

DRAFT Nevada's Antidegradation Implementation Procedures

March 2022



*Jarbidge River above Jarbidge (Assessment Unit NV03-JR-13_00)
Tier 2 Protection for all Parameters*



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Contents

1.0	Introduction.....	1
2.0	Tiered Protection Levels.....	2
2.1	Implementation of a Statewide Antidegradation Program	4
2.2	Thermal Discharges	6
3.0	Antidegradation Review Procedures.....	6
3.1	Characterizing Receiving Waters to Determine Baseline Water Quality.....	7
3.2	Steps of an Antidegradation Review	9
3.2.1	STEP 1. Identify Parameters of Concern (i.e., Pollutants of Concern).....	9
3.2.2	STEP 2. Determine the Baseline Concentration for Pollutants of Concern in the Receiving Water	10
3.2.3	STEP 3. Determine Tier Protection Level for Pollutants of Concern.....	12
3.2.4	STEP 4. Evaluate the Effect of Discharge on the Receiving Water Quality	14
3.2.5	STEP 5. Additional Analysis and Evaluation	17
4.0	Antidegradation Policy: General Permits, Stormwater and MS4 Permits, and 401 Certifications	23
4.1	General Permits.....	23
4.2	MS4 Permits	24
4.3	401 Certifications	24
5.0	Waters of Extraordinary Ecological, Aesthetic or Recreational Value - EAWs.....	24
6.0	References.....	27

Figures

Figure 1.	Determining the Tier of Protection for Waterbody/Parameter Combinations	14
Figure 2.	STEPS 1 through 4 to Follow when Evaluating a Discharge Permit Application	22

Attachments and Appendices

Attachment 1	Antidegradation Review Example
Attachment 2	40CFR 131.12

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Acronyms and Abbreviations

7Q10	7-day high or low flow with a 10-year recurrence interval
AIP	Antidegradation implementation procedure
BMP	Best management practice
CFR	Code of Federal Regulations
Commission	State Environmental Commission (as used in regulations)
CPP	Continuing Planning Process
CWA	Clean Water Act
DO	Dissolved oxygen
Division	Nevada Division of Environmental Protection (as used in regulations)
EAW	Ecological and Aesthetic Water
EPA	U.S. Environmental Protection Agency
IBV	Interim baseline value
MDL	Method detection limit
mg/L	Milligrams per liter
ML	Minimum level
MS4	Municipal separate storm sewer system
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRS	Nevada Revised Statutes
PQL	Practical quantitation limit
RMHQ	Requirement to maintain existing higher quality
TDS	Total dissolved solids
TMDL	Total maximum daily load
WQC	Water quality certification

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Nevada's Antidegradation Implementation Procedures

1.0 Introduction

An antidegradation policy to protect high-quality waters and maintain existing water quality constitutes an important component of state water quality programs. The goal of antidegradation is to protect existing in-stream water quality and preserve the unique attributes and in-stream conditions of high-quality waters that may be impossible to fully restore if degradation is allowed to occur. An antidegradation policy, along with beneficial use designations and numeric or narrative criteria to protect those uses, provides the fundamental structure of a state's water quality standards program.

The Nevada Division of Environmental Protection (Division) has developed an antidegradation policy with procedural guidance for policy implementation that would be applied on a statewide basis. This policy meets the statutory requirements of Nevada's water pollution control law found at Nevada Revised Statute (NRS) 445A.520 and NRS 445A.565, and parallels federal antidegradation policy found at Title 40 in the Code of Federal Regulations (CFR) 131.12 (Appendix A contains these statutes from the NRS and CFR 131.12).

This document, *Nevada's Antidegradation Implementation Procedures (AIP)*, has been developed to provide guidance on the sequence of steps the Division would follow to evaluate whether a regulated discharge would degrade water quality in a receiving water. Regulated discharges include those that require a discharge permit, those covered under a general permit, or a Section 401 water quality certification pursuant to state or federal law. The information contained in this document is intended to provide guidance only and is not a substitute for the provisions of any other State laws, rules, or regulations. This AIP guidance includes:

- Procedure for determining baseline water quality of a receiving water;
- Process for identifying the antidegradation protection level (i.e., the "tier") for water quality parameters in the receiving water;
- Approach for evaluating whether water quality conditions in the receiving water will be degraded;
- Procedure for analysis of less-degrading or non-degrading alternatives when degradation of high water quality conditions is predicted;
- Process for nomination, and data and information requirements for nominating and classifying a surface water as an ecologic, aesthetic or recreational water (EAW); and
- Requirements for public notification and opportunity for comment for antidegradation reviews completed as part of the permitting process and for nomination and classification of EAWs.

2.0 Tiered Protection Levels

The Division's antidegradation policy is intended to maintain and protect water quality conditions in a surface water when a discharge into the waterbody is proposed. To implement this policy, it is necessary to identify antidegradation protection levels or tiers appropriate for each parameter in each receiving water. The state antidegradation rule, R119-20, delineates four tiers of protection. Implementation of the antidegradation policy involves applying these tiers on a parameter-by-parameter (i.e., pollutant-by-pollutant) basis. Each tier of protection has its own requirements for protecting existing water quality, as described below:

- **Tier 3** – Tier 3 protection provides the highest level of protection. This tier is reserved for a surface water or segment thereof, that has been classified as an EAW by the State Environmental Commission (Commission). Tier 3 protection per the State antidegradation rule prohibits any new or expanded discharge into the EAW, and to upstream tributaries to the EAW that would degrade water quality in the EAW or an important attribute of the classified water.

A Tier 3 protection level will not prohibit an existing point source discharge, including a discharge associated with a zone of mixing, that was authorized by the Division prior to classification of the water as an EAW. This exception would also be applicable to authorized discharges into upgradient waters to the EAW. At the time of permit renewal, as long as the authorized discharge rate, effluent limitations, and other permit conditions and requirements are maintained, and the permit holder does not request to expand the point-source discharge or modify the zone of mixing, the discharge will continue to be exempt from an antidegradation review. A Tier 3 protection level shall also not prohibit any activity authorized by the Division to restore or maintain the water quality or other attributes of the classified EAW.

Proposed activities and discharges that result in temporary or limited lowering of water quality will be allowed, when necessary, to accommodate public health and safety in the area which the EAW is located, for an emergency response to mitigate an immediate threat to public health or safety, or when the Division authorizes an activity or discharge that will result in restoration or maintenance of the water quality condition or characteristic, or ecological, aesthetic or recreational value of the EAW. Such activities and discharges must not be reoccurring, and the Division shall ensure that any controls necessary to minimize impacts to water quality and water quality values are implemented.

Tier 2.5 – This tier of protection, like Tier 3, is reserved for a surface water or segment thereof, that has been classified as an EAW by the Commission. Unlike Tier 3, this tier of protection does not preclude a new or expanded point source discharge into the EAW

where such discharges would not degrade the existing water quality or other attributes of the EAW. A Tier 2.5 protection level shall not prohibit point source discharges, including a discharge associated with a zone of mixing, that was authorized by the Division prior to classification of the water as an EAW. This exception would also be applicable to authorized discharges into upgradient waters to the EAW. At the time of permit renewal, as long as the authorized discharge rate, effluent limitations, and other permit conditions and requirements are maintained, and the permit holder does not request to expand the point source discharge or modify the zone of mixing, the discharge will continue to be exempt from an antidegradation review. A Tier 2.5 protection level shall also not prohibit any activity authorized by the Division to restore or maintain the water quality or other attributes of the classified EAW.

Proposed activities and discharges that result in temporary or limited lowering of water quality will be allowed, when necessary, to accommodate public health and safety in the area which the EAW is located, for an emergency response to mitigate an immediate threat to public health or safety, or when the Division authorizes an activity or discharge that will result in restoration or maintenance of the water quality condition or characteristic, or ecological, aesthetic or recreational value of the EAW. Such activities and discharges must not be reoccurring and the Division shall ensure that any controls necessary to minimize impacts to water quality and water quality values are implemented.

Waterbodies nominated as EAWs would be assigned a Tier 3 or Tier 2.5 antidegradation protection level by the Division, and recommended to the Commission for approval. The antidegradation protection level recommended by the Division would be based on the supporting information and data compiled to support classification of a nominated surface water as an EAW (See Section 6.0). The objective of a Tier 3 or Tier 2.5 antidegradation protection level assigned to an EAW is to prevent future degradation caused by new or increased sources of pollution.

New or expanded point source discharges upstream of an EAW (Tier 3 or Tier 2.5) are allowable if a demonstration can be made to the Division that the discharge will not impact water quality conditions in the downstream EAW or impact an attribute of the classified water. This demonstration will primarily rely on an antidegradation review analysis as described in Section 4.3, although an applicant would also have the option to use modeling to show that downstream water quality conditions in the EAW would not be impacted.

- **Tier 2** – This tier of protection applies to parameters in high-quality receiving waters where a requirement to maintain higher quality (RMHQ) has been adopted for a parameter or where existing quality for any parameter is better than applicable water quality standards, but an RMHQ has not yet been adopted. Tier 2 protection status

requires protecting and maintaining existing high-quality conditions, unless an antidegradation review of reasonable alternatives does not identify a technically feasible and economical alternative, and an evaluation of social or economic considerations associated with the proposed discharge justifies a lowering of water quality. However, in no case may water quality be allowed to degrade to the point where it fails to meet water quality standards.

The Division will consider Tier 2 the default protection level for all parameters in all waters that have limited available water chemistry data, until new information or data demonstrates that ambient water quality is not considered high quality. Nevada's waters would be afforded Tier 2 protection for those parameters identified as being present at levels better than the water quality standard, pursuant to NRS 445A.565.

- **Tier 1** – This tier of protection applies to all surface waters as a minimum level of protection. Tier 1 protection requires that water quality standards be achieved. No further degradation of existing water quality is permitted in a receiving water where a parameter of concern does not meet applicable water quality standards.

The antidegradation policy for waterbodies with Tier 1 protection is to maintain and protect existing and designated uses for a waterbody, as well as to specify the water quality criteria needed to protect such uses. Under Tier 1 protection, no point source discharges that cause impairment of the water (i.e., exceed the water quality standards) are allowed (NRS 445A.520).

Tier 1 and Tier 2 antidegradation protection levels are based on the corresponding level of each water quality parameter in the receiving water (i.e., protection is applied on a parameter-by-parameter basis), whereas Tier 3 or Tier 2.5 is a designation afforded to the entire waterbody as an EAW. Because the designation of an EAW may be based on ecological, aesthetic, or recreational values (i.e., an attribute other than high water quality conditions), an impaired (i.e., polluted) water could be designated as an EAW based on one of these other attributes. This means a receiving water that is a Tier 2.5 EAW could have Tier 2 protection for some parameters with existing water quality better than water quality standards, and Tier 1 protection for other parameters that are not better than water quality standards.

2.1 Implementation of a Statewide Antidegradation Program

The Division will require an antidegradation review analysis be submitted with a permit application for a new or an expanded point source discharge to a surface water. The purpose of the antidegradation review is to evaluate whether the discharge has the potential to degrade the existing quality of the receiving water. Regulated discharges include point source discharges to receiving surface waters (National Pollutant Discharge Elimination System [NPDES] and State Water Pollution Permits), discharges covered under general permits, and discharges regulated under federal permits that are subject to state water quality certification under Section 401 of the Clean Water Act (CWA).

