WISE SoE Quality Control Rules

Rules for automatic quality control (QC) in Reportnet for WISE SoE (1, 3 & 4) reporting obligations

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Introduction

This document describes the quality control rules implemented in Reportnet for the following data flows: WISE SoE - Emissions (WISE-1), WISE SoE - Water Quantity (WISE-3) and WISE SoE - Water Quality (WISE-4). The rules are automatically applied to the XML deliveries uploaded to the envelopes in the appropriate collections of the different data flows. There are different categories of rules implemented. After running the automatic QC, a detailed feedback is available on the "data quality" tab of the envelope (see "How to use Reportnet for reporting under WISE SoE reporting obligations" in the WISE SoE help pages).

Table 1. Overview and description for the different QC rule categories.

TYPE	Description
BLOCKER	**A critical error**. The envelope can not be released. Normally, a blocker is an error in the format of the file, or in the structure or content of the data. Such a critical error makes it impossible for the delivery to be harvested and integrated into the European database. The envelope can only be released if every incorrect file is removed and replaced by corrected files.
ERROR	**A non-critical error**. The envelope can be released, but part of its content may be excluded from the European database (or be marked as having low reliability). Data Reporters are strongly advised to correct the non-critical errors. If the automated QC returned errors, a clarification or a resubmission may be requested by the Data Client, when the data is processed and the final feedback is added to the envelope. The delivery scoring evaluation may be reduced if errors are present.
WARNING	**An issue that may be an error**. Data Reporters are advised to check the correctness of the records or values that raised the warning. The envelope can be released. If the automated QC returned warnings, a clarification may be requested by the Data Client, when the data is processed and the final feedback is added to the envelope.
INFO	**Other issues related to the quality of the data.** The envelope can be released. A clarification may be requested by the Data Client, when the data is processed and the final feedback is added to the envelope. Note that the observation status and the remarks fields (for WISE-1, WISE-3 and WISE-4) can be used to provide include the clarifications in the delivery itself. Similarly, the metadata file can be used for the same purpose in WISE-5.
OK	**The automatic QC did not detect quality issues**. The envelope can be released.
SKIPPED	Data check has been executed, but there was "Nothing found to check", typically because of missing optional data elements.
UNKNOWN	Script execution failed, e.g. due to missing reference data or unresponsive third party web service. If the script with UNKNOWN results involves the detection of critical errors, the release of the envelope will not be possible. Data Reporters are requested to run the QC at a later time, and to contact wisesoe.helpdesk@eionet.europa.eu if the problem persists.

In addition to the tests described in this document, a **result values - limits test** is implemented in WISE-4 (Water Quality). The test checks if the resultObservedValue is within the acceptable value range for each determinand.

The limits are given in an additional file available in CDR help section. In general, the values MINLIMIT and MAXLIMIT are identical for surface water and for groundwater in both the DisaggregatedData and the AggregatedData tables for a given determinand.

In the table AggregatedDataByWaterBody, and because only groundwater data can be reported in this table, the limits for selected determinands can be different from those applied in the DisaggregatedData and AggregatedData tables.

WISE SoE - Emissions (WISE-1)

Emissions

Table 2. Quality control tests performed on the Emissions table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: spatialUnitIdentifier, spatialUnitIdentifierScheme, phenomenonTimeReferencePeriod, observedPropertyDeterminandCode, parameterEmissionsSourceCategory.	BLOCKER
2	Conditional mandatory values test	Tests the presence of values which are mandatory under certain conditions. The parameterEPRTRfacilities value must be present for emissions from point sources which are relevant for E-PRTR reporting (PT, U, U2, U22, U23, U24, I, I3, I4, O, O1, O2, O3, O4). The resultEmissionsValue can be empty only if an appropriate resultObservationStatus flag is used to explain the reason.	BLOCKER
3	Record uniqueness test	Tests the uniqueness of the records. The combination of the values spatialUnitIdentifier, spatialUnitIdentifierScheme, phenomenonTimeReferencePeriod, observedPropertyDeterminandCode, parameterEmissionsSourceCategory, and parameterEPRTRfacilities must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
4	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
5	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: spatialUnitIdentifierScheme, observedPropertyDeterminandCode, parameterEmissionsSourceCategory, parameterEPRTRfacilities, resultEmissionsUom, procedureEmissionsMethod, and resultObservationStatus.	BLOCKER
6.1	Spatial unit identifier format test	Tests the validity of the spatialUnitIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • If the spatial unit is the entire country, its identifier is the country code. • If the spatial unit is not the entire country, the identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6.2	Spatial unit identifier reference test	Tests the presence of the spatialUnitIdentifier and its respective spatialUnitIdentifierScheme in the WISE register. Due to the ongoing WFD reporting, which includes also updates of the River Basin Districts and sub-units, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
7	Spatial unit identifier scheme test	Tests the validity of the spatialUnitIdentifierScheme value. The allowable values are countryCode, euRBDCode, euSubUnitCode, eionetRBDCode and eionetSubUnitCode.	BLOCKER
8	Time reference period test	Tests whether the phenomenonTimeReferencePeriod value: is provided in the requested format (YYYY or YYYY--YYYY); if reported as a period, the starting year is not higher than ending year values are from the expected range	BLOCKER
9	Unit of measure test	Tests whether the correct resultEmissionsUom value has been used for the reported determinand (only kg/a and t/a are expected). The test also detects determinands which are not expected to be reported in this table.	BLOCKER
10	Emissions method test	Tests whether the procedureEmissionsMethod value has been used correctly: Methods calculated, estimated and measured are allowed for point sources. Methods estimated and modelled are allowed for diffuse sources.	BLOCKER

Riverine Input Loads

NOT REQUESTED IN 2019 DATACALL

Table 3. Quality control tests performed on the RiverineInputLoads table.

#	Test name	Test description	Type
1	Mandatory values test	TestedTests the presence of mandatory values - monitoringSiteIdentifier, monitoringSiteIdentifierScheme, phenomenonTimeReferenceYear, observedPropertyDeterminandCode, resultEmissionsUom, resultEmissionsValue. Missing resultEmissionsValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	TestedTests uniqueness of the records. Combination of the values monitoringSiteIdentifier, monitoringSiteIdentifierScheme, phenomenonTimeReferenceYear, observedPropertyDeterminandCode, procedureEstimateDetail must be unique for each record in the table. No multiplicities can exist.	BLOCKER
3	Data types test	TestedTests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	TestedTests the correctness of values against the respective codelists. Checked values are monitoringSiteIdentifierScheme, observedPropertyDeterminandCode, resultEmissionsUom, procedureEstimateDetail, resultObservationStatus	BLOCKER
5	Monitoring site identifier format test	TestedTests correctness of the monitoringSiteIdentifier value format: • The country code part of the identifier value must match the one of the reporting country {Upercase(<countryCodePartOfTheEnvelopeURL>), except use "UK" instead of "GB" and use "EL" instead of "GR"} • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: [A-Z]{2}[0-9A-Z]{1}[0-9A-Z-_]{0,39})	BLOCKER
6	Monitoring site identifier reference test	TestedTests presence of the monitoringSiteIdentifier and its respective monitoringSiteIdntifierScheme in the official reference list (WISE register). The list has been created from the previously reported data on monitoring sites. Due to the ongoing reporting of WFD data, which includes also update of the monitoring sites, the detected discrepancies are currently not considered as errors. They will be considered as blocker errors in the future reporting cycles.	WARNINGBLOCKER
7	Unit of measure test	TestedTests whether correct resultEmissionsUom Values have been used for the observed determinands.	BLOCKER
8	Reference year test	TestedTests whether the phenomenonTimeReferenceYear value is from the expected range. (({year(<timeValuesLimitDateStart>) - {year(<timeValuesLimitDateEnd>) in http://converters.eionet.europa.eu/xmlfile/dataflow_cycles.xml where <DataFlow> RO_ID="632" and <DataFlowCycle> Identifier="2017"}.	WARNING
9	Observed value limits test	TestedTests whether the resultEmissionsValue is within the acceptable value ranges for the respective determinands. Values can be confirmed as correct by providing an appropriate flag in the field resultObservationStatus. Please be aware that confirmation won't be accepted if the value defies logic (e.g. negative concentration, pH above 14,...). Level of error depends on the particular substance or parameter.	BLOCKER / ERROR / WARNING / INFO

Direct Discharges

NOT REQUESTED IN 2019 DATACALL

Table 4. Quality control tests performed on the DirectDischarges table.

#	Test name	Test description	Type
1	Mandatory values test	TestedTests the presence of mandatory values - waterBodyIdentifier, waterBodyIdentifierScheme, phenomenonTimeReferenceYear, observedPropertyDeterminandCode, resultEmissionsUom, resultEmissionsValue. Missing resultEmissionsValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	TestedTests uniqueness of the records. Combination of the values waterBodyIdentifier, waterBodyIdentifierScheme, phenomenonTimeReferenceYear, observedPropertyDeterminandCode, procedureEstimateDetail, parameterEmissionsSourceCategory must be unique for each record in the table. No multiplicities can exist.	BLOCKER
3	Data types test	TestedTests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	TestedTests the correctness of values against the respective codelists. Checked values are waterBodyIdentifierScheme, observedPropertyDeterminandCode, resultEmissionsUom, procedureEstimateDetail, parameterEmissionsSourceCategory, resultObservationStatus	BLOCKER
5	Water body identifier format test	TestedTests correctness of the waterBodyIdentifier value format: • The country code part of the identifier value must match the one of the reporting country {Upercase(<countryCodePartOfTheEnvelopeURL>), except use "UK" instead of "GB" and use "EL" instead of "GR"} • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: [A-Z]{2}[0-9A-Z]{1}[0-9A-Z-_]{0,39})	BLOCKER
6	Water body identifier reference test	TestedTests presence of the waterBodyIdentifier, and its respective waterBodyIdentifierScheme, in the official reference list (WISE register). The list has been created from the previously reported data on water bodies. Due to the ongoing reporting of WFD data, which includes also update of the water bodies, the detected discrepancies are currently not considered as errors. They will be considered as blocker errors in the future reporting cycles.	WARNINGBLOCKER
7	Unit of measure test	TestedTests whether correct resultEmissionsUom Values have been used for the observed determinands.	BLOCKER
8	Reference year test	TestedTests whether the phenomenonTimeReferenceYear value is from the expected range. (({year(<timeValuesLimitDateStart>) - {year(<timeValuesLimitDateEnd>) in http://converters.eionet.europa.eu/xmlfile/dataflow_cycles.xml where <DataFlow> RO_ID="632" and <DataFlowCycle> Identifier="2017"}.	WARNING
9	Observed value limits test	TestedTests whether the resultEmissionsValue is within the acceptable value ranges for the respective determinands. Values can be confirmed as correct by providing an appropriate flag in the field resultObservationStatus. Please be aware that confirmation won't be accepted if the value defies logic (e.g. negative concentration, pH above 14,...). Level of error depends on the particular substance or parameter.	BLOCKER / ERROR / WARNING / INFO

WISE SoE - Water Quantity (WISE-3)

Monitoring Data

Table 5. Quality control tests performed on the MonitoringData table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: monitoringSiteIdentifier, monitoringSiteIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedValue. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests uniqueness of the records. The combination of the values in monitoringSiteIdentifier, monitoringSiteIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: monitoringSiteIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5	Monitoring site identifier format test	Tests the validity of the monitoringSiteIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6	Monitoring site identifier reference test	Tests the presence of the monitoringSiteIdentifier and its respective monitoringSiteIdentifierScheme in the WISE register. The list has been created from the previously reported data on monitoring sites. Due to the ongoing WFD reporting, which includes also updates of the monitoring sites, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is within the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER

Reservoir Data

Table 6. Quality control tests performed on the ReservoirData table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: waterBodyIdentifier, waterBodyIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedValue. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests uniqueness of the records. The combination of the values in waterBodyIdentifier, waterBodyIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: waterBodyIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5	Surface water body identifier format test	Tests the validity of the waterBodyIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6	Surface water body identifier reference test	Tests the presence of the waterBodyIdentifier, and its respective waterBodyIdentifierScheme in the WISE register. The list has been created from the previously reported data on surface water bodies. Due to the ongoing WFD reporting, which includes also updates of the water bodies, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is from the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER

Renewable Fresh Water Resources

Table 7. Quality control tests performed on the RenewableFreshwaterResources table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedVolume. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5.1	Spatial unit identifier format test	Tests the validity of the spatialUnitIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • If the spatial unit is the entire country, its identifier is the country code. • If the spatial unit is not the entire country, the identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
5.2	Spatial unit identifier scheme test	Tests the presence of the spatialUnitIdentifier and its respective spatialUnitIdentifierScheme in the WISE register. Due to the ongoing WFD reporting, which includes also updates of the River Basin Districts and sub-units, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
6	Spatial unit identifier scheme test	Tests the validity of the spatialUnitIdentifierScheme value. The allowable values are countryCode, euRBDCode, euSubUnitCode, eionetRBDCode and eionetSubUnitCode.	BLOCKER
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is within the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER
8	Time period volume sum test	Tests whether the sum of monthly volume values doesn't exceed the corresponding annual volume value.	BLOCKER

Additional Water Resources

Table 8. Quality control tests performed on the AdditionalWaterResources table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedVolume. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5.1	Spatial unit identifier format test	Tests the validity of the spatialUnitIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • If the spatial unit is the entire country, its identifier is the country code. • If the spatial unit is not the entire country, the identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
5.2	Spatial unit identifier scheme test	Tests the presence of the spatialUnitIdentifier and its respective spatialUnitIdentifierScheme in the in the WISE register. Due to the ongoing WFD reporting, which includes also updates of the River Basin Districts and sub-units, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
6	Spatial unit identifier scheme test	Tests the validity of the spatialUnitIdentifierScheme value. The allowable values are countryCode, euRBDCode, euSubUnitCode, eionetRBDCode and eionetSubUnitCode.	BLOCKER
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is within the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER
8	Time period volume sum test	Tests whether the sum of monthly volume values doesn't exceed the corresponding annual volume value.	BLOCKER
9.1	Parameter volume mathematical relation rules test - non fresh water sources, NACE C and NACE D Cooling	Tests whether the NFW_TOTAL volume value isn't lower than sum of NFW_C_CL and NFW_D_CL volume values reported from the same spatial unit and time period.	BLOCKER
9.2	Parameter volume mathematical relation rules test - water from desalination processes	Tests whether the DSW_TOTAL volume value isn't lower than sum of DSW_NACE_A011_A013 and DSW_NACE_E36 volume values reported from the same spatial unit and time period.	BLOCKER
9.3	Parameter volume mathematical relation rules test - reused water	Tests whether the RUW_TOTAL volume value isn't lower than sum of RUW_NACE_A011_A013, RUW_NACE_C and RUW_DOM volume values reported from the same spatial unit and time period.	BLOCKER

#	Test name	Test description	Type
9.4	Parameter volume mathematical relation rules test - recycled water and water available for manufacturing activities	Tests whether the RECL_TOTAL volume value isn't lower than RECL_NACE_C volume value reported from the same spatial unit and time period.	BLOCKER

Water Returns

Table 9. Quality control tests performed on the WaterReturns table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedVolume. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5.1	Spatial unit identifier format test	Tests the validity of the spatialUnitIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • If the spatial unit is the entire country, its identifier is the country code. • If the spatial unit is not the entire country, the identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
5.2	Spatial unit identifier scheme test	Tests the presence of the spatialUnitIdentifier and its respective spatialUnitIdentifierScheme in the in the WISE register. Due to the ongoing WFD reporting, which includes also updates of the River Basin Districts and sub-units, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
6	Spatial unit identifier scheme test	Tests the validity of the spatialUnitIdentifierScheme value. The allowable values are countryCode, euRBDCode, euSubUnitCode, eionetRBDCode and eionetSubUnitCode.	BLOCKER
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is within the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER
8	Time period volume sum test	Tests whether the sum of monthly volume values doesn't exceed the corresponding annual volume value.	BLOCKER

Water Abstraction

Table 10. Quality control tests performed on the WaterAbstraction table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedVolume. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5.1	Spatial unit identifier format test	Tests the validity of the spatialUnitIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • If the spatial unit is the entire country, its identifier is the country code. • If the spatial unit is not the entire country, the identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
5.2	Spatial unit identifier scheme test	Tests the presence of the spatialUnitIdentifier and its respective spatialUnitIdentifierScheme in the in the WISE register. Due to the ongoing WFD reporting, which includes also updates of the River Basin Districts and sub-units, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
6	Spatial unit identifier scheme test	Tests the validity of the spatialUnitIdentifierScheme value. The allowable values are countryCode, euRBDCode, euSubUnitCode, eionetRBDCode and eionetSubUnitCode.	BLOCKER
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is within the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER
8	Time period volume sum test	Tests whether the sum of monthly volume values doesn't exceed the corresponding annual volume value.	BLOCKER
9.01	Parameter volume mathematical relation rules test - total surface water abstraction, abstraction from artificial reservoirs	Tests whether the ABS_SW volume value isn't lower than ABS_SW_RES volume value reported from the same spatial unit and time period.	BLOCKER
9.02	Parameter volume mathematical relation rules test - total surface water abstraction, abstraction from lakes	Tests whether the ABS_SW volume value isn't lower than ABS_SW_LAKE volume value reported from the same spatial unit and time period.	BLOCKER

#	Test name	Test description	Type
9.03	Parameter volume mathematical relation rules test - total surface water abstraction, abstraction from rivers	Tests whether the ABS_SW volume value isn't lower than ABS_SW_RIV volume value reported from the same spatial unit and time period.	BLOCKER
9.04	Parameter volume mathematical relation rules test - total surface water abstraction, sectoral surface water abstractions	Tests whether the ABS_SW volume value isn't lower than sum of sectoral surface water abstraction volume values (ABS_SW_NACE_A + ABS_SW_NACE_B + ABS_SW_NACE_C +ABS_SW_NACE_D + ABS_SW_NACE_E36 + ABS_SW_NACE_F + ABS_SW_NACE_I + ABS_SW_OTHER + ABS_SW_DOM) reported from the same spatial unit and time period.	BLOCKER
9.05	Parameter volume mathematical relation rules test - surface water for NACE A, NACE_A011_A013 for irrigation, NACE_A0322 for aquaculture	Tests whether the surface water NACE A volume value isn't lower than sum of NACE_A011_A013 and NACE_A0322 volume values reported from the same spatial unit and time period.	BLOCKER
9.06	Parameter volume mathematical relation rules test - surface water for NACE C, NACE C cooling	Tests whether the ABS_SW_NACE_C volume value isn't lower than ABS_SW_NACE_C_CL volume value reported from the same spatial unit and time period.	BLOCKER
9.07	Parameter volume mathematical relation rules test - surface water for NACE D, NACE D cooling	Tests whether the ABS_SW_NACE_D volume value isn't lower than ABS_SW_NACE_D_CL volume value reported from the same spatial unit and time period.	BLOCKER
9.08	Parameter volume mathematical relation rules test - surface water for NACE D, NACE D hydropower	Tests whether the ABS_SW_NACE_D volume value isn't lower than ABS_SW_NACE_D3511_HYDR volume value reported from the same spatial unit and time period.	BLOCKER
9.09	Parameter volume mathematical relation rules test - total groundwater abstraction, sectoral groundwater abstractions	Tests whether the ABS_GW volume value isn't lower than sum of sectoral groundwater abstraction volume values (ABS_GW_NACE_A + ABS_GW_NACE_B + ABS_GW_NACE_C +ABS_GW_NACE_D + ABS_GW_NACE_E36 + ABS_GW_NACE_F + ABS_GW_NACE_I + ABS_GW_OTHER + ABS_GW_DOM) reported from the same spatial unit and time period.	BLOCKER
9.10	Parameter volume mathematical relation rules test - groundwater for NACE A, NACE_A011_A013 for irrigation, NACE_A0322 for aquaculture	Tests whether the groundwater NACE A volume value isn't lower than sum of NACE_A011_A013 and NACE_A0322 volume values reported from the same spatial unit and time period.	BLOCKER
9.11	Parameter volume mathematical relation rules test - groundwater for NACE C ,NACE C cooling	Tests whether the ABS_GW_NACE_C volume value isn't lower than ABS_GW_NACE_C_CL volume value reported from the same spatial unit and time period.	BLOCKER
9.12	Parameter volume mathematical relation rules test - groundwater for NACE D, NACE D cooling	Tests whether the ABS_GW_NACE_D volume value isn't lower than ABS_GW_NACE_D_CL volume value reported from the same spatial unit and time period.	BLOCKER

Water Use

Table 11. Quality control tests performed on the WaterUse table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod, resultObservedVolume. Missing resultObservedValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, phenomenonTimePeriod must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: spatialUnitIdentifier, spatialUnitIdentifierScheme, observedProperty, and resultObservationStatus.	BLOCKER
5.1	Spatial unit identifier format test	Tests the validity of the spatialUnitIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • If the spatial unit is the entire country, its identifier is the country code. • If the spatial unit is not the entire country, the identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
5.2	Spatial unit identifier scheme test	Tests the presence of the spatialUnitIdentifier and its respective spatialUnitIdentifierScheme in the in the WISE register. Due to the ongoing WFD reporting, which includes also updates of the River Basin Districts and sub-units, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
6	Spatial unit identifier scheme test	Tests the validity of the spatialUnitIdentifierScheme value. The allowable values are countryCode, euRBDCode, euSubUnitCode, eionetRBDCode and eionetSubUnitCode.	BLOCKER
7	Time reference period test	Tests whether the phenomenonTimePeriod value: • is provided in the requested format (YYYY-MM-DD, YYYY-MM, YYYY or YYYY-MM--YYYY-MM); • is within the expected range • if reported in YYYY-MM--YYYY-MM format, it represents a quarter period (1st YYYY-01--YYYY-03, 2nd YYYY-04--YYYY-06, 3rd YYYY-07--YYYY-09, 4th YYYY-10--YYYY-12)	BLOCKER
8	Time period volume sum test	Tests whether the sum of monthly volume values doesn't exceed the corresponding annual volume value.	BLOCKER
9.1	Parameter volume mathematical relation rules test - total water use for agriculture (NACE A), water use for irrigation (NACE A 01.1, 01.3)	Tests whether the WU_NACE_A volume value isn't lower than WU_NACE_A011_A013 volume value reported from the same spatial unit and time period.	BLOCKER
9.2	Parameter volume mathematical relation rules test - total water use for manufacturing, (NACE C) water use for manufacturing cooling (NACE C Cooling)	Tests whether the WU_NACE_C volume value isn't lower than WU_NACE_C_CL volume value reported from the same spatial unit and time period.	BLOCKER

#	Test name	Test description	Type
9.3	Parameter volume mathematical relation rules test - total water use for NACE D, water use for electricity production cooling (NACE D Cooling)	Tests whether the WU_NACE_D volume value isn't lower than WU_NACE_D_CL volume value reported from the same spatial unit and time period	BLOCKER

WISE SoE - Water Quality (WISE-4)

Sample data by monitoring site

Table 12. Quality control tests performed on the DisaggregatedData table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: monitoringSiteIdentifier, monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, phenomenonTimeSamplingDate, resultObservedValue, resultQualityObservedValueBelowLOQ. Missing resultObservedValue values can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in monitoringSiteIdentifier, monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia and phenomenonTimeSamplingDate must be unique for each record in the table. No duplicate records can exist.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, resultQualityObservedValueBelowLOQ, procedureAnalyticalMethod, and resultObservationStatus.	BLOCKER
5	Monitoring site identifier format test	Tests the validity of the monitoringSiteIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6	Monitoring site identifier reference test	Tests the presence of the monitoringSiteIdentifier and its respective monitoringSiteIdentifierScheme in the WISE register. The list has been created from previously reported data on monitoring sites. Due to the ongoing WFD reporting, which includes also updates of the monitoring sites, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
7	Unit of measure test	Tests whether the correct resultUom value has been used for the reported determinand. The test also detects determinands which are not expected to be reported in this table.	BLOCKER
8	Sampling date test	Tests whether the phenomenonTimeSamplingDate value is within the expected range.	BLOCKER
9	Observed value limits test	Tests whether the resultObservedValue value is within the acceptable range for the reported determinand. A value can be confirmed as being correct by providing an appropriate flag in the field resultObservationStatus. Please be aware that that confirmation won't be accepted if the value defies logic (e.g. a negative concentration, a pH above 14, etc.)	WARNING
10	LOQ test	Tests the correctness of the values in the LOQ fields: • The procedureLOQValue must be reported for hazardous substances and selected determinands for physicochemical conditions • If resultQualityObservedValueBelowLOQ = True then resultObservedValue = procedureLOQValue	ERROR
11	Sample depth test	Tests the parameterSampleDepth value against the maximum sampling depth value reported for the respective monitoring site.	WARNING

Annual statistics data by monitoring site

Table 13. Quality control tests performed on the AggregatedData table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: monitoringSiteIdentifier, monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, phenomenonTimeReferenceYear, resultNumberOfSamples, resultQualityMinimumBelowLOQ, resultMinimumValue, resultQualityMeanBelowLOQ, resultMeanValue, resultQualityMaximumBelowLOQ, resultMaximumValue, resultQualityMedianBelowLOQ, resultMedianValue. Missing resultMinimumValue, resultMeanValue, resultMaximumValue and resultMedianValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in monitoringSiteIdentifier, monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, phenomenonTimeReferenceYear must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, resultQualityMinimumBelowLOQ, resultQualityMeanBelowLOQ, resultQualityMaximumBelowLOQ, resultQualityMedianBelowLOQ, procedureAnalyticalMethod, and resultObservationStatus.	BLOCKER
5	Monitoring site identifier format test	Tests the validity of the monitoringSiteIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6	Monitoring site identifier reference test	Tests the presence of the monitoringSiteIdentifier and its respective monitoringSiteIdentifierScheme in the WISE register. The list has been created from the previously reported data on monitoring sites. Due to the ongoing WFD reporting, which includes also updates of the monitoring sites, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
7	Unit of measure test	Tests whether the correct resultUom value has been used for the reported determinand. The test also detects determinands which are not expected in this table.	BLOCKER
8	Reference year test	Tests whether the phenomenonTimeReferenceYear value is within the expected range.	WARNING
9	Sampling period test	Tests whether the parameterSamplingPeriod value: • is provided in the requested format (YYYY-MM-DD--YYYY-MM-DD or YYYY-MM--YYYY-MM) • the starting date is not later than ending date • represents a maximum period of one year • is consistent with the value provided in the phenomenonTimeReferenceYear field.	BLOCKER
10	Result values - limits test	Tests whether the resultMinimumValue, resultMeanValue, resultMaximumValue and resultMedianValue values are within the acceptable range for the reported determinand.	WARNING

#	Test name	Test description	Type
11	Result values - mathematical relation rules test	Tests a set of mathematical relation rules between the result values: • resultMinimumValue <= resultMaximumValue • resultMinimumValue <= resultMeanValue • resultMinimumValue <= resultMedianValue • resultMaximumValue >= resultMeanValue • resultMaximumValue >= resultMedianValue • resultStandardDeviationValue <= (resultMaximumValue - resultMinimumValue) • if resultMinimumValue < resultMaximumValue then resultStandardDeviationValue > 0 • if resultNumberOfSamples = 1 then resultMinimumValue = resultMeanValue = resultMaximumValue = resultMedianValue • if resultNumberOfSamples = 1 then resultStandardDeviationValue = 0 • resultQualityNumberOfSamplesBelowLOQ <= resultNumberOfSamples • if resultQualityNumberOfSamplesBelowLOQ = 0 then resultQualityMinimumBelowLOQ = resultQualityMeanBelowLOQ = resultQualityMaximumBelowLOQ = resultQualityMedianBelowLOQ = False • if resultNumberOfSamples = 1 then resultQualityMinimumBelowLOQ = resultQualityMeanBelowLOQ = resultQualityMaximumBelowLOQ = resultQualityMedianBelowLOQ • if resultQualityNumberOfSamplesBelowLOQ = resultNumberOfSamples then resultQualityMinimumBelowLOQ = resultQualityMeanBelowLOQ = resultQualityMaximumBelowLOQ = resultQualityMedianBelowLOQ = True	BLOCKER
12	LOQ test	Tests correctness of the values in the LOQ fields: • the procedureLOQValue must be reported for hazardous substances and selected determinands for physicochemical conditions • if resultQualityMeanBelowLOQ = True then resultMeanValue = procedureLOQValue • if resultQualityMinimumBelowLOQ = True then resultMinimumValue = procedureLOQValue • if resultQualityMaximumBelowLOQ = True then resultMaximumValue = procedureLOQValue • if resultQualityMedianBelowLOQ = True then resultMedianValue = procedureLOQValue	ERROR
13	Sample depth test	Tests the parameterSampleDepth value against the maximum sampling depth value reported for the respective monitoring site.	WARNING

Annual statistics data by water body

Table 14. Quality control tests performed on the AggregatedDataByWaterBody table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: waterBodyIdentifier, waterBodyIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, phenomenonTimeReferenceYear, resultNumberOfSamples, resultQualityMinimumBelowLOQ, resultMinimumValue, resultQualityMeanBelowLOQ, resultMeanValue, resultQualityMaximumBelowLOQ, resultMaximumValue, resultQualityMedianBelowLOQ, resultMedianValue. Missing resultMinimumValue, resultMeanValue, resultMaximumValue and resultMedianValue can be explained by using an appropriate flag in the resultObservationStatus field.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values in waterBodyIdentifier, waterBodyIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, phenomenonTimeReferenceYear must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: waterBodyIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, resultQualityMinimumBelowLOQ, resultQualityMeanBelowLOQ, resultQualityMaximumBelowLOQ, resultQualityMedianBelowLOQ, and resultObservationStatus.	BLOCKER
5	Water body identifier format test	Tests the validity of the waterBodyIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6	Water body identifier reference test	Tests the presence of the waterBodyIdentifier, and its respective waterBodyIdentifierScheme in the WISE register. The list has been created from the previously reported data on water bodies. Due to the ongoing WFD reporting, which includes also updates of the water bodies, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	BLOCKER
7	Water body category test	Tests whether data is reported only for groundwater bodies (parameterWaterBodyCategory = GW).	ERROR
8	Determinand test	Tests whether determinands other than nitrate (CAS_14797-55-8), nitrite (CAS_14797-65-0), ammonium (CAS_14798-03-9) and dissolved oxygen (EEA_3132-01-2) are reported.	BLOCKER
9	Unit of measure test	Tests whether the correct resultUom value has been used for the reported determinand. The test also detects determinands which are not expected in this table.	BLOCKER
10	Reference year test	Tests whether the phenomenonTimeReferenceYear value is within the expected range.	WARNING
11	Sampling period test	Tests whether the parameterSamplingPeriod value • is provided in the requested format (YYYY-MM-DD--YYYY-MM-DD or YYYY-MM--YYYY-MM) • the starting date is not higher than the ending date • represents a maximum period of one year • is consistent with the value provided in the phenomenonTimeReferenceYear field.	BLOCKER
12	Result values - limits test	Tests whether the resultMinimumValue, resultMeanValue, resultMaximumValue and resultMedianValue values are within the acceptable range for the reported determinand.	WARNING

#	Test name	Test description	Type
13	Result values - mathematical relation rules test	Tests a set of mathematical relation rules between the result values: • resultMinimumValue <= resultMaximumValue • resultMinimumValue <= resultMeanValue • resultMinimumValue <= resultMedianValue • resultMaximumValue >= resultMeanValue • resultMaximumValue >= resultMedianValue • resultStandardDeviationValue <= (resultMaximumValue - resultMinimumValue) • if resultMinimumValue < resultMaximumValue then resultStandardDeviationValue > 0 • if resultNumberOfSamples = 1 then resultMinimumValue = resultMeanValue = resultMaximumValue = resultMedianValue • if resultNumberOfSamples = 1 then resultStandardDeviationValue = 0 • resultQualityNumberOfSamplesBelowLOQ <= resultNumberOfSamples • if resultQualityNumberOfSamplesBelowLOQ = 0 then resultQualityMinimumBelowLOQ = resultQualityMeanBelowLOQ = resultQualityMaximumBelowLOQ = resultQualityMedianBelowLOQ = False • if resultNumberOfSamples = 1 then resultQualityMinimumBelowLOQ = resultQualityMeanBelowLOQ = resultQualityMaximumBelowLOQ = resultQualityMedianBelowLOQ • if resultQualityNumberOfSamplesBelowLOQ = resultNumberOfSamples then resultQualityMinimumBelowLOQ = resultQualityMeanBelowLOQ = resultQualityMaximumBelowLOQ = resultQualityMedianBelowLOQ = True	BLOCKER
14	LOQ test	Tests the correctness of values in the LOQ fields: • the procedureLOQValue must be reported for Nitrate (CAS_14797-55-8) and Ammonium (CAS_14798-03-9) • if resultQualityMeanBelowLOQ = True and procedureLOQValue is provided then resultMeanValue = procedureLOQValue • If resultQualityMinimumBelowLOQ = True and procedureLOQValue is provided then resultMinimumValue = procedureLOQValue • If resultQualityMaximumBelowLOQ = True and procedureLOQValue is provided then resultMaximumValue = procedureLOQValue • If resultQualityMedianBelowLOQ is True and procedureLOQValue is provided then resultMedianValue = procedureLOQValue	ERROR
15	Sites class test	Tests the Class value validity for the specific determinands. • Class 4 is not applicable for Dissolved oxygen (EEA_3132-01-2) • Class 5 is not applicable for Dissolved oxygen (EEA_3132-01-2), Ammonium (CAS_14798-03-9) and Nitrate (CAS_14797-55-8)	BLOCKER
16	Number of sites sum test	Tests whether the sum of the numbers of sites reported in all classes doesn't exceed the resultNumberOfSamples value. • resultNumberOfSamples >= resultNumberOfSitesClass1 + resultNumberOfSitesClass2 + resultNumberOfSitesClass3 + resultNumberOfSitesClass4 + resultNumberOfSitesClass5	BLOCKER

Annual biology EQR data by monitoring site

Table 15. Quality control tests performed on the BiologyEQRData table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: monitoringSiteIdentifier, monitoringSiteIdentifierScheme, parameterWaterBodyCategory, parameterNCSWaterBodyType, observedPropertyDeterminandBiologyEQRCode, phenomenonTimeReferenceYear, resultEcologicalStatusClassValue, resultNumberOfSamples. Missing resultEcologicalStatusClassValue can be explained by using an appropriate flag in the resultObservationStatus field. In addition, it is also preferred that at least one of the following values is provided - resultEQRValue, resultNormalisedEQRValue.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values of monitoringSiteIdentifier, monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandBiologyEQRCode, and phenomenonTimeReferenceYear must be unique for each record in the table. No duplicate records can exist with respect to the above primary key.	BLOCKER
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: monitoringSiteIdentifierScheme, parameterWaterBodyCategory, observedPropertyDeterminandCode, procedureAnalysedFraction, procedureAnalysedMedia, resultUom, resultQualityObservedValueBelowLOQ, procedureAnalyticalMethod, and resultObservationStatus.	BLOCKER
5	Monitoring site identifier format test	Tests the validity of the monitoringSiteIdentifier value format: • The country code part of the identifier value must match the one of the reporting country. Use UK for the United Kingdom and EL for Greece. • The identifier value can't contain punctuation marks, white space or other special characters, including accented characters, except for "-" or "_". It must use only upper case letters. The third character, following the 2-letter country code, and the last character can't be "-" or "_". The total length of the identifier can't exceed 42 characters. (Regular expression: ^[A-Z]{2}[0-9A-Z]{1}([0-9A-Z_\-]{0,38}[0-9A-Z]{1}){0,1}$)	BLOCKER
6	Monitoring site identifier reference test	Tests the presence of the monitoringSiteIdentifier and its respective monitoringSiteIdentifierScheme in the WISE register. The list has been created from previously reported data on monitoring sites. Due to the ongoing WFD reporting, which includes also updates of the monitoring sites, the detected discrepancies are currently not considered as errors. They will be considered as BLOCKER errors in the future reporting cycles.	WARNING
7	Water body category test	Tests whether data is reported only for surface water bodies (parameterWaterBodyCategory = RW or parameterWaterBodyCategory = LW)	ERROR
8	Reference year test	Tests whether the phenomenonTimeReferenceYear value is within the expected range.	WARNING
9	Sampling period test	Tests whether the parameterSamplingPeriod value • is provided in the requested format (YYYY-MM-DD--YYYY-MM-DD or YYYY-MM--YYYY-MM) • the starting date is not higher than the ending date • represents a maximum period of one year • is consistent with the value provided in the phenomenonTimeReferenceYear field.	BLOCKER
10	Result values - limits test	Tests whether the resultMinimumValue, resultMeanValue, resultMaximumValue and resultMedianValue are within the acceptable value ranges for the respective determinand.	WARNING
11	Determinands and Water body category test	Tests whether only the relevant observedPropertyDeterminandBiologyEQRCode is reported for a given water body category: • For lakes (parameterWaterBodyCategory = LW), only Macrophyte and Phytoplankton • For rivers (parameterWaterBodyCategory = RW), only Invertebrate and Phytobenthos	ERROR

Classification procedure for ecological status or potential status based on biology EQR data

Table 16. Quality control tests performed on the BiologyEQRClassificationProcedure table.

#	Test name	Test description	Type
1	Mandatory values test	Tests the presence of the mandatory values: CountryCode, observedPropertyDeterminandBiologyEQRCode, parameterWaterBodyCategory, parameterNCSWaterBodyType, and parameterICStatusOfDeterminandBiologyEQR. In addition reporting of parameterBoundaryValueClasses12, parameterBoundaryValueClasses23, parameterBoundaryValueClasses34 and parameterBoundaryValueClