

# Proposed Scoring Update for Clean Water State Revolving Fund (CWSRF) Water Quality Severity Points

## Purpose

This document summarizes the proposed changes to the Water Quality Severity Points (WQSPs) calculations within the application review process in the Clean Water State Revolving Fund (CWSRF) program. The CWSRF program is a financing program that assists qualified municipalities with needed water pollution control project construction via low-interest loans. The program is hosted within the Water Infrastructure Funding and Financing Section of the Finance Division in the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

The calculation of WQSPs is done by an engineer/engineers in the Permits Section of EGLE's Water Resources Division (WRD). WRD district engineers may assist with WQSP calculations, as needed based on the number of applications received. The criteria used to allocate the WQSPs is defined fully in this internal guidance to ensure consistency between reviewers.

A revision to the application and scoring process for the CWSRF program is being implemented for the 2024 Fiscal Year.

## Existing Points and Categories

Water Quality Severity Points are currently calculated for five different criteria: dissolved oxygen, nutrients, toxic materials, microorganisms, and drinking water standards. Each of these criteria had 100 potential points to be allocated. The total number of points allocated in most categories was based primarily on a mass reduction basis, such as dissolved oxygen deficit or nutrient loading reduction.

The removal of chlorinated discharges or the reduction of nitrate in groundwater discharges were the exceptions to the loading-based points system. Instead, a set number of points was allocated for projects that incorporated work based on those two criteria.

## Proposed Points

The updated scoring of WQSPs is a result of an update to the entire scoring process under the CWSRF program. The new scoring system will be based on 100 total points. The WQSPs will account for 20 total points, or 20% of the overall score.

## Proposed Categories for Surface Water Discharge Applications

There are three scoring categories for WQSPs: dissolved oxygen, nutrients, and toxics. These categories are similar to the categories used in previous scoring. Each category has a maximum score of 20 points.

The total WQSPs awarded to an application is based on the sum of the points earned in each of the three categories. However, a maximum of 20 WQSPs will be awarded for each project application. Therefore, a project will receive only 20 points even if the total of points awarded from the three categories exceeds 20 points.

The previous scoring criteria included a microorganism category that looked at the reduction of fecal coliform organisms in surface water discharges. These projects are associated with projects that are not currently disinfected, such as CSOs and SSOs. Scoring for those types of intermittent discharges are included in the proposed Public Health category in the CWSRF program; therefore, additional microorganism points are not necessary in the WQSPs process.

### Dissolved Oxygen – 20 Total Points

In the past, dissolved oxygen points were typically only awarded to projects that curbed intermittent discharges such as combined sewer overflows (CSO) and sanitary sewer overflows (SSO). The primary reason is that continuous and seasonal discharges covered under national pollutant discharge elimination system (NPDES) program permits already have effluent limits that are based on protecting the dissolved oxygen standard downstream. The discharges from some intermittent sources, such as approved retention and treatment basins (RTBs) either presumptively meet water quality standards or are demonstrated as meeting water quality standards.

It is anticipated that most projects correcting a dissolved oxygen deficit in the future will still be related to CSO and SSO discharges. However, dissolved oxygen points may also be calculated for continuous or seasonal discharges that require more restrictive effluent limits based on revised modeling or other factors.

A base of ten WQSPs will be awarded to project applications that are intended to correct a discharge that are calculated or proven to result in a violation of the dissolved oxygen standard as defined in Michigan's Part 4 Water Quality Standards [R323.1064, R323.1065]. All other projects will receive zero points for this criterion.

In addition to the ten base points, up to ten additional points will be awarded based on the reduction of the dissolved oxygen deficit. The dissolved oxygen deficit is defined as the mass of oxygen required to eliminate a dissolved oxygen sag and ensure that the minimum predicted dissolved oxygen concentration meets the appropriate standard. The pre- and post- project dissolved oxygen deficit will be calculated using a dissolved oxygen model. A Streeter-Phelps type model will be used for riverine systems, while a completely mixed reactor model will be used for lakes and impoundments. The model will use flow, temperature, and effluent quality default assumptions as defined in Appendix A.

The previous scoring awarded the maximum number of points for projects that reduced the dissolved oxygen deficit by 2,500 kg. The updated scoring is weighted based on this reduction. Projects reducing a dissolved oxygen deficit will receive 0.1 point per 25 kg removed in addition to the 10 base points. Projects reducing a dissolved oxygen deficit by more than 2,500 kg will receive the full 20 points, 10 base points and 10 points based on the mass reduction. For example, a project removing a dissolved oxygen deficit of 1,000 kg would receive 14 total points (10 base points + 4.0 points based on the mass removal).

### Nutrients – 20 Total Points

The department will award up to 20 total points for projects that remove nutrient phosphorus from a discharge to waters of the state.

Ten of the points will be awarded based on the annual mass of total phosphorus removed from a discharge. If a project impacts the nutrient loads at multiple outfalls, the individual points calculated for each outfall will be added together, with a combined maximum of 10 points.

Points based on nutrient removal are calculated based on a net removal of nutrients. For continuous and seasonal dischargers this net removal is simply the reduction in phosphorus mass discharged in the effluent. For intermittent discharges the flow removed at the project outfall are often directed to a downstream treatment plant. The net total phosphorus removal is the reduction of nutrients at the intermittent outfall minus the nutrient load that results from directing that flow to the treatment plant. The nutrient load at the downstream treatment plant is calculated based on the facility's existing effluent quality in discharge monitoring reports.

Measured effluent water quality and discharge data will be used to calculate the pre-project condition; however, site-specific data is not always available. This is especially true to intermittent discharges. Default pre- and post-project assumptions are summarized in Appendix A.

One point will be awarded per 300 kg of total phosphorus removed. Projects that remove more than 3,000 kg of total phosphorus will receive the full 10 points. Point totals will be calculated to the 0.1 scale; meaning projects will receive 0.1 points for every 30 kg removed.

Ten points are held in reserve for projects that are in areas that have a total maximum daily load (TMDL) or documented impairment, either in the form of nuisance nutrient expression or high diurnal variations in dissolved oxygen resulting in violations of the dissolved oxygen standard. These areas are of special importance for nutrient reduction projects. Any project that reduces nutrients and is upstream of an impaired water or TMDL will get an additional 10 points.

### Toxic Materials – 20 Total Points

The WQSPs associated with toxic materials can be broken down into three subcategories: ammonia toxicity, chlorine, and emerging pollutants. Each of the three subcategories can be awarded up to 10 points. However, the cumulative point total for toxic materials cannot exceed 20 points.

In addition, the maximum of 20 toxics points will be awarded for projects that are focused on removing toxic chemicals of human health concern in areas where drinking water protection is necessary. The definition of areas requiring drinking water protection and chemicals of concern is subsequently discussed.

### Ammonia – 10 Subcategory Points

The department adopted new criteria for ammonia toxicity in 2019. Implementation of the criteria began in Fiscal Year 2023 for NPDES permits. The 2019 ammonia toxicity criteria are generally more restrictive than the previous ammonia toxicity criteria; therefore, many facilities are receiving tighter effluent limits for ammonia. These effluent limits are often part of a schedule of compliance that allows a facility a certain number of years to meet the new limits.

It is expected that the CWSRF program will receive an uptick in applications for projects aimed at reducing effluent ammonia because of the criteria implementation. Projects aimed at removing ammonia to meet tighter effluent limits related to preventing chronic toxicity will be awarded up to 10 points. The points will be scaled based on the necessary improvement in effluent quality. Given that

effluent limits for chronic toxicity are typically only applied to continuous discharges, intermittent discharges cannot qualify for toxic materials points related to ammonia.

Points will be awarded based on the percent reduction required in the loading of ammonia for a facility. The use of loading-based reduction requirements means that all projects are scored equally regardless of whether the facility design flow changes as a result of the project.