Implementation of the proposed antidegradation program is intended to be forward-looking and will apply when new or expanded discharges to a surface water are proposed, and at the time of permit renewal if a major modification is proposed. Permit renewals that maintain existing permitted flow, the same effluent limitations, and other conditions and requirements as the previous authorized permit, will be viewed as not causing further degradation of water quality and will not be subject to antidegradation review. If a discharge permit has an approved zone of mixing, renewal of the zone of mixing will not be subject to antidegradation review provided the permittee does not propose to modify the authorized zone of mixing.

A permit renewal that involves a major modification or an expanded discharge would require that an antidegradation review be submitted by the applicant with the permit renewal. Major modifications include the following:

- An increased limit of flow of the discharge authorized by the permit,
- A change in the pollutant composition of the discharge requiring different effluent limitations,
- A relocation of the discharge outfall that represents a significant change based on an evaluation by Division, or
- Proposed modifications to a previously approved zone of mixing.

For new dischargers requesting a zone of mixing, an antidegradation review would be required to demonstrate that at the downstream edge of the mixing zone, the concentration of parameters of concern in the discharge would meet the applicable antidegradation protection levels for parameters in the receiving water. The specifics of the antidegradation review for a zone of mixing request are discussed in *Nevada's Antidegradation Permit Writers' Guidance* (Nevada Division of Environmental Protection [NDEP] 2020.)

Discharges authorized by general permits will not be required to undergo an antidegradation review as part of the "notice of intent" submittal for coverage under the general permit. Instead, a categorical antidegradation review will be conducted when a new general permit is issued, or an existing general permit is renewed to ensure permit conditions and requirements meet antidegradation requirements. An overview of the antidegradation review procedure for general permits is contained in Section 5.0.

Antidegradation reviews for a storm water permit will focus on whether the permittee's storm water pollution prevention plan is effective in controlling pollutant levels in storm water discharges and protecting water quality. Further discussion of the antidegradation requirements for activities covered under storm water permits is contained in Section 5.0.

Antidegradation review requirements for Section 401 water quality certifications (WQCs) are highly dependent on the activity being regulated. Section 401 WQC antidegradation evaluations for regulated activities covered under federal license or permit will be made on a case-by-case basis and are discussed in more detail in Section 5.0.

Implementation of the Division's antidegradation program will require consultation, coordination, and cooperation between the Division and applicant/permittee to ensure that relevant issues are addressed early in the review process. The comprehensive antidegradation review analysis will require determination of baseline water quality, assessing projected impacts of the discharge, analyzing possible alternatives, and evaluating economic or social benefits, if applicable, prior to a decision being made by the Division and when required, by the Commission whether to issue a discharge permit. It is recommended that an applicant/permittee meet with the Division in a pre-application conference prior to submittal of a permit application. Timely notification and early consultation with the Division will help ensure that issuance of permits can proceed without disruption to facility design, construction, or other activities planned by the applicant.

Public review is an important part of the permit review process, particularly if degradation is to be allowed in a waterbody that is assigned Tier 2 protection for some or all parameters. The antidegradation review, as well as decisions regarding authorizing a proposed discharge, will be open to public comment as part of the Division's permitting process. The Division must provide public notice and a 30-day public comment period for each draft permit in accordance with Nevada Administrative Code (NAC) 445A.234 and 40 CFR 124.10. The antidegradation review will determine the appropriate permit limits or conditions that must be set to satisfy antidegradation protection requirements.

2.2 Thermal Discharges

Thermal discharges into surface waters have not been a notable issue in the State. However, the proposed antidegradation approach and implementation would apply to prevent potential water quality impairments associated with thermal discharges, as required by Section 316 of the CWA.

3.0 Antidegradation Review Procedures

The antidegradation review for point source discharges will be based upon the assigned tier protection level and baseline water quality of the receiving water, applicable water quality standards, parameters of concern associated with the discharge and projected impact of the point source discharge on the quality of the receiving water. Antidegradation reviews will focus on the status of the receiving water, the chemistry of the discharge and the impact of parameters (pollutants) upon the receiving water. The antidegradation review shall be conducted on a parameter-by-parameter basis.

An antidegradation review will require applicants to identify parameters (pollutants) reasonably expected to be in the discharge at measurable concentrations, estimated flow rates and expected effluent pollutant concentrations. If ambient water quality data are not available, an applicant may need to collect and submit data to analyze the impact of the discharge to a receiving water. The collection of ambient water quality data to develop baseline values is discussed in more detail in the next section.

3.1 Characterizing Receiving Waters to Determine Baseline Water Quality

The baseline water quality or existing water quality of a receiving water provides the yardstick against which predicted degradation associated with a regulated point source discharge is measured. The Division will make water chemistry data from its statewide water quality monitoring program—as well as quality data available from other agencies and organizations—available to the greatest extent possible to characterize baseline water quality. These data can then be used to determine the level of antidegradation protection appropriate for parameters in the waterbody. If water chemistry data are limited or non-existent, the permit applicant will need to collect and provide monitoring data to characterize ambient water quality conditions in the receiving water. In these situations, it is recommended that the applicant contact the Division well in advance of permit application submittal to develop a sampling and analysis plan.

A sampling and analysis plan need not be lengthy, and it may cite the Division's *Quality Assurance Program Plan for Surface Water Sampling* (NDEP 2020) for sampling procedures and analytical methods. At a minimum, though, the sampling and analysis plan should identify proposed sampling location(s), water quality parameters to be monitored, analytical methods for samples collected, and measures that will be followed to provide representative data that are subject to proper quality control procedures. Representative samples provide a reasonable approximation of the characteristics of a population. In this case, the sample typifies (“represents”) in space and time, the chemical conditions of the waterbody that is under consideration. For example, to characterize the average chemistry of a stream, it would be best to sample the water in the flow path instead of in a backwater pool. Ideally, a representative sample is an unbiased reflection of the chemical conditions in a waterbody. Sample sites should be selected to provide a reasonable estimate of well-mixed waters.

As noted above, flow is an important factor to be considered when establishing baseline water quality. Sampling during a variety of flow regimes provides a more complete picture of baseline water quality conditions; however, extreme conditions of high or low flow can markedly affect parameter concentrations and other characteristics. For this reason, flow rates should always be noted when sampling. Extreme high and low flows are typically defined as those above the upper 7Q10 (i.e., 7-day high flow with a 10-year recurrence) or below the lower 7Q10 (i.e., 7-day low flow with a 10-year recurrence). There may be circumstances where a 7Q10 analysis is

not appropriate, such as when flow is highly regulated by reservoir releases, or in effluent-dominated systems, or when sufficient flow data are lacking to conduct the 7Q10 analysis. In such cases, best professional judgement will be used to identify an alternative method for defining high and low flow.

In general, receiving waters with existing (baseline) quality that is better than the water quality standards will be considered “high quality” and the parameters in the waterbody will be subject to Tier 2 protection. A statistical approach similar to that used historically to set RMHQs will be followed to calculate the baseline concentrations of parameters in the receiving water when water quality is better than the water quality standard levels and the water does not have existing RMHQs. Ideally, there would be adequate water chemistry data available, representative of various flow regimes, from which to set an interim baseline value (IBV) at the extrapolated 95th percentile value for a particular parameter¹. For those waters that have RMHQs adopted for certain parameters, baseline water concentration of the parameter will be set at the RMHQ value.

The strategy that will be used when water quality data are limited or unavailable for the receiving water would be to determine an IBV for a parameter using water chemistry data from, at a minimum, three independent and representative samples collected according to the sampling and analysis plan. These samples should be collected during periods of non-extreme flow conditions.

The terms, “independent” and “representative” have specific meaning in a statistical sense. Independent samples are not strongly auto-correlated (also known as serial correlation). What this means is if there is too short a time lag between sampling events, the true variability of the population may be poorly estimated because the samples are not sufficiently independent. As an example, if one were to collect one sample per quarter for four quarters, versus collecting one sample per day on four consecutive days, there would likely be more variability in the quarterly samples than in the daily samples, even though both sets represent “four samples per year.” For this reason, the Division recommends a minimum interval of collecting samples no more than monthly. To better ensure that independent and representative samples are collected, the Division recommends that a brief sampling and analysis plan be prepared and submitted for review and concurrence prior to collecting water chemistry samples.

The IBVs function as “temporary RMHQs”. As more water chemistry samples are collected from the receiving water (as a permit monitoring condition), to better characterize the spatial and temporal variability of the ambient water quality, the baseline would be better defined. Eventually, data sufficient to calculate RMHQs would be collected. Under this strategy, a permittee or project proponent would acknowledge that effluent limits could be adjusted, as

¹ The “extrapolated 95th percentile is calculated using the =PERCENTILE.INC(ARRAY,0.95) function in Excel. For example, using three results (10, 10, 20 mg/L) yields an extrapolated 95th percentile of 19.0 mg/L

necessary, as more representative water quality data are collected. Historically, the Division has used data from a minimum of 20 samples (e.g., five years of quarterly data) collected during non-extreme flow conditions to calculate the 95th percentile as the RMHQ value. After data are sufficient, the baseline chemistry defined by IBVs would be updated to RMHQ values.

For lakes and reservoirs, the Division will consider seasonal impacts, water-level fluctuations, or other factors deemed important to establish the baseline water quality. Critical water levels of lakes and reservoirs will be determined on a case-by-case basis. The need for baseline water quality characterization will not be required for discharges authorized by general permits unless there are pollutants of concern reasonably expected in the discharge that might cause loss of a designated beneficial use or degradation of an EAW. Steps taken to conduct an antidegradation review during the permitting process are described below, in Section 3.2. More details are provided in *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020)

3.2 Steps of an Antidegradation Review

The general steps taken to complete an antidegradation review are as follows:

- STEP 1 – Identify the parameters of concern (i.e., pollutants of concern) expected to be present in the proposed discharge at measurable concentrations.
- STEP 2 – Determine the baseline concentration in the receiving water for each parameter of concern in the point source discharge.
- STEP 3 – Determine the appropriate tier of antidegradation protection for each parameter of concern in the receiving water.
- STEP 4 – Evaluate whether the levels of parameters of concern in the proposed discharge are at levels equal to or less than the antidegradation tier protection levels for the parameters in the receiving waterbody and if higher water quality conditions will be maintained.
- STEP 5 – Perform additional analysis of alternatives and evaluation of social or economic importance factors to demonstrate why degradation of water quality is necessary, subject to the permittee's decision to do such to receive a discharge permit.

Note: A completed antidegradation review checklist is included in Attachment 1 to demonstrate the steps involved in preparing an antidegradation review.

