: The EQS assessed relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009, as amended.

# 3 OPERATIONAL REPORTS SUMMARY

## 3.1 Treatment Efficiency Report

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

### 3.1.1 Treatment Efficiency Report Summary - CASTLETROY WWTP

| Parameter | Influent mass loading (kg/year) | Effluent mass emission (kg/year) | Efficiency (% reduction of influent load) | Comment |
|---|---|---|---|---|
| **TP** | 15638.59 | 1500.74 | 90.4 | |
| **COD** | 1892761.09 | 100686.41 | 94.68 | |
| **TN** | 105008.01 | 37629.37 | 64.17 | |
| **cBOD** | 805924.44 | 16620.57 | 97.94 | |
| **SS** | 898543.01 | 44506.87 | 95.05 | |

Note: The above data is based on sample results for the number of dates reported

## 3.2 Treatment Capacity Report Summary

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

| CASTLETROY WWTP | |
|---|---|
| **Peak Hydraulic Capacity (m3/day) - As Constructed** | 17280 |

| CASTLETROY WWTP | |
|---|---|
| **DWF to the Treatment Plant (m3/day)** | 5306 |
| **Current Hydraulic Loading - annual max (m3/day)** | 23297 |
| **Average Hydraulic loading to the Treatment Plant (m3/day)** | 7794 |
| **Organic Capacity (PE) - As Constructed** | 45000 |
| **Organic Capacity (PE) - Collected Load (peak week)** | 42850 |
| **Organic Capacity (PE) - Remaining** | 2150 |
| **Will the capacity be exceeded in the next three years? (Yes/No)** | No |

## 3.3 Complaints Summary

A summary of complaints of an environmental nature is included below.

| Number of Complaints | Nature of Complaint | Number Open Complaints | Number Closed Complaints |
|---|---|---|---|
| **There is no Complaint data included in the AER.** | | | |

## 3.4 Reported Incidents Summary

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

### 3.4.1 Summary of Incidents

| Incident Type | Cause | No. of incident occurrences | Recurring (Y/N) | Closed (Y/N) |
|---|---|---|---|---|
| **Other** | Plant or equipment breakdown at WWTP | 1 | No | Yes |
| **Spillage** | Other | 1 | No | Yes |
| **Spillage** | Other | 1 | No | Yes |
| **Spillage** | Other | 1 | No | Yes |
| **Other** | Shock load to WWTP | 1 | No | Yes |
| **Non-compliance** | Dosing Pump Failure | 1 | No | Yes |
| **Uncontrolled release** | Plant or equipment breakdown at WWTP | 1 | No | Yes |
| **Spillage** | Other | 1 | No | Yes |

### 3.4.2 Summary of Overall Incidents

| Question | Answer |
|---|---|
| **Number of Incidents in 2018** | 8 |
| **Number of Incidents reported to the EPA via EDEN in 2018** | 8 |
| **Explanation of any discrepancies between the two numbers above** | |

## 3.5 Sludge / Other inputs to the WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

| Input type | Quantity | Unit | P.E. | % of load to WWTP | Included in Influent Monitoring (Y/N)?[3] | Is there a leachate/sludge acceptance procedure for the WWTP? | Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N) |
|---|---|---|---|---|---|---|---|
| **Landfill Leachate (delivered by tanker)** | 260.82 | Weight (Tonnes) | 2 | 0 | No | No | No |

# 4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

## 4.1 Storm Water Overflow Identification and Inspection Report

A summary of the operation of the storm water overflows and their significance where known is included below:

**No Appendix Included**

### 4.1.1 SWO Identification

| WWDL Name / Code for Storm Water Overflow | Irish Grid Ref. | Included in Schedule A4 of the WWDL | Significance of the overflow(High / Medium / Low) | Assessed against DoEHLG Criteria | No. of times activated in 2018 (No. of events) | Total volume discharged in 2018 (m3) | Monitoring Status |
|---|---|---|---|---|---|---|---|
| **SW6** | 166095, 162870 | Yes | | Unknown | | | Not Monitored |
| **SW4** | 160587, 158561 | No | Low | Not Meeting | | | Not Monitored |
| **SW5** | 160587, 158561 | No | Low | Meeting | | | Not Monitored |

### 4.1.2 Inspection Summary Report

| SWO Summary | |
|---|---|
| **How much sewage was discharged via SWOs in the agglomeration in the year (m3)?** | |
| **Is each SWO identified as non meeting DoEHLG Guidance included in the Programme of Improvements?** | Yes |
| **The SWO Assessment included the requirements of relevant of WWDL schedules?** | Yes |

| SWO Summary | |
|---|---|
| **Have the EPA been advised of any additional SWOs / charges to Schedule C3 and A4 under Condition 1.7?** | No |

## 4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.

### 4.2.1 Specified Improvement Programme Summary

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

| Specified Improvement Programmes (under Schedule A and C of WWDL) | Licence Schedule | Licence Completion Date | Date Expired? (N/NA/Y) | Status of Works | Timeframe for Completing the Work | Comments |
|---|---|---|---|---|---|---|
| **Installation of Phosphate removal technology** | C | 31/12/2009 | Yes | Works Completed | | |
| **SW-4 Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, I995** | C | | No | Not Started | | The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis |
| **SW-5 Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, I995** | C | | No | Not Started | | The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis |
| **WWTP short term upgrade** | C | 31/12/2009 | Yes | Works Completed | | |

A summary of the status of any improvements identified by under Condition 5.2 is included below.

### 4.2.2 Improvement Programme Summary

| Improvement Identifier | Improvement Description | Improvement Source | Expected Completion Date | Comments |
|---|---|---|---|---|
| **There are no Improvements Programme for this Agglomeration.** | | | | |

### 4.2.3 Sewer Integrity Risk Assessment

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Table".

# 5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

5.a Licence Specific Reports Summary Table

| Licence Specific Report | Required by licence | Year included in AER | Included in this AER | Reference to relevant section of AER (e.g. Appendix X). |
|---|---|---|---|---|
| **Priority Substances Assessment** | No | 2018 | Yes | 5.1 |

## 5.1 Priority Substances Assessment

The Priority Substances Assessment Report is included in Appendix 7.1 - Priority Substances Assessment. A summary of the findings of this report is included below.

| Parameter | Value |
|---|---|
| **Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance** | N/A |
| **Is the agglomeration included in the Irish Water Dangerous Substance Effluent Monitoring Programme (if yes, what year)** | Yes included in the Irish Water Dangerous Substance Effluent Monitoring Programme. 2018 monitoring data is included in Appendix to this AER |
| **Does the Dangerous Substance Effluent Monitoring Programme reporting identify Irish Water measures for minimising priority substances and eliminating priority hazardous substances in the discharges** | |

| Parameter | Value |
|---|---|
| **Does the Dangerous Substance Effluent Monitoring assessment identify that priority substances were found at levels above EQS or target LOD values??** | |
| **Does the assessment include a review of Trade inputs to the works?** | |
| **Does the assessment include a review of other inputs to the works?** | |
| **Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water)** | |

# 6 CERTIFICATION AND SIGN OFF

## 6.1 Summary of AER Contents

| Parameter | Answer |
|---|---|
| **Does the AER include an Executive Summary?** | Yes |
| **Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?** | Yes |
| **Is there a need to advise the EPA for consideration of a Technical Amendment / Review of the licence?** | No |
| **List reason e.g. additional SWO identified** | |
| **Is there a need to request/advise the EPA of any modifications to the existing WWDL?** | No |
| **List reason e.g. changes to monitoring requirements** | |
| **Have these processes commenced?** | |
| **Are all outstanding reports and assessments from previous AERs included as an appendix to this AER** | No |

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed: Date: 28/03/2019

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of ,

Eleanor Roche

Acting Head of Environmental Regulation.

# 7 APPENDIX

In the appendix include all the detailed or site specific reports that are relevant to the AER. Reports omitted from previous AERs should also be appended here.

| Appendix |
| --- |
| **Appendix 7.1 - Priority Substances Assessment** |

| Archived | Category | Entity | Entity Referenc | Station | Station Referen | Station Easting | Station Northin | Laboratory |
|---|---|---|---|---|---|---|---|---|
| Yes | Discharge Mon | Castletroy Was | TP1900D0019 | Effluent | TPEFF1900D00 | 160630.8 | 158500.3 | Limerick City & |
| Yes | Discharge Mon | Castletroy Was | TP1900D0019 | Effluent | TPEFF1900D00 | 160630.8 | 158500.3 | Limerick City & |

| River Basin Dist | Surface Waterb | Ground Waterb | Sample Templa | Sample Referer | Sample Date | Sample Time | Sample Metho | Sampled By |
|---|---|---|---|---|---|---|---|---|
| Shannon | River: SHANNO | Limerick City Ea | Discharge Mon | 18372013 | 30-May-2018 | 14:10 | Grab | Adrian Insley |
| Shannon | River: SHANNO | Limerick City Ea | Discharge Mon | 18374109 | 23-Oct-2018 | 02:00 | Grab | Adrian Insley |

| | | Parameter | Ortho-Phospha | COD Chemical ( | Ammonia NH3- | Suspended Soli | Total Nitrogen | pH |
|---|---|---|---|---|---|---|---|---|
| | | Max. | -- | -- | -- | -- | -- | -- |
| | | Min. | -- | -- | -- | -- | -- | -- |
| | | Test Method | TM-CHEM-17 | -CHEM- 4, 28 & | TM-CHEM-17 | TM-CHEM-22 | TM-CHEM-26 | TM-CHEM-21 |
| Reason | Comments | Analyst Conclus | mg/l | mg/l | mg/l | mg/l | mg/l | pH units |
| Investigative | Dangerous Con | - | | | | | | 7.4 |
| Compliance | Dangerous subs | - | | | | | | 7.8 |

| Mercury | Arsenic | Total Phosphor | Nickel | Fluoride | Enterococci | Conductivity @ | Chromium | Coliform Bacter |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | TM-CHEM-16 | -- | TM-CHEM-9 | TM-MICRO-3 & | TM-CHEM-6 & 3 | -- | TM-MICRO-2 |
| µg/l | µg/l | mg/l | µg/l | mg/l | MPN/100mls | µS/cm | mg/l | MPN/100mls |
| < 0.06 | < 1 | | 1.7 | 0.36 | | 1684 | 0.0007 | |
| 0.09 | < 1 | | 2.8 | 0.45 | | 1533 | 0.001 | |

| E Coli | Lead | Antimony | Selenium | Boron | Copper | Chloride | Fluoranthene | Alpha Hexachlo |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| TM-MICRO-2 | -- | -- | -- | -- | -- | TM-CHEM-18 | -- | -- |
| MPN/100mls | µg/l | µg/l | µg/l | mg/l | mg/l | mg/l | µg/l | µg/l |
| | < 0.9 | 0.5 | < 3 | 6.44 | 1.736 | 310 | < 0.02 | < 0.003 |
| | < 0.9 | 0.5 | < 3 | 6.51 | 0.008 | 270 | < 0.02 | < 0.003 |

| Beta HCH | Gamma-HCH Li | Dichlobenil | 1,2,3-TCB Trich | Anthracene | Benzene | Benzo(a)pyrene | Benzo(b)fluorar | Benzo(ghi)pery |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l |
| < 0.003 | < 0.0027 | < 0.002 | < 0.01 | < 0.02 | < 0.1 | < 0.02 | < 0.02 | < 0.02 |
| < 0.003 | < 0.003 | < 0.002 | < 0.01 | < 0.02 | < 0.1 | < 0.02 | < 0.02 | < 0.02 |

| Benzo(k)fluorar | Carbon Tetrach | Cyanide | Dieldrin | Diuron | Glyphosate | Hexachloroben | Hexachlorobuta | Indeno(1,2,3-c, |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l |
| < 0.02 | < 0.5 | | < 0.004 | < 0.05 | 1.1 | < 0.002 | < 0.5 | < 0.02 |
| < 0.02 | < 0.5 | 1 | < 0.004 | < 0.05 | < 0.1 | < 0.002 | < 0.5 | < 0.02 |

| Isodrin | Isoproturon | Linuron | Naphthalene | Hardness CaCO | Dichlorometha | Toluene | Atrazine | Simazine |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | TM-CHEM-20 | -- | -- | -- | -- |
| µg/l | µg/l | µg/l | µg/l | mg/l | µg/l | µg/l | µg/l | µg/l |
| < 0.004 | < 0.05 | < 0.05 | < 0.02 | 347.8 | < 5 | < 0.5 | < 0.02 | < 0.02 |
| < 0.004 | < 0.05 | < 0.05 | < 0.02 | 321.1 | < 5 | < 0.5 | < 0.02 | < 0.02 |

| Xylene-Meta,Pa | Ethylbenzene | Chloroform | Trichloroethene | Tetrachloroeth | Xylene-Ortho o | BOD, 5 days wit | 2,4-D Acid Herb | Acenaphthene |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | TM-CHEM-3 | -- | -- |
| µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | mg/l | µg/l | µg/l |
| < 0.5 | < 0.5 | < 1 | < 0.1 | < 0.1 | < 0.5 | | < 0.05 | < 0.02 |
| < 0.5 | < 0.5 | < 1 | < 0.1 | < 0.1 | < 0.5 | | < 0.05 | < 0.02 |

| Acenaphthylen | Chrysene HPLC | Fluorene | MCPA | Phenanthrene | Pyrene | Calcium | Magnesium | 1,2,4-TCB Trich |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | mg/l | mg/l | µg/l |
| < 0.02 | < 0.02 | < 0.02 | < 0.05 | < 0.02 | < 0.02 | 115.5 | 14.4 | < 0.01 |
| < 0.02 | < 0.02 | < 0.02 | < 0.05 | < 0.02 | < 0.02 | 104.1 | 14.9 | < 0.01 |

| Dibenzo(a,h)an | Cadmium | Zinc | Barium | Cobalt | Molybdenum | Vanadium | Tin | Mecoprop Tota |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| µg/l | mg/l | mg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l |
| < 0.02 | < 0.0002 | 0.022 | 48.6 | < 3 | 8.3 | < 3 | < 3 | < 0.05 |
| < 0.02 | < 0 | 0.026 | 30.3 | 5.7 | 26.9 | < 3 | < 3 | < 0.05 |

| Benzo(a)anthra | 2,6-Dichlorobe | Total Cyanide | Total PAH | 1,3,5-Trichlorobenz |
|---|---|---|---|---|
| -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- |
| µg/l | µg/l | µg/l | µg/l | µg/l |
| < 0.02 | < 0.1 | 3 | < 0.02 | < 0.01 |
| < 0.02 | < 0.1 | | < 0.02 | < 0.01 |