It is worth noting that NPDES permits in the state of Michigan can have up to four seasons and the required reduction in effluent ammonia may vary from season to season. Points will be awarded based on the season that requires the greatest percent reduction in effluent ammonia loading.

A base of 5 points will be awarded for any project aimed at reducing effluent ammonia. The remaining 5 points will be awarded based on the percent reduction in ammonia loading. Points will be calculated by taking the percent reduction and dividing it by 10.

For example, a project that requires a 35% reduction in effluent ammonia loading will receive 8.5 total points: the 5 base points and 3.5 additional points based on the required loading reductions.

Projects requiring more than a 50% reduction in effluent ammonia in any given season will be awarded the full 10 points for this subcategory.

#### Chlorine – 10 Subcategory Points

Under the existing scoring criteria for CWSRF projects an application receives automatic full category points for the removal of a chlorinated discharge. A chlorinated discharge may be removed by the installation of de-chlorination or alternative disinfection processes. In the updated scoring process proposed here, the removal of a chlorinated discharge will result in 10 points being awarded in the toxic materials category.

#### Emerging Pollutants/PFAS – 10 Subcategory Points

Ten points are awarded for projects that are designed to reduce or eliminate emerging pollutants for a discharge to waters of the state.

At present, the department is focusing on pre- and polyfluoroalkyl substances (PFAS) as an emerging pollutant issue. Projects designed to treat PFAS waste streams prior to discharge into waters of the state will be awarded the 10 points.

While the initial focus of the emerging pollutant scoring is PFAS chemicals, this document is not meant to be written in a way that precludes awarding points for other or future emerging pollutants. The Permits Section within EGLE's Water Resources Division (WRD) may, in conjunction with the WRD's Emerging Pollutants Section, add chemicals of concern that will receive points under the emerging pollutants category.

#### Special Considerations for Protecting Drinking Water Sources

Twenty points will be automatically awarded in the toxics category for projects that are related to removing toxic chemicals of concern from discharges that are in areas where drinking water protection is necessary. Chemicals of concern include bio-accumulative chemicals of concern (BCCs) listed in the department's Rule 57 toxics table ([Rule 57 Water Quality Values](#)), PFAS chemicals for which human

health values have been established, or toxic chemicals that have a human health drinking water value established in Rule 57.

Drinking water protection is necessary for waters of the state upstream of inland drinking water intakes, as defined in Division Procedure WRD-053, “Applicability of Public Water Supply Designated Use”. Protected river and inland lake drinking water intakes are defined in Rule 100 of Michigan’s Part 4 Water Quality Standards [R323.1100(8)]. A copy of the referenced document can be found at the following link: [Public Water Supply Intakes in Michigan](#) (accessed 2/23/2023).

Rule 100 also states that all the Great Lakes and connecting waters are protected as drinking water sources. Therefore, projects with a purpose of limiting or eliminating chemicals of concern in a discharge to the Great Lakes also qualify for the automatic 20 points.

### Proposed Point Distribution for Ground Water Applications – 20 Points

Nitrate is the primary concern for projects that discharge to groundwater. High concentrations of nitrates in groundwater are a human health concern for drinking water. The scoring for projects that reduce or remove nitrates in groundwater are summarized below. The scaling of the scoring is consistent with how groundwater projects were scored in past CWSRF cycles except that the point totals awarded are divided by 5. A fourth category was added to account for projects that reduce or remove high nitrates that have been observed in monitoring wells but have not yet been detected in drinking water wells.

One or More Public Well with Nitrate > 10 mg/l	20 Points
One of More Private Well with Nitrate > 10 mg/l	10 Points
Monitoring Well with Nitrate > 10 mg/l	5 Points
All Other Projects	0 Points

It is possible for a project discharging groundwater to earn the full allocation of toxics points just from reducing a document nitrate problem in groundwater. However, projects that do not score the full 20 points based on nitrate reduction can still receive additional toxics points based on projects related to emerging pollutants or if there is a documented problem with the groundwater venting to surface water. These points will be calculated in a manner consistent with the scoring described above.

### Proposed Categories and Point Distribution for Projects to Correct Failing Septic Systems – 20 points

There are a number of failing septic systems in the state of Michigan, and repair costs for these systems can cost thousands of dollars. In addition, the current jurisdiction over individual and smaller septic systems falls to local health departments. One solution to failing septic systems is to install a collection system with a community septic system or treatment plant. Properly designed, constructed, and operated centralized treatment systems to correct failing septic systems provides for the protection of human health and the environment. Projects of this nature may receive up to 20 WQSPs from a single category or multiple categories, as outlined below.

One of the primary benefits of a centralized system is that it is possible to ensure that wastewater is disinfected before discharge. Therefore, WQSPs are awarded based on the removal of (from failing septic tanks):

<b>Condition Before Centralized Treatment Project</b>	<b>Water Quality Severity Points</b>
Documented exceedances of fecal coliform in surface water because of failing septic tanks	20
Documented illicit discharges of sanitary sewage to surface water resulting from failed septic tanks	20
Documented impact to surface water as a result of failing septic tanks (i.e., visual indicators or other metrics)	15
Projects to correct failing septic tanks with centralized treatment, but no indication of impact to surface waters	10

Projects that score less than 20 points based on the table above may receive additional points in the dissolved oxygen, nutrients, and toxicity (ammonia) categories. The categories will be scored on the same process as other surface water discharges. The assumptions for pre-project conditions with failing septic tanks are summarized below:

<b>Category</b>	<b>Default Assumption</b>
Flow	70 gallons per capita per day
CBOD <sub>5</sub>	180 mg/l
Ammonia - N	15 mg/l
Total Phosphorus	7 mg/l

## Appendix A – Default Assumptions for Use in Calculations

No changes were made to the assumptions in the table below.

Parameter	Continuous Discharges	Seasonal Discharges	Intermittent Discharges
River Flow	Lowest summer monthly 95 <sup>th</sup> percentile exceedance flow	Lowest monthly 95 <sup>th</sup> percentile exceedance flow during discharge	Lowest summer monthly 50 <sup>th</sup> percentile exceedance flow
River Temperature	Highest monthly 10 <sup>th</sup> percentile exceedance temperature	Highest monthly 10 <sup>th</sup> percentile exceedance temperature during discharge	Highest monthly 50 <sup>th</sup> percentile exceedance temperature
Pre-Project Effluent Flow	(1) Average of summer flows in the last 12-month period (May-Sept) (2) Population served multiplied by 100 gallons per capita per day	(1) Average flow from the last 12-month period, during discharge (2) Population served multiplied by 36,500 gallons per capita per year, then divided by a 14-day discharge season	Based on the past 3 calendar years of discharge data: <i>For Dissolved Oxygen:</i> Median discharge event flow, in MGD. <i>For Other Parameters:</i> Calculate loads based on average annual overflow volume
Post-Project Effluent Flow	Annual average design flow, in MGD	Annual design discharge volume, in million gallons per year (MGY), divided by a 14-day discharge season.	<i>For Dissolved Oxygen:</i> Estimated median event, in MGD. <i>For Other Parameters:</i> Calculate loads based on average annual overflow volume  (NOTE: For nutrients, account for flows eliminated from discharge, but directed to downstream treatment)

Parameter	Continuous Discharges	Seasonal Discharges	Intermittent Discharges
Effluent CBOD5 (pre-project)	<ul style="list-style-type: none"> <li>(1) Average summer effluent CBOD<sub>5</sub> concentrations (May-Sept) in the past 12 months</li> <li>(2) Untreated Wastewater – 200 mg/l Primary Treatment – 120 mg/l Secondary Treatment – 40 mg/l Tertiary Treatment – 10 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>(1) Average effluent CBOD<sub>5</sub> concentrations during discharge in the past 12 months</li> <li>(2) Untreated Wastewater – 200 mg/l Primary Treatment – 120 mg/l Secondary Treatment – 40 mg/l Tertiary Treatment – 10 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>(1) Average of CBOD<sub>5</sub> discharge data, if available</li> <li>(2) Untreated Wastewater – 100 mg/l Primary Treatment – 50 mg/l</li> </ul>
Effluent CBOD5 (post-project)	Summer season daily maximum CBOD <sub>5</sub> effluent limit in NPDES permit	<ul style="list-style-type: none"> <li>(1) Daily maximum CBOD<sub>5</sub> limit in NPDES permit</li> <li>(2) 7-Day average CBOD<sub>5</sub> effluent limit in NPDES permit, multiplied by 1.5</li> </ul>	<ul style="list-style-type: none"> <li>(1) Estimated effluent concentration based on treatment type</li> <li>(2) Untreated Wastewater – 100 mg/l Primary Treatment – 50 mg/l</li> </ul>
Effluent Ammonia for DO Points (pre-project)	<ul style="list-style-type: none"> <li>(1) Average summer effluent ammonia concentrations (May-Sept) in the past 12 months</li> <li>(2) Untreated Wastewater – 15 mg/l Primary Treatment – 15 mg/l Secondary Treatment – 12 mg/l Tertiary Treatment – 2 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>(1) Average effluent ammonia concentrations during discharge in the past 12 months</li> <li>(2) Untreated Wastewater – 15 mg/l Primary Treatment – 15 mg/l Secondary Treatment – 12 mg/l Tertiary Treatment – 2 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>(1) Average of CBOD<sub>5</sub> discharge data, if available</li> <li>(2) 5 mg/l</li> </ul>
Effluent Ammonia for DO Points (post-project)	<ul style="list-style-type: none"> <li>(1) Summer season daily maximum ammonia effluent limit in NPDES permit</li> <li>(2) 15 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>(1) Daily maximum NH<sub>3</sub>-N limit in NPDES permit</li> <li>(2) 15 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>(1) Estimated effluent ammonia concentration based on treatment type</li> <li>(2) 5 mg/l</li> </ul>
Effluent Ammonia for Toxics Points (pre-project)	<ul style="list-style-type: none"> <li>(1) Existing NPDES permit effluent limits</li> <li>(2) 15 mg/l</li> </ul>	Not Applicable to Seasonal Discharges	Not Applicable to Intermittent Discharges



<b>Parameter</b>	<b>Continuous Discharges</b>	<b>Seasonal Discharges</b>	<b>Intermittent Discharges</b>
Effluent Ammonia for Toxics Points (post-project)	Effluent ammonia limits to protect against chronic toxicity in NPDES permit	Not Applicable to Seasonal Discharges	Not Applicable to Intermittent Discharges
Effluent Total Phosphorus (pre-project)	<ul style="list-style-type: none"> <li>(1) Annual total phosphorus loading based on effluent monitoring</li> <li>(2) Loading based on an assumed concentration of 1.0 mg/l and the total annual flow volume</li> </ul>	<ul style="list-style-type: none"> <li>(1) Annual total phosphorus loading based on effluent monitoring</li> <li>(2) Loading based on an assumed concentration of 1.0 mg/l and the total annual flow volume</li> </ul>	<ul style="list-style-type: none"> <li>(1) Annual total phosphorus loading based on measured concentrations</li> <li>(2) Loading based on an assumed concentration of 1.0 mg/l and the total annual flow volume</li> </ul>
Effluent Total Phosphorus (post-project)	Annual loading based on the NPDES permit limit recommendations	Annual loading based on the NPDES permit limit recommendations	<ul style="list-style-type: none"> <li>(1) Estimated effluent total phosphorus concentration based on treatment type</li> <li>(2) Loading based on an assumed average concentration of 0.2 mg/l (80% removal)</li> </ul>