3.2.1 STEP 1. Identify Parameters of Concern (i.e., Pollutants of Concern)

The applicant or project proponent will be required to supply sufficient information and data related to the chemistry of the discharge to allow the pollutants of concern to be identified. Pollutants of concern are those pollutants reasonably expected to be present in the discharge

at measurable concentrations that may adversely affect the water quality of the receiving water, and pollutants for which the receiving water is identified as impaired on the Division's CWA Section 303(d) list. ***(See Step 2.2 of antidegradation review checklist, Attachment 1).***

In addition to the pollutants of concern, an applicant or project proponent may also be requested to provide water quality data for parameters necessary to determine the appropriate value range of water quality criteria (e.g., pH, temperature, hardness). If a dissolved metal is a pollutant of concern, a discharger may also be requested to provide the information to translate the total metal present in the discharge to an in-stream dissolved concentration. The Division recommends that an applicant or project proponent consult with Division staff prior to collecting baseline water quality data or submitting a discharge permit application.

For new discharges, effluent quality should be based on the anticipated effluent quality using all information available to a permittee or project proponent at the time of preparing a permit application and antidegradation review. It may be necessary to review information for facilities with similar types of processes and treatment systems to characterize the anticipated effluent quality from new facilities.

Certain parameters that may be present in a point source discharge will not be considered pollutants of concern for the purposes of an antidegradation review. Magnesium, calcium and potassium are essential nutrients, and silicon atoms are ubiquitous in clays and other aluminosilicate minerals. None of these constituents has water quality standards.

After identifying the pollutants of concern in the proposed discharge, the corresponding baseline concentration of the parameter in the receiving water would be determined using available water chemistry data for the waterbody. Available water chemistry data in the Division's water quality monitoring database and data that have been collected by the permittee can be used to establish baseline water quality and determine whether existing water quality conditions for pollutants of concern warrant Tier 2 protection.

3.2.2 STEP 2. Determine the Baseline Concentration for Pollutants of Concern in the Receiving Water

The characterization of the chemistry of the receiving waterbody, as discussed in Section 4.1, will provide the chemistry data to determine the baseline concentration for the pollutants of concern in the receiving water. Baseline concentrations will be established at an IBV or RMHQ level, depending on the available data and whether there are existing RMHQs.

Interim Baseline Values (IBVs)

Based on the water chemistry data compiled from existing data sources and any additional or new monitoring data collection for the receiving water, an IBV for each pollutant of concern will be calculated to define the baseline concentrations. The IBV will be set at the extrapolated 95th percentile of the water chemistry data set available.

Requirements to Maintain Existing Higher Quality (RMHQs)

The standards for water quality, as contained in NAC 445A.11704 through NAC 445A.2234, inclusive, will be reviewed to determine whether the receiving water have adopted water quality standards and if RMHQs have been developed for any pollutant of concern. The baseline concentration for these pollutants of concern will be equivalent to the applicable RMHQ level.

(See Step 2.4 and Step 2.7 of antidegradation review checklist, Attachment 1).

The Division's most recent *Water Quality Integrated Report* will be used to determine whether the receiving water has been identified as an impaired waterbody (Category 4 or 5) on the CWA Section 303(d) List. Where the receiving water is identified as Category 4 or Category 5 for a pollutant of concern, determining the baseline concentration of the parameter in the receiving water will not be necessary. For Category 4 parameters, which have an approved total daily minimum load (TMDL), the effluent permit limitation for these pollutants of concern will be based on the TMDL waste load allocation. Where the receiving water is identified as Category 5 for a pollutant of concern, the corresponding effluent permit limit would be based on the applicable water quality standard, and there would be no need to calculate a baseline concentration value for the pollutant of concern.

Water quality parameters such as dissolved oxygen, temperature, and pH can vary considerably with time of day (i.e., there is a marked diurnal variation). For purposes of the antidegradation review, these parameters will not be considered pollutants of concern. Effluent permit limits for these parameters will be set at applicable water quality standard levels. As previously discussed, magnesium, calcium and potassium are essential nutrients and if present in a discharge will be regulated at the water quality standard level. Additionally, silica will not be considered a pollutant of concern due to its ubiquitous presence in clays and other aluminosilicate minerals.

When a pollutant of concern is expected to be present in a new or expanded discharge, but the water chemistry data indicate that the parameter is not present at a measurable concentration in the receiving water, the following values for censored data will be used:

- If, in cases where the method detection limit (MDL) is used as the reporting or censoring limit, the result is indicated as "not detected," the value of the MDL should be used as a proxy value for the non-detected result.
- If sample result is reported at a value greater than the MDL, but less than the reported quantitation limit, the reported value should be used as is. Such sample results should be qualified by the laboratory as "estimated" and have an associated data qualifier (e.g., J-qualified).

- If sample result is censored at the quantitation limit (e.g., the quantitation limit is used as a reporting/censoring limit), a value of one-half the quantitation limit should be used as a proxy value for the non-detected result.

U.S. Environmental Protection Agency (EPA) guidance (EPA 1991, 1994, 1995, 2005) recommends using the minimum level² (ML) as the permit limit. Additionally, some states have regulations requiring the use of a ML or another quantitation limit be set as the permit limit (e.g., Ohio requires the practical quantitation limit [PQL], [Ohio Permit Guidance, 2015]). The State of Nevada has not specified that quantitation limits (e.g., the ML), rather than detection limits (e.g., the MDL), must be used as permit limits. Clarification may be needed when baseline concentrations of trace metals or other trace constituents are less than quantitation limits.

Parameters such as total dissolved solids (TDS), chloride and sulfate have water quality standards with relatively high numerical concentrations that support a beneficial use. For parameters such as these, RMHQs are usually not established at values less than 10 percent of the standard. For example, if the sulfate standard is 250 milligrams per liter (mg/L), the lowest RMHQ that will be established is 25 mg/L. (*Nevada's Continuing Planning Process (CPP), 2004*). When such parameters are identified as pollutants of concern, if applicable RMHQs have been developed and adopted, the IBV will be set at the RMHQ level. If a RMHQ has not been developed, then for purposes of an antidegradation review, the IBVs will be established at a value of not less than 10% of the water quality standard, even if the baseline concentration of the parameter in the receiving water is lower.

3.2.3 STEP 3. Determine Tier Protection Level for Pollutants of Concern

Based on the water quality of the receiving water and the corresponding IBVs calculated or set as described in Step 2, the appropriate tier of antidegradation protection will be determined for each pollutant of concern in the new or expanded point source discharge. As mentioned previously, because the antidegradation review analysis is conducted on a parameter-by-parameter basis, a receiving water may have some pollutants of concern assigned a Tier 2 protection level, while other parameters may be assigned a Tier 1 protection level. Determination of the antidegradation protection level to assign for each pollutant of concern will be based on comparison of the IBV to the water quality standard. (***See Step 2.7 of antidegradation review checklist, Attachment 1***).

Tier 2 Protection

Tier 2 protection will be provided for any pollutant of concern in the receiving water with an applicable RMHQ or an IBV that is less than the applicable water quality standard.

² The ML is the lowest level at which the entire analytical system must give a recognizable signal and an acceptable calibration point for the pollutant being analyzed.

Tier 1 Protection

Tier 1 protection will be provided for any pollutant of concern in the receiving water with an IBV that is the same or greater than the applicable water quality standard. As explained in Section 4.3.2, Tier 1 protection will be assigned to a pollutant of concern covered by a TMDL, or if the receiving water is impaired for the parameter.

Tributary Waters

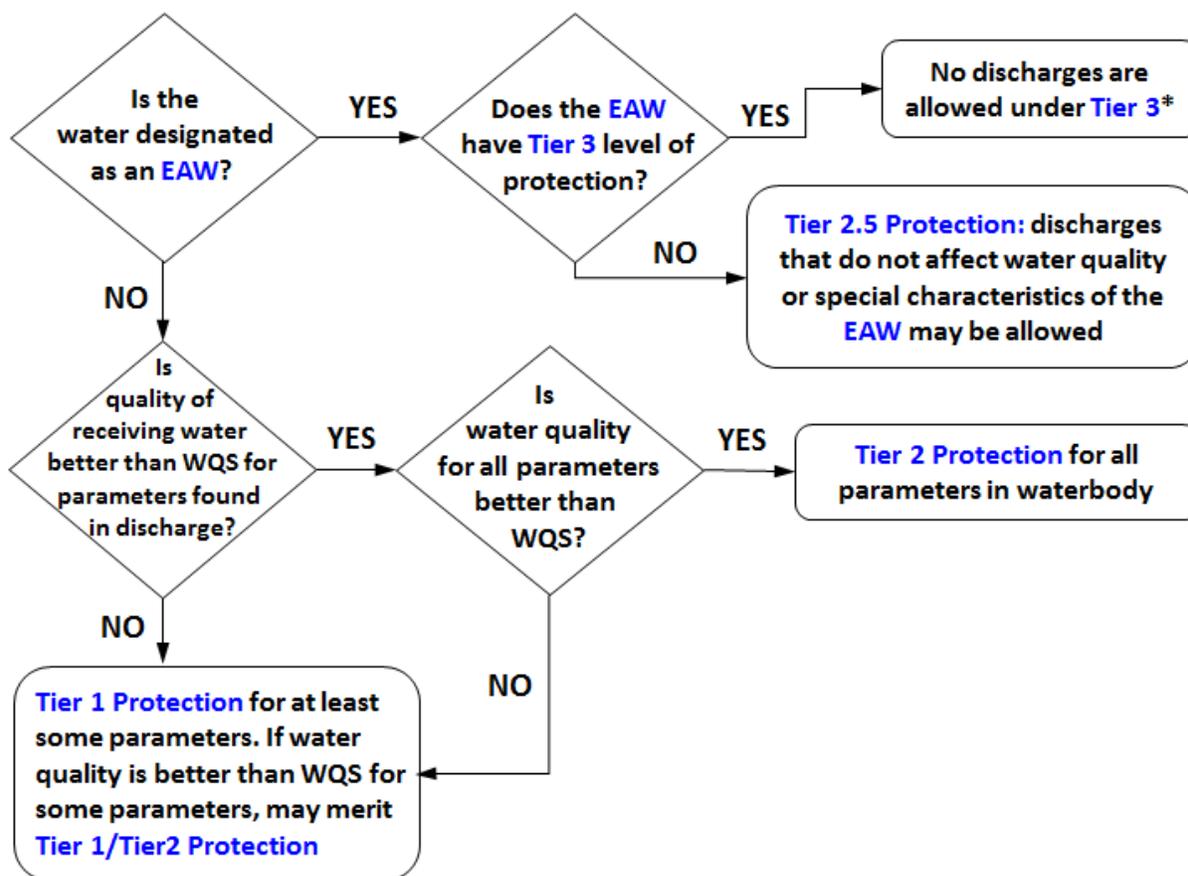
If the receiving water is not a designated water named in NAC 445A.123 through 445A.2234, but is a tributary to such a water, the “tributary rule” (NAC 445A.1239) will be used to determine the water quality standards that would apply to the receiving water (tributary).

When the receiving water is not a designated water nor a tributary to such a water, the Division will assess existing aquatic life uses, existing recreational or aesthetic uses, agricultural uses, and other sensitive uses such as drinking water source, as well as the overall value of the waterbody from an ecological and public-use perspective, to determine what would be the appropriate beneficial uses and water quality standards for that water. Such undesignated or non-tributary waters would be evaluated based on criteria for those beneficial uses deemed appropriate for the water. This means that, for any pollutant of concern where the IBV exceeds a criterion value associated with the appropriate beneficial use, a Tier 1 protection level would be assigned to that parameter.

Tier 2.5 and Tier 3 Protection apply to surface waters that have been classified as EAWs. The distinction between these two tiers of protection is that the Tier 2.5 level allows for new or expanded point source discharges into the water if baseline (existing) water quality conditions are maintained and protected; whereas, the Tier 3 level prohibits any new or expanded direct point source discharge into the water after it has been classified as an EAW. When the receiving water for a new or expanded point source discharge is a Tier 2.5 EAW, the same antidegradation review steps as described in this section would be followed. Baseline water quality information would be needed to determine the baseline concentrations (i.e., IBVs) of pollutants of concern in the EAW. Tier 2 or Tier 1 protection would be assigned to the pollutants of concern as described above.

A Tier 3 or Tier 2.5 level of protection allows for a point source discharge upstream of an EAW if the antidegradation review demonstrates that the water quality of the downstream EAW will not be degraded. For such discharges, it will be necessary to evaluate the baseline water quality for both the upstream water (tributary) and the downstream EAW. The tier of protection assigned to the pollutants of concern will be based on the more stringent IBV when comparing baseline values for both the upstream (tributary) water and the downstream EAW. If an RMHQ has been adopted for a pollutant of concern in the downstream EAW, maintaining this higher water quality condition would need to be accounted for when assigning the appropriate tier of protection for the parameter in the upstream discharge. A decision flowchart for determining antidegradation protection levels is shown in **Figure 1**.

Figure 1. STEP 1 – Determining the Tier of Protection for Waterbody/Parameter Combinations



3.2.4 STEP 4. Evaluate the Effect of Discharge on the Receiving Water Quality

Statutory and regulatory requirements require that the effect of a point source discharge on the water quality conditions in a receiving water be evaluated at the point of discharge or at the downstream point of an approved zone of mixing. NRS 445A.565 does not authorize a “de minimis” exemption which would allow the Division to differentiate between discharges that will have an insignificant effect on water quality conditions from those that will have a significant impact. Pursuant to NAC 445A.296, an authorized mixing zone would include a downstream point (or boundary) designated by the Director where the pollutant of concern levels in the discharge would need to meet applicable tier protection levels for parameters in the receiving water.

This step of the antidegradation review process evaluates whether the pollutant of concern levels in the point source discharge will meet their applicable tier protection levels in the receiving water. The antidegradation review must be comprehensive to include all pollutants of concern projected to be present in the discharge at a measurable concentration but will evaluate each parameter on an individual basis. ***(See Step 3.1 of antidegradation review checklist, Attachment 1).***

If a pollutant of concern in the receiving water is assigned a Tier 2 level of antidegradation protection, the point source discharge must not cause degradation of water quality conditions at the point of discharge or at the downstream edge of an approved mixing zone. A more detailed discussion of the procedural steps and supplemental information that will need to accompany a permit application with a requested a zone of mixing is contained in *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020).

For a receiving water in which a pollutant of concern is assigned a Tier 1 protection level, the point source discharge would not cause degradation of water quality conditions if the concentration of the parameter at the point of discharge meets the water quality standard for the parameter. As previously discussed, if a TMDL exists for a pollutant of concern, the permit limit will be set based on the associated TMDL waste load allocation for the parameter.

Generally, a Tier 1 protection level will be assigned when the pollutant of concern in the receiving water is an impairment (i.e., the baseline concentration exceeds the water quality standard) and a TMDL has not been developed. A zone of mixing to meet a Tier 1 protection level (i.e., the water quality standard) would not be permissible for a new or expanded point source discharge when the receiving water is already impaired for the pollutant of concern.

Certain parameters, such as alkalinity and dissolved oxygen (DO), are an exception to the rationale described above. Alkalinity and DO are “greater than” standards, meaning that an increase in their levels in the receiving water is generally an improvement to water quality. In addition to these exceptions, acceptable values of pH lie within a range of values, meaning that both increases or decreases in pH may affect water quality conditions, and will be evaluated on a case-by-case basis.

If the antidegradation review analysis provided to the Division demonstrates that the new or expanded point source discharge will not cause degradation of water quality conditions in the receiving water, the Division shall not require any additional analysis to authorize the discharge. If the analysis indicates that the new or proposed point source discharge will cause degradation of water quality conditions in the receiving water, this does not mean that the discharge will not be allowed. Rather, the applicant or proponent seeking authorization for the discharge will need to submit to the Division additional information, as outlined in the next step of the antidegradation review process.

Where the new or expanded discharge is into a receiving water that is not a designated water named in NAC 445A.123 through 445A.2234, but is a tributary to such a water, the “tributary rule” (NAC 445A.1239) will be used to determine the water quality standards that would apply to the receiving water (i.e., the tributary water). In this case, the appropriate tier levels of antidegradation protection to set for the pollutants of concern in the discharge will be that of the downstream designated water. A similar evaluation as described above would be followed to evaluate the effect of the discharge on the tributary water quality conditions.

Similarly, a new or expanded discharge into a water that has been classified as an EAW with a designated Tier 2.5 level of antidegradation protection would follow the above procedural steps, depending on the tier protection levels assigned to the pollutants of concern. The tier protection levels would be based on concentrations of the parameters in the receiving Tier 2.5 EAW. The Division's antidegradation policy stipulates that water quality conditions in the EAW with a designated Tier 2.5 protection level must be maintained and protected. Concentrations of the pollutants of concern in the effluent at the point of discharge must meet the baseline water quality for pollutants of concern; otherwise, the discharge will be viewed as lowering the baseline water quality and will not be allowed.

A point source discharge upstream of an EAW (Tier 3 or Tier 2.5) is allowable if the antidegradation review analysis demonstrates that the water quality of the downstream EAW will not be degraded. As explained in Section 4.3.3, when such is proposed, it will be necessary to evaluate the baseline water quality for both the upstream water (tributary) and the downstream EAW. **The tier of protection assigned to each pollutant of concern will be based on the more stringent IBV** by comparing pollutant concentrations in the upstream (tributary) water and in the downstream receiving water (i.e., the EAW). The evaluation of the discharge may require that the concentration of a pollutant of concern in the effluent meet the baseline concentration of the parameter in the upstream tributary rather than the downstream EAW.

When the antidegradation review analysis demonstrates that a new or expanded point source discharge would not degrade water quality conditions in the receiving water, effluent permit limits for the pollutant of concern would be set at the respective IBV or RMHQ, in order to maintain the higher water quality conditions. Permit limits for pollutant of concern that were assigned a Tier 1 protection level would be set at the corresponding water quality standard for the parameter. An exception to an effluent limit set for a Tier 1 pollutant of concern would be if a TMDL had been developed and approved. Waste load allocations specified in a TMDL supersede water quality standards.

Where baseline water quality for a Tier 2 pollutant of concern was based on an IBV calculated from a limited data set, the collection of quarterly data over a 5-year period will be required as a condition of issuance of the permit. This additional water chemistry data will be used to better define baseline water quality and provide a more robust dataset for the Division to possibly develop an RMHQ for the parameter. The Division may modify the effluent permit limit for the pollutant of concern pursuant to NAC 445A.261.6, if the additional water chemistry data indicate that a higher or lower limit than the original IBV is warranted. If the recalculated IBV based on the additional water chemistry results is more stringent, and a permittee is unable to achieve consistent compliance, the Division may either:

1. Include a less stringent effluent limitation(s) if, after performing the additional analysis and evaluation specified in Section 7.0 of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020), it is determined that a lowering of water quality with respect to the parameter is necessary to accommodate important economic or social development, or
2. Include the more stringent effluent limitation and establish a schedule of compliance to bring permittee into compliance with the discharge limitation.

Relaxation of a permit limit would be permissible when a recalculated IBV based on the additional water chemistry data collected during the permit term indicated that a less stringent effluent permit limit was appropriate. The relaxation of the effluent limitations based on an updated IBV or RMHQ would continue to maintain the existing high quality of the waterbody and, thus, would be consistent with the antidegradation policy. Additionally, the modification of permit is allowed per Section 6 of NAC 445A.261 when the Division receives new information which was not available at the time the permit was issued that would have justified the application of different conditions of the permit.

3.2.5 STEP 5. Additional Analysis and Evaluation

This next step in the antidegradation review process would only be conducted if a new or expanded discharge is predicted to not meet Tier 2 protection levels for pollutants of concern in the receiving water, and the project proponent or permittee desires to pursue an exemption from meeting the effluent limits that would prevent degradation of water quality. The Division will work with the applicant to evaluate alternatives to reduce degradation. If lowering of existing water quality cannot be reasonably avoided, the applicant may present a justification that the proposed activity is necessary to accommodate important economic or social benefits in the area where the proposed project will be located. This step of the antidegradation review determines whether the economic or social benefit to be gained from the proposed activity justifies degradation of the higher water quality.

NRS 445A.565 allows lowering of higher water quality conditions only after important social or economic benefits have been demonstrated by the applicant, and the Commission has agreed that lowering the quality of the receiving waterbody is necessary for economic or social benefits. Here, the Commission must weigh the balance between degradation and economic or social improvements in deciding. In allowing such degradation, the Commission will ensure that the quality of the receiving waterbody is not reduced below water quality standard levels necessary to protect existing beneficial uses. Sections 7.1 through 7.3 of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020) provide more details on evaluating alternatives and justifying social or economic benefits. ***(See Step 4.0 of antidegradation review checklist, Attachment 1).***

3.2.5.1 *Alternative Analysis*

Before the Division continues with review of a permit application that is predicted to cause degradation of water quality, the project proponent or permit applicant will be required to evaluate whether any less-degrading alternatives are available. This alternative analysis focuses on alternatives directly related to protecting water quality that are economically, environmentally, and technologically reasonable. Alternative pollution-reduction strategies, such as different treatment techniques, different discharge locations, process changes that would improve discharge quality, or a non-discharge alternative would need to be evaluated. The overall goal of this analysis is to identify whether a less-degrading alternative, based on the above, could be reasonably and economically implemented to reduce the levels of the parameters of concern in the discharge to corresponding levels in the receiving waterbody with Tier 2 protection. Section 7.2 of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020) provides details on conducting an alternatives analysis.

Additional treatment steps to discharge less pollution are usually going to cost more and therefore raise the question of whether it is reasonable for a project proponent to be required to implement more costly pollution-control alternatives. The analysis may result in identification of multiple reasonable alternatives. As noted in Section 7.2 of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020), alternatives may include, but are not limited to, the following:

- Pollution prevention.
- Improved operation and maintenance of the existing treatment system.
- Alternative treatment technologies, including advanced or innovative biological, physical, and/or chemical treatment.
- Collection system improvements.
- Recycling/reusing wastewater.
- Land application.
- Regionalization.
- Groundwater recharge.
- Seasonal or controlled discharges to avoid critical periods.
- Relocation or reconfiguration of the outfall or diffuser.
- Reduction in the scope of the proposed activity.
- An alternative that does not result in the discharge.

The alternative analysis should be comprehensive and consider the following in evaluating less-degrading alternatives, specified in the sections of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020) referenced parenthetically below:

- Amount of degradation reduced (Section 7.2.2).

- Cost-effectiveness of pollutant removal (Section 7.2.3).
- Cost of pollution reduction versus overall environmental gain (Section 7.2.4).
- Affordability of alternatives (Section 7.2.5).

If the alternative analysis indicates that a more reasonable alternative could be implemented rather than allowing the degradation to occur, the Division will work with the project proponent to revise the permit application based on the revised project design.

If the alternative analysis does not identify a technologically feasible and economical alternative that would not result in the degradation of the water quality conditions of the receiving water, a project justification as described in the next section must be prepared and submitted to the Division for the approval of the Commission.

Whenever a new project is being planned, alternative analysis is standard engineering practice during project design. The alternative analysis requirement of the antidegradation review is not intended to place an additional burden placed on the project proponent or permittee. Projects that require a CWA 404 permit are already subject to U.S. Army Corps of Engineers and EPA requirements to consider alternatives. If a project is subject to federal National Environmental Policy Act (NEPA) requirements, a detailed alternative analysis evaluation is conducted during the NEPA process. Any alternative analysis completed as a requirement of other permitting activities may be acceptable, subject to Division approval, for antidegradation review purposes.

3.2.5.2 Justification of Social or Economic Importance

If the evaluation of alternatives indicates that degradation of the receiving water is unavoidable and changing project design is not feasible, the permit applicant or project proponent will be required to develop a project justification demonstrating that the degradation of water quality is necessary to accommodate important social or economic development in the area where the waterbody is located. This justification is then submitted to the Division. The social or economic justification must show that the social or economic benefits that will result from an activity are important to the affected community. Section 7.3 of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020) provides additional details of what factors may be considered to develop a justification.

The following steps are recommended in EPA guidance and reference documents to show social or economic justification; sections referenced from *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020):

- Identify the affected community (Section 7.3.1).
- Describe the important social or economic development that will result from the project or activity (Section 7.3.2).

- Determine the overall environmental, social, and economic benefits in comparison to the degradation of water quality that will result (Section 7.3.3).

A project that is socially justified is one that is important to the social development of the local community in at least one aspect (e.g., population growth or job growth), or results in improvements of important community service needs (e.g., construction of new wastewater treatment plant, public water supply project, or improved transportation infrastructure). An economically justified project will promote economic development of the local community. A more in-depth analysis would be required to show the economic importance than a social justification and would cover how the costs associated with water quality degradation are offset by benefits to the community. A simplified cost-benefit analysis may be required.

The Division will evaluate the submitted information to determine whether the discharge associated with the proposed project is important from an economic or social perspective to justify continuing with the permitting process. When information provided in the applicant's justification is not sufficient to determine the social or economic benefits or environmental impacts associated with the proposed activity, additional information may need to be submitted.

During this evaluation, the Division will give precedence to any land-use determinations made by local governments or land-use planning authorities that may contradict the land use associated with the project. The evaluation will also consider any information and comments submitted during the public notification period by the public or affected stakeholders that are contrary to the social or economic justification submitted by the applicant or project proponent. Public comments submitted to the Division will be made available and discussed during the Commission hearing. Additional public input may be solicited at other points in the permit development process, if deemed appropriate by the Division.

3.2.5.3 State Environmental Commission Hearing

For the purposes of NRS 445A.565, the Commission will hold a public hearing to consider the justification based on the economic or social importance of a proposed discharge that demonstrates why the degradation of water quality conditions is necessary, and if an analysis of alternatives has been conducted to evaluate reasonable and practicable alternatives that would prevent degradation or result in less degradation. During the hearing, the Commission may approve issuance of a permit by the Division that will result in the degradation of water quality for a pollutant of concern in the receiving water that has been designated as having a Tier 2 level of antidegradation protection if the Commission determines that:

- The degraded water quality is justifiable because of important economic or social factors;

- The highest and best degree of waste treatment available under existing technology that is reasonably consistent with the economic capability of the project or development is used to prevent or reduce degradation of the water quality in the receiving water; and
- All cost effective and reasonable best management practices for diffuse source pollution control required in accordance chapter 445A of NRS are achieved to prevent or reduce the impacts to the water quality in the receiving water.

Pursuant to NRS 445A.520, if the Commission approves issuance of the permit that will result in degradation of water quality conditions, the lower effluent limits that the Commission would approve would, at a minimum, be set at water quality standards to protect the designated beneficial uses of the waterbody.

Approval of a less restrictive effluent limit for parameter in a new or expanded discharge to water classified as an EAW and assigned a protection level of Tier 2.5 is not allowed. No degradation of water quality conditions. A new or expanded point source discharge into a Tier 2.5 EAW must not degrade existing water quality conditions.

3.2.5.4 Documentation of Antidegradation Review Findings and Public Input Process

The federal rules on antidegradation (40 CFR 131.12(a)(2)(i)) specify that states must involve the public in any decisions pertaining to when Tier 2 protection is (or is not) provided, and the factors considered in the decision. This requirement is to be met by including an antidegradation discussion in the fact sheet issued for each discharge permit for which public input is solicited. If the discharge is determined not to cause a significant degradation of a water quality parameter with Tier 2 protection, sufficient evidence will be presented in the fact sheet to support the finding.

In cases where Commission approval of a discharge permit limit projected to cause degradation is required, a public hearing would be held for the Commission to decide whether sufficient evidence and justification warrants less restrictive permit limits be approved. Public comments on the proposed action would be considered during the Commission hearing.

A summary of the antidegradation review analysis is shown in Figure 2.

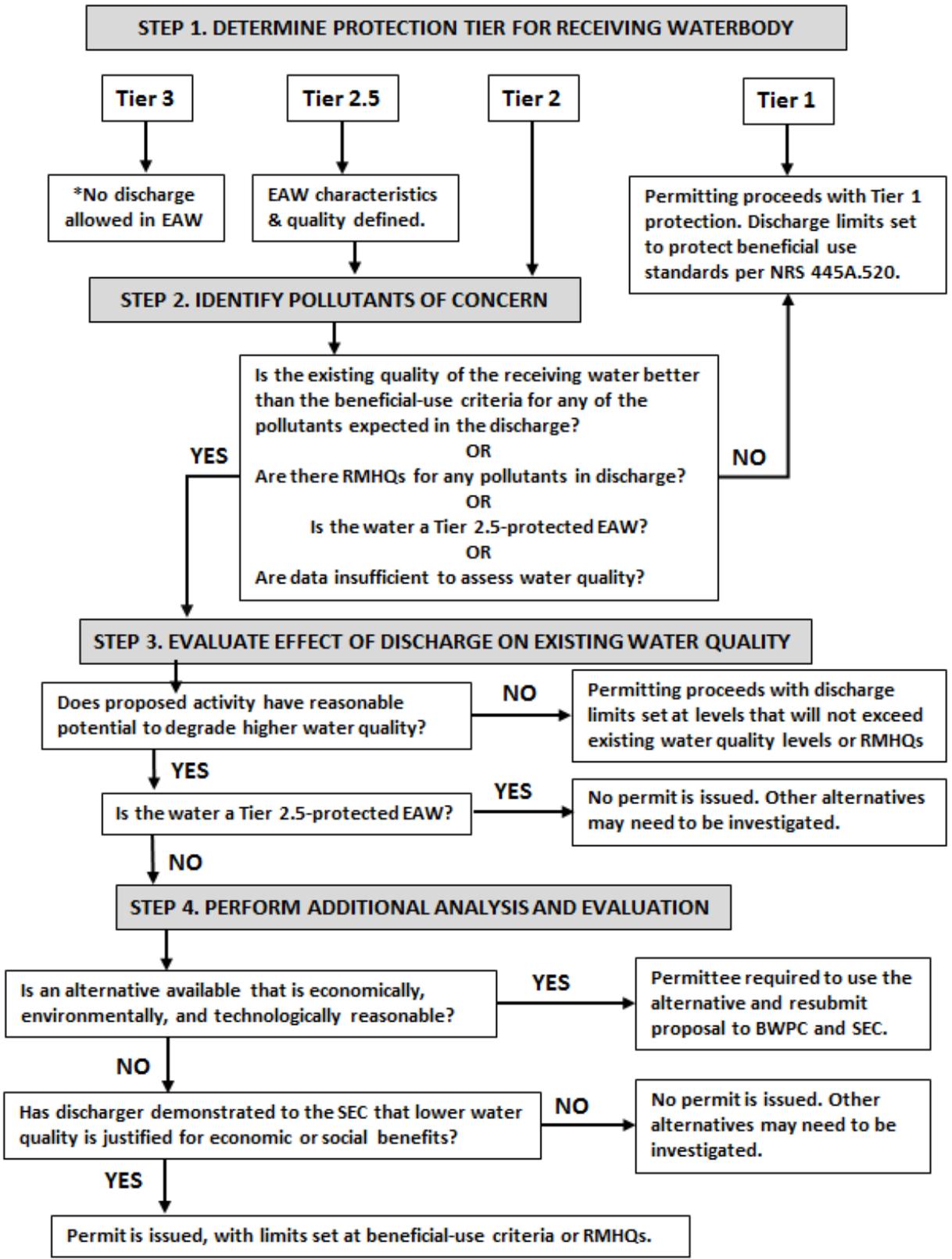


Figure 2. STEPS 1 through 4 to Follow when Evaluating a Discharge Permit Application

4.0 Antidegradation Policy: General Permits, Stormwater and MS4 Permits, and 401 Certifications

Specific details for performing antidegradation reviews for general permits and stormwater permits are provided in the *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020).

4.1 General Permits

General permits are issued to address a class of discharges where standardized permit conditions and limitations ensure that the permitted discharges will meet water quality standards. Antidegradation reviews for discharges authorized by general permits will occur for the entire class of general permittees when the general permit is issued or may be required by the Division in cases where the impact from a discharge on the quality of the receiving water may result in degradation of water quality conditions. Antidegradation reviews will focus on pollutants of concern that may contribute to water quality impairment.

Dischargers who submit a notice of intent for coverage under a general permit will be presumed to be meeting the antidegradation requirements if they comply with permit conditions and any requirements deemed necessary by the Division to minimize degradation of water quality. However, if a discharger submits a notice of intent for coverage under an issued general permit and the discharge will be to a receiving water with Tier 2 protection levels for certain water quality parameters, the Division may require the discharger to undertake additional control measures such as additional monitoring, more frequent site visits and more rapid stabilization of exposed areas to minimize degradation, or may require the discharger to obtain an individual permit.

When a general permit is renewed, the Division will evaluate whether the terms or conditions of the current permit are protective of water quality for the class of discharges covered by the permit. If necessary, permit conditions and requirements may be modified during the renewal to ensure that discharges minimize any degradation of water quality and comply with antidegradation requirements.

The general permits for stormwater discharges require a different approach to ensure degradation of water quality is avoided. Compliance with terms of the general permits—in particular, the implementation of stormwater runoff controls to minimize stormwater effects on the water quality of receiving waters—is required to maintain authorization to discharge under the general permit. During reissuance of these General Permits, new and innovative control measures that have demonstrated to be effective in removing contaminants from stormwater runoff may be incorporated into the permits as best management practices (BMPs) to protect water quality. Section 8 in *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020) discusses permits, including stormwater and general permits.

If a notice of intent is filed for coverage under a stormwater general permit that involves an EAW, the Division will determine whether the activity or proposed discharge is short term in nature and the resulting water quality impacts are temporary. Short-term impacts to water quality conditions in EAWs will be evaluated from the perspective of whether the activity is necessary and whether water quality will return to conditions prior to the activity.

4.2 MS4 Permits

An individual stormwater permit for a municipal separate storm sewer system (MS4) meets antidegradation requirements if the permittee complies with all permit conditions, including development of a stormwater management plan outlining the controls to be implemented to reduce the level of parameters in stormwater discharges to the maximum extent practicable. The MS4 Permits are designed to (1) reduce and eliminate stormwater pollution and (2) incorporate a systematic process for continually improving management policies and practices to minimize discharge of pollutants to the MS4 through the installation, implementation, and maintenance of stormwater control measures. Section 8.2 of *Nevada's Antidegradation Permit Writers' Guidance* (NDEP 2020) discusses more on MS4 permits.

4.3 401 Certifications

The Division issues 401 Water Quality Certifications for Federal Dredge and Fill 404 Permits. For 401 Certifications, the permittee submits the 404 permit application, site maps, and a list of the BMPs to be used in the project. The 404 application includes an alternative analysis. BMPs are an integral part of the project to protect water quality conditions during project work. If the proposed project involves a Tier 2-protected water, the Division will evaluate if the project will cause degradation of water quality conditions. The 401 certification may include additional conditions to ensure that degradation is either temporary or insignificant.

5.0 Waters of Extraordinary Ecological, Aesthetic or Recreational Value - EAWs

EAWs would be “special” surface waters within the State that would be approved by the Commission for special protection against degradation under the Nevada’s Water Pollution Control Regulations (Standards for Water Quality) and the federal CWA. An EAW classification would afford the highest level of protection against degradation that can be afforded for a surface water under the State of Nevada’s Water Quality Standards.

Surface waters that would be considered candidates for classification as an EAW would have extraordinary or exceptional characteristics relative to other State of Nevada surface waters, including one or more of the following:

- (a) the surface water is in a relatively pristine condition, largely absent of human sources of degradation, and of high quality; or
- (b) the water has important ecological, aesthetic or recreational value; or
- (c) the water has a unique water quality characteristic or is an exceptional and rare example of its type regardless of whether the water is considered high quality.

Nevada's water quality standards (NAC 445A. 11704 through NAC 445A.2234) establish designated beneficial uses for surface waters, set criteria to protect those uses, and establish provisions to preserve water quality. EAWs would be subject to the same water quality criteria as other water with the same designated uses with the exception that a beneficial use of "Waters of Extraordinary Ecological or Aesthetic Value" would be assigned to an EAW. This special beneficial use assigned to an EAW would in effect provide additional protection aimed at protecting and preserving the water quality or the attribute of the classified water. Degradation of water quality is not allowed in an EAW except under very limited circumstances. Where water quality exceeds the standards, that higher water quality must be protected.

The designation or classification of a surface water as an EAW would be a formal regulatory rulemaking action and would be decided upon by the Commission.

5.1 Nomination Process

Any person may nominate a surface water for classification as an EAW by filing a petition with the Commission or submitting the nomination to the Division. The latter is preferred by the Division as the required informational that will need to be compiled to support classification of the nominated surface water and the public outreach efforts that will need to be conducted will require consultation with the Division.

Note: The nominating party has the burden of establishing the basis and providing the supporting information for classifying a surface water as an EAW. If a person submits a nomination to the Division, through a collaborative effort between the nominating party and the Division, the following information will be gathered to support classification of the nominated surface water as an EAW:

- Name and geographic location of the surface water including upstream and downstream boundaries.
- A rationale explaining the reason for the nomination, the extraordinary or exceptional characteristic that support classification as an EAW, and why existing protection levels (water quality standards including antidegradation protection as a non-EAW) are not sufficient.

- Evidence and water chemistry data that supports the nomination and demonstrates that the water quality is higher than the applicable standard for water quality or the existence of another attribute (i.e., unique water quality characteristic, important ecological, aesthetic or recreational value.
- Watershed inventory that identifies any existing and pending permitted water withdrawals from and discharges into the surface water, any future uses of the surface water described in local, regional and state water planning and management plans, and any dams, diversions, or other hydrologic modifications within the surface water, or upstream or downstream of the surface water.
- Discussion on the compatibility of the classification with any preexisting or preauthorized land use activities on lands adjacent to the surface water which must include historical irrigation practices and agricultural activities in the watershed.
- Discussion of the social and economic benefits and impacts associated with the classification.
- Public outreach and communication efforts within the local community and surrounding area near the surface water, including level of support and any letters or statements from stakeholders, landowners or federal, state or local governmental agencies.

If a person files a petition directly with the Commission, the supporting information described above must be included with the petition. The Commission will notify the person within 30 days after receiving the petition whether proceedings will be initiated to adopt a regulation classifying the nominated surface water as an EAW or deny the petition with reason(s) provided for the denial in the notification.

5.2 Formal Rulemaking Process

As with any change to the State's water quality standards, a regulatory action to classify an EAW will follow established administrative rulemaking procedures which includes public notice of the draft regulation and providing ample opportunities for stakeholder and interested parties to provide comment and discussion. Information gathered to support adoption of a regulation to classify an EAW would be made available for review and comment during local community and stakeholder outreach meetings and public workshops.

A public hearing before the Commission would be held for the Commission to make a decision on whether or not to adopt the draft regulation and grant EAW status to the nominated surface water. If the nominated water is adopted as an EAW, the Commission will assign a Tier 3 or Tier 2.5 level of antidegradation protection for the water.

The classification of a surface water as an EAW shall not prohibit use of the water as authorized under title 48 of NRS or affect any rule, regulation or order of the State Engineer, nor will it prohibit or alter any activities that are authorized under a state or federal permit related to the management and maintenance of structures and devices in and on the water. Classification of a surface water as an EAW does not entitle an appropriator of water to require that the source of the water meets his or her specific requirements for water quality.

The nomination and classification of an EAW will not affect preexisting or preauthorized land-use activities within the vicinity of the nominated surface water or activities on adjacent lands. Nomination of a surface water for an EAW designation will not deter any pending permits from being issued, including pending discharges to upgradient waters. Authorized discharges into the nominated EAW and upgradient waters will not be affected, provided there are no increases in the discharge or changes in the composition of the discharge after designation of the water as an EAW.

The current links to the **Nevada State Environmental Commission** (Commission) website are as follows:

<https://Commission.nv.gov/participate/forms-and-documents/>

https://Commission.nv.gov/uploads/documents/Commission_form1_writable.pdf

6.0 References

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EPA. 1995. Memo on "Guidance on Water Quality Based Effluent Limits Set Below Analytical Detection/Quantitation Limits." April. 3 pages.

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Attachment 1

Antidegradation Review Example

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Antidegradation Review Example: Individual POTW Permit Requesting Increased Flow

Description of Proposed Activity

Under the current permit, the Permittee is authorized to discharge up to an average dry weather flow of 5.0 million gallons per day (MGD) of secondary treated, chlorine-disinfected wastewater to the Humboldt River between Osino and Palisade. The Permittee requested in their permit application authorization to discharge up to an average dry weather flow of 6.7 MGD of advanced treated wastewater.

The Permittee is planning an upgrade and expansion project that would provide an advanced level of treatment and increase the design average dry weather flow to 6.7 MGD in order to accommodate future increased wastewater flows associated with development and population growth in the Permittee's General Plan.

The upgraded and expanded treatment system will consist of a new headworks facility including screens and pumps; primary treatment in two new rectangular primary clarifiers; new secondary biological treatment system using an air activated sludge treatment process to achieve nitrification and denitrification; two new circular secondary clarifiers; filtration and chemical addition; and ultraviolet light disinfection. The upgraded and expanded treatment system is scheduled to be completed and fully operational by December 2025.

ANTIDEGRADATION REVIEW CHECKLIST													
APPLICATION REVIEW													
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Facility Name	Date Application Submitted												
City of Winterfell WWTP	January 1, 2020												
A.2	Did the permit application request any of the following activities? <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> New discharge</td> <td style="width: 50%; border: none;"><input type="checkbox"/> Other activity that may lower water quality (specify)</td> </tr> <tr> <td style="border: none;"><input checked="" type="checkbox"/> Increase the permitted effluent flow</td> <td style="border: none;"><input type="checkbox"/> Groundwater remediation project → STOP. Antidegradation review not required.</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Significant facility modification</td> <td style="border: none;"><input type="checkbox"/> No → STOP. Antidegradation review not required.</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Outfall relocation</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> New or expanded mixing zone</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> New or revised effluent limitation greater than baseline water quality</td> <td style="border: none;"></td> </tr> </table>	<input type="checkbox"/> New discharge	<input type="checkbox"/> Other activity that may lower water quality (specify)	<input checked="" type="checkbox"/> Increase the permitted effluent flow	<input type="checkbox"/> Groundwater remediation project → STOP. Antidegradation review not required.	<input type="checkbox"/> Significant facility modification	<input type="checkbox"/> No → STOP. Antidegradation review not required.	<input type="checkbox"/> Outfall relocation		<input type="checkbox"/> New or expanded mixing zone		<input type="checkbox"/> New or revised effluent limitation greater than baseline water quality	
<input type="checkbox"/> New discharge	<input type="checkbox"/> Other activity that may lower water quality (specify)												
<input checked="" type="checkbox"/> Increase the permitted effluent flow	<input type="checkbox"/> Groundwater remediation project → STOP. Antidegradation review not required.												
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<input type="checkbox"/> Outfall relocation													
<input type="checkbox"/> New or expanded mixing zone													
<input type="checkbox"/> New or revised effluent limitation greater than baseline water quality													
A.3	Did you notify the applicant that an antidegradation review has been initiated and, if necessary, request any preliminary information that may be necessary to perform the review? <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Yes</td> <td style="width: 50%; border: none;"><input type="checkbox"/> No → Provide notification.</td> </tr> </table>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No → Provide notification.										
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No → Provide notification.												
A.4	If the applicant requested a new or modified mixing zone, did you review the associated mixing zone study to confirm that it documented the model inputs, model results, and mixing zone dimensions and satisfies the conditions specified in NAC 445A.295 through 445A.302? <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;"><input type="checkbox"/> Yes</td> <td style="width: 33%; border: none;"><input type="checkbox"/> No → Perform review.</td> <td style="width: 33%; border: none;"><input checked="" type="checkbox"/> Not applicable</td> </tr> </table>	<input type="checkbox"/> Yes	<input type="checkbox"/> No → Perform review.	<input checked="" type="checkbox"/> Not applicable									
<input type="checkbox"/> Yes	<input type="checkbox"/> No → Perform review.	<input checked="" type="checkbox"/> Not applicable											
STEP 1: DETERMINE THE TIER PROTECTION LEVEL													

ANTIDEGRADATION REVIEW CHECKLIST	
1.1	Receiving Water Name Humboldt River
1.2	Are standards of water quality established for the receiving water in NAC 445A.123 to 445A.2234? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Apply the tributary rule.
1.3	Indicate the citation and waterbody for the standards of water quality applicable to the receiving water (e.g., NAC 445A.1256 Northwest Region: Boulder Reservoir). NAC 445A.1438 Humboldt Region: Humboldt River at Palisade
1.4	Is the receiving water an Extraordinary Ecological or Aesthetic Water (EAW) requiring Tier 2.5 or Tier 3 protection or a tributary to an EAW requiring Tier 3 protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No → Skip to Item 1.11.
1.5	What type of activity is proposed? <input type="checkbox"/> Temporary and limited <input type="checkbox"/> Other → Skip to Item 1.8.
1.6	Is the activity necessary to 1) achieve long-term ecological or water quality benefit or 2) to accommodate public health and safety activities in the area of the EAW? <input type="checkbox"/> Yes <input type="checkbox"/> No → STOP. Activity not allowed.
1.7	After considering the factors specified in Section 4.2.1, will the lowering of water quality be temporary and limited in the EAW? <input type="checkbox"/> Yes → Review complete. Prepare permit and document findings in the fact sheet. <input type="checkbox"/> No → STOP. Activity not allowed.
1.8	To what type of receiving water does the proposed activity discharge? <input type="checkbox"/> EAW requiring Tier 3 protection → STOP. Activity not allowed. <input type="checkbox"/> Unclassified tributary to an EAW requiring Tier 3 protection → Skip to Item 1.11 and perform parameter-by-parameter analysis (see Section 4.2.2) <input type="checkbox"/> EAW requiring Tier 2.5 protection
1.9	What is the basis of the EAW classification? <input type="checkbox"/> Water quality conditions → Skip to Item 1.11 and perform parameter-by-parameter analysis (see Section 4.2.2). <input type="checkbox"/> Other attributes
1.10	Based on the qualitative analysis performed in accordance with Section 4.2.2, will the proposed activity affect the unique value of the EAW? <input type="checkbox"/> Yes → STOP. Activity not allowed. <input type="checkbox"/> No → Review complete. Prepare permit and document findings in the fact sheet.
1.11	Is the receiving water or a downstream waterbody to which the receiving water is tributary listed as an impaired waterbody (Category 4 or 5) for any parameters on the most recent EPA-approved Clean Water Act Section 303(d) List? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Skip to Item 2.1.

ANTIDegradation REVIEW CHECKLIST

1.12	List the parameter(s) identified as causing the impairment(s). These parameters require Tier 1 protection. For each parameter, indicate whether an applicable TMDL has been developed. <ul style="list-style-type: none"> • If “Yes”, establish effluent limitations based on the TMDL wasteload allocation. • If “No”, establish effluent limitations based on the applicable water quality standard and/or effluent and receiving water monitoring requirements. 									
	Parameter	Applicable TMDL?	Parameter	Applicable TMDL?						
	1. Phosphorus	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.	<input type="checkbox"/> Yes <input type="checkbox"/> No						
	2. Mercury	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.	<input type="checkbox"/> Yes <input type="checkbox"/> No						
	3. TSS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.	<input type="checkbox"/> Yes <input type="checkbox"/> No						
	4.	<input type="checkbox"/> Yes <input type="checkbox"/> No	9.	<input type="checkbox"/> Yes <input type="checkbox"/> No						
	5.	<input type="checkbox"/> Yes <input type="checkbox"/> No	10.	<input type="checkbox"/> Yes <input type="checkbox"/> No						
STEP 2: IDENTIFY PARAMETERS OF CONCERN										
2.1	Indicate the sources reviewed to identify parameters of concern. (Check all that apply.) <table border="0" style="width: 100%;"> <tr> <td><input checked="" type="checkbox"/> Existing permit</td> <td><input type="checkbox"/> Effluent limitations guidelines (ELGs)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Application</td> <td><input type="checkbox"/> Other (specify)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Discharge monitoring reports (DMRs)</td> <td></td> </tr> </table>				<input checked="" type="checkbox"/> Existing permit	<input type="checkbox"/> Effluent limitations guidelines (ELGs)	<input checked="" type="checkbox"/> Application	<input type="checkbox"/> Other (specify)	<input checked="" type="checkbox"/> Discharge monitoring reports (DMRs)	
<input checked="" type="checkbox"/> Existing permit	<input type="checkbox"/> Effluent limitations guidelines (ELGs)									
<input checked="" type="checkbox"/> Application	<input type="checkbox"/> Other (specify)									
<input checked="" type="checkbox"/> Discharge monitoring reports (DMRs)										
2.2	List the parameters of concern.									
	Parameter	Parameter	Parameter	Parameter						
	1. Ammonia	6. Nitrite	11. TSS	16.						
	2. Chloride	7. Total Nitrogen	12.	17.						
	3. Copper	8. Total Phosphorus	13.	18.						
	4. Mercury	9. Sulfate	14.	19.						
	5. Nitrate	10. TDS	15.	20.						
2.3	Have RMHQs been developed for any of the parameters of concern listed in Item 2.2? <table border="0" style="width: 100%;"> <tr> <td><input checked="" type="checkbox"/> Yes</td> <td><input type="checkbox"/> No → Skip to Item 2.5.</td> </tr> </table>				<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No → Skip to Item 2.5.				
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No → Skip to Item 2.5.									
2.4	List the applicable RMHQs. These parameters require Tier 2 protection. Baseline water quality for these parameters is equivalent to the RMHQs.									
	Parameter	RMHQ (specify units)	Parameter	RMHQ (specify units)						
	1. Total Nitrogen	1.4 mg/L	6.							
	2. TDS	350 mg/L	7.							
	3. Chloride	21 mg/L	8.							
	4.		9.							
	5.		10.							

ANTIDEGRADATION REVIEW CHECKLIST

	10.			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Tier 1 <input type="checkbox"/> Tier 2
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STEP 3: EVALUATE THE EFFECTS OF THE PROPOSED ACTIVITY

3.1 For each parameter of concern requiring Tier 2 protection, compare the effluent concentration at the point of discharge to the baseline water quality (i.e., the RMHQ or IBV).

- If the effluent concentration does not exceed baseline water quality, no additional analysis is required. Document findings in the fact sheet.
- If the effluent concentration exceeds baseline water quality, the permit writer should proceed to Item 4.1 for additional analysis and evaluation.

Parameter	Effluent Concentration (specify units)	Baseline Water Quality (specify units)	Effluent Concentration > Baseline Water Quality?	Additional Analysis Required?
1. Total Nitrogen	10 mg/L	1.4 mg/L	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. TDS	296 mg/L	350 mg/L	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3. Chloride	69 mg/L	21 mg/L	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4. Ammonia	<1.2 mg/L	0.21 mg/L	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Copper	2.9 µg/L	1.4 µg/L	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. Nitrate	5 mg/L	0.9 mg/L	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Nitrite	<0.001 mg/L	<0.001 mg/L	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
8. Sulfate	36 mg/L	102 mg/L	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
9.			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
10.			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

STEP 4: ADDITIONAL ANALYSIS AND EVALUATION

4.1	Did the applicant provide an alternative analysis and justification of social or economic importance for the lowering of water quality for parameters requiring Tier 2 protection identified in Item 3.1? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request analysis and justification.
4.2	Did the applicant adequately identify other less degrading and/or non-degrading pollution control measures? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request analysis of additional alternatives.
4.3	Did the applicant rank all feasible alternatives from least to most degrading to water quality and, for less degrading alternatives, quantify the level of pollution reduction accomplished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request ranking of alternatives.
4.4	Did the applicant select the least degrading alternative feasible for all parameters? <input type="checkbox"/> Yes → Alternative analysis complete. <input checked="" type="checkbox"/> No → Continue to Item 4.5. Skip to Item 4.10.

ANTIDEGRADATION REVIEW CHECKLIST	
4.5	<p>Did the applicant provide a cost assessment for each alternative and rank each alternative by its cost effectiveness for pollutant removal?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request cost assessment.</p>
4.6	<p>Indicate the applicant's approach for performing the cost assessment.</p> <p><input checked="" type="checkbox"/> Present worth approach (Appendix B) <input type="checkbox"/> Absolute value approach (Appendix C) <input type="checkbox"/> Other</p>
4.7	<p>Did the applicant adequately consider the environmental impacts for each alternative?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request analysis of environmental impacts.</p>
4.8	<p>Did the applicant provide an affordability analysis?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Skip to Item 4.10. The least degrading, technically feasible alternative is deemed affordable.</p>
4.9	<p>Did the applicant select the least degrading alternative determined to be affordable?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Identify the least degrading, affordable alternative and work with the applicant to revise the application</p>
4.10	<p>Did the applicant identify the affected community and describe its current economic and environmental conditions?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request identification of the affected community.</p>
4.11	<p>Did the applicant describe the benefits the activity will have on the economic or social development of the community?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request description of economic or social benefits.</p>
4.12	<p>Did the applicant determine the overall environmental, social, and economic impacts associated with the proposed activity and accompanying degradation of water quality?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No → Request analysis of overall environmental, social, and economic impacts.</p>
4.13	<p>Based on a review of the applicant's justification, is the lowering of water quality for the parameters requiring Tier 2 protection necessary to accommodate economic or social development in the area where the surface water is located?</p> <p><input checked="" type="checkbox"/> Yes → Review complete. Prepare permit and document findings in the fact sheet. <input type="checkbox"/> No → STOP. Activity not allowed. Notify applicant of denial and, if a permit is to be issued, document findings in the fact sheet.</p>
4.14	<p>Will the highest statutory and regulatory requirements for all new and existing point sources be achieved and all cost-effective and reasonable BMPs for nonpoint sources be implemented?</p> <p><input checked="" type="checkbox"/> Yes → Review complete. Prepare permit and document findings in the fact sheet. <input type="checkbox"/> No → STOP. Activity not allowed until requirements achieved or implemented.</p>

Summary of Antidegradation Review

Parameters of concern are parameters for which there is reason to believe are or may be discharged by the facility and could affect the physical, chemical, or biological condition of the receiving water. Based on a review of the current permit, permit application, and Discharge Monitoring Reports (DMRs) submitted during the permit term, the following parameters of concern were identified in the discharge: ammonia, chloride, copper, mercury, nitrate, nitrite, total nitrogen, total phosphorus, sulfate, total dissolved solids, and total suspended solids (TSS).

Although the current permit includes effluent limitations for biochemical oxygen demand (BOD) and pH, the Division has determined that no additional analysis is required for these parameters. For BOD, applicable water quality criteria for BOD have not been established. While BOD has the potential to lower the dissolved oxygen in the receiving water, the anticipated discharge from the upgraded and expanded facility is expected to reduce both BOD concentrations and loading and is not expected to result in a lowering of water quality with respect to dissolved oxygen. For pH, the previous ion concentration limit (i.e., standard pH units) will remain unchanged, and the observed pH range is within the naturally occurring background concentrations of the receiving water.

To identify pollutants requiring Tier 1 protection, the Nevada's 2016-2018 Water Quality Integrated Report was reviewed for parameters identified as impaired (Category 4 or 5) on the Clean Water Act Section 303(d) list. The Humboldt River, from Osino to Palisade Gage, is identified as impaired, and thus requires Tier 1 protection, for phosphorus, mercury, and TSS. The draft permit includes water quality-based effluent limitations for phosphorus and TSS based on the wasteload allocations (WLAs) specified in the applicable total maximum daily loads (TMDLs).

Mercury concentrations in the effluent are below applicable water quality criteria; however because mercury was detected in the effluent and is a bioaccumulative pollutant, and the receiving water is impaired for mercury, the discharge has reasonable potential to cause or contribute to an exceedance of the water quality criteria for mercury. Therefore, an effluent limitation for mercury has been established based on the applicable water quality criteria. Quarterly effluent and receiving water monitoring are also required to characterize the effluent and receiving water for mercury. When a TMDL is issued, the effluent limitations may be revised (higher or lower) in accordance with the TMDL wasteload allocations.

The receiving water requires Tier 2 protection for parameters for which baseline water quality is better than the applicable water quality standards to support the designated and existing beneficial uses. Tier 2 protection must be provided for parameters with an applicable requirement to maintain higher quality (RMHQs). For these parameters, baseline water quality is equivalent to the RMHQ. As shown in Item 2.4 of the antidegradation review example, RMHQs have been developed, and Tier 2 protection is required, for total nitrogen, total dissolved solids, and chloride.

For the remaining parameters of concern, an interim baseline value (IBV) was calculated to represent baseline water quality. The IBVs were calculated based on the extrapolated 95th-percentile value³ using receiving water data collected by the Permittee (three monthly samples collected between February and April 2020). Tier 2 protection is required for parameters with an IBV that is less than the applicable water quality criterion unless it is determined that the receiving water is not high quality with respect to that parameter based on additional information. As shown in Item 2.7 of the antidegradation review example, the IBV was less than the water quality criterion, and Tier 2 protection is required, for ammonia, copper, nitrate, nitrite, and sulfate.

Effects of the Proposed Activity

For each parameter of concern requiring Tier 2 protection, an evaluation was done to determine whether existing water quality in the receiving water would be maintained and protected if the discharge or activity is authorized. A regulated discharge will not cause degradation of higher water quality conditions if the levels of the parameters of concern at the point of discharge are at or below the corresponding baseline water quality (i.e., the RMHQ or IBV) in the receiving water.

Because the proposed activity will impact the effluent quality with respect to the parameters of concern, the anticipated effluent quality from the proposed upgraded and expanded facility, as reported in the engineering report provided with the Permittee's application, was utilized to evaluate the effects of the proposed discharge.

As shown in Item 3.1 of the antidegradation review example, the proposed activity will not result in degradation of the receiving water for total dissolved solids, ammonia, nitrite, or sulfate. The draft permit establishes effluent limitations for these parameters based on the baseline water quality (i.e., the RMHQ or IBV) to ensure the existing high quality of the receiving water is maintained.

The proposed activity will result in degradation of the receiving water for total nitrogen, chloride, copper, and nitrate. Therefore, additional analysis and evaluation is necessary to determine 1) if reasonable or economical alternatives to lowering the water quality for these parameters are available and 2) whether the lowering of water quality for these parameters is necessary to accommodate important economic or social development.

Alternative Analysis

The Permittee submitted an Antidegradation Analysis Report in April 2020, which provided an alternative analysis to determine if reasonable or economical alternatives to lowering the water quality for total nitrogen, chloride, copper, and nitrate are available. The Permittee considered several alternatives that would reduce or eliminate the lowering of water quality resulting from the proposed increase in discharge from 5.0 MGD to 6.7 MGD for these parameters. For each alternative, the Permittee quantified

³ The "extrapolated 95th percentile" is calculated using the =PERCENTILE.INC(ARRAY,0.95) function in Excel. For example, using three results (10, 10, 20 mg/L) yields an extrapolated 95th percentile of 19.0 mg/L.

the amount of degradation reduced to determine the least degrading alternative with respect to total nitrogen, chloride, copper, and nitrate. Because the Permittee's preferred alternative was not the least degrading, the Permittee evaluated the cost effectiveness of pollutant removal, cost of pollution versus environmental gain, and affordability. The Permittee conducted the cost assessment using the absolute value approach following the guidance in EPA's *Interim Economic Guidance for Water Quality Standards Workbook*.

The Permittee evaluated each of the following alternatives in detail in the Antidegradation Analysis. As described below, the Permittee concluded that additional treatment, recycling, regionalization, and changing the source water supply were not affordable.

- Higher level of treatment using microfiltration – The Permittee evaluated additional treatment through advanced treatment using microfiltration, in addition to the planned upgrades. The Permittee concluded that installation of advanced treatment facilities designed to eliminate all incremental changes in downstream water quality for total nitrogen, chloride, copper, and nitrate is not affordable and would result in projected annual rates that are higher than 1 percent of the median household income. Additionally, this alternative would result in additional environmental concerns associated with increased energy use.
- Zero discharge (i.e., 100% recycling of effluent) – The Permittee evaluated recycling the additional wastewater through landscape irrigation with storage during the non-irrigation season. In particular, the Permittee evaluated recycling of wastewater for the irrigation of agricultural land in the southwest portion of the City of Winterfell; however, no viable water reuse customers have been identified by the Permittee.
- Connection to other wastewater facilities in the region (i.e., regionalization) – The Permittee evaluated construction of a pumping station, wastewater storage facility, and regional pipeline to connect to the City of King's Landing WWTP in lieu of the proposed upgrades. The Permittee concluded that regionalization is not affordable and would result in projected annual rates that are higher than 1 percent of the median household income.
- Change in drinking water source – The Permittee considered changing the source of drinking water to a source with lower salinity levels to reduce the effluent chloride levels. The current water source is surface water purchased through the Winterfell Irrigation District that originates as snowpack. The source water quality is very high, with low turbidity and chloride levels. Therefore, the Discharger concluded that changing drinking water sources is not a feasible alternative to reduce effluent concentrations of chloride.

Justification of Social or Economic Importance

In their Antidegradation Analysis Report, the Permittee provided a justification of social or economic importance to determine whether the lowering of water quality for total nitrogen, chloride, copper, and nitrate is necessary to accommodate important economic or social development. The Permittee concluded that the proposed activity is important for social and economic development in the City of Winterfell, as follows:

- The proposed activity will accommodate planned growth in the community, consistent with the Permittee's General Plan. The Permittee anticipates population growth of 23% from 2020 to 2030 and 61% from 2020 to 2045 (the expected life of the planned upgrades).
- The proposed activity will accommodate new development in the community, which is expected to improve property values in the area and increase the tax base.
- The proposed activity will provide a higher level of treatment than the current secondary treated discharge. The addition of nitrification/denitrification and filtration treatment processes will result in lower effluent concentrations of nutrients (ammonia, nitrate, and total nitrogen) and metals (copper and mercury) than are present in the current discharge. The conversion from chlorine disinfection with sodium bisulfite dichlorination to ultraviolet light disinfection will result in the elimination of chlorine disinfection by-products (e.g., trihalomethanes) and will reduce the salinity levels, including chloride, of the effluent through decreased chemical usage.

Antidegradation Findings

The Division concurs with the conclusions of the Permittee's Antidegradation Analysis Report and finds that the lowering of water quality for total nitrogen, chloride, copper, and nitrate associated with the proposed increase in the permitted flow from 5.0 MGD to 6.7 MGD is consistent with the State Antidegradation Policy.

As demonstrated in the alternative analysis and the justification of social or economic importance, the lower water quality is necessary to accommodate economic and social development in the area where the surface water is located and no reasonable or economical alternatives to lowering the water quality are available.

The draft permit will not result in water quality that is lower than the applicable water quality standards to protect the designated and existing beneficial uses for the receiving water or a downstream receiving water. For parameters requiring Tier 1 protection, the draft permit includes effluent limitations based on the applicable TMDL or routine monitoring to characterize the effluent and receiving water. For parameters requiring Tier 2 protection for which degradation is not expected, the draft permit establishes effluent limitations based on baseline water quality to ensure that the existing high water

quality is maintained and protected. For parameters requiring Tier 2 protection for which degradation is expected (i.e., total nitrogen, chloride, copper, and nitrate), the draft permit establishes effluent limitations based on the treatment capability of the upgraded facility to minimize the level of degradation associated with proposed increased discharge. Approval for these less restrictive permit limits would require a public hearing before the State Environmental Commission to approve, per the State Antidegradation Policy.

When allowing a lowering of water quality, the State Antidegradation Policy requires that the highest statutory and regulatory requirements for all new and existing point sources and cost-effective and reasonable best management practices for nonpoint source control are achieved. The Division has evaluated point sources that affect water quality within the watershed where water quality would be lowered by the discharge and has determined that the highest statutory and regulatory requirements are being achieved or the permitted sources have a formal agreement with DEQ to achieve those requirements.

Nevada's Nonpoint Source Management Plan⁴ describes how the Division works with partners to address nonpoint source pollution. In the Humboldt River watershed, the Division has implemented several 319(h) projects to address riparian zone restoration, erosion control, grazing management, increase in vegetation cover, eradication of invasive weeds, and uplands restoration. The NPS Program is focusing on reductions of nutrient and sediment loading in the Humboldt River through partnerships with landowners and active agencies to develop and implement a watershed-based plan or alternative strategy in the watershed. Continued implementation of the Nonpoint Source Management Plan in the watershed will ensure that cost-effective and reasonable BMPs are achieved.

⁴ https://ndep.nv.gov/uploads/water-nonpoint-docs/NV_NPS_SMP_Final.pdf

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Attachment 2

40 CFR 131.12

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Attachment 2 – Federal Antidegradation Policy

40 CFR § 131.12 Antidegradation Policy.

- (a) The State shall develop and adopt a statewide antidegradation policy. The antidegradation policy shall, at a minimum, be consistent with the following:
- (1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
 - (2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.
 - (i) The State may identify waters for the protections described in paragraph (a)(2) of this Section on a parameter-by-parameter basis or on a waterbody-by-waterbody basis. Where the State identifies waters for antidegradation protection on a waterbody-by-waterbody basis, the State shall provide an opportunity for public involvement in any decisions about whether the protections described in paragraph (a)(2) of this Section will be afforded to a water body, and the factors considered when making those decisions. Further, the State shall not exclude a water body from the protections described in paragraph (a)(2) of this Section solely because water quality does not exceed levels necessary to support all of the uses specified in Section 101(a)(2) of the Act.
 - (ii) Before allowing any lowering of high water quality, pursuant to paragraph (a)(2) of this Section, the State shall find, after an analysis of alternatives, that such a lowering is necessary to accommodate important economic or social development in the area in which the waters are located. The analysis of alternatives shall evaluate a range of practicable alternatives that would prevent or lessen the degradation associated with the proposed activity. When the analysis of alternatives identifies one or more practicable alternatives, the State shall only find that a lowering is necessary if one such alternative is selected for implementation.

- (3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.
 - (4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 316 of the Act.
- (b) The State shall develop methods for implementing the antidegradation policy that are, at a minimum, consistent with the State's policy and with paragraph (a) of this Section. The State shall provide an opportunity for public involvement during the development and any subsequent revisions of the implementation methods, and shall make the methods available to the public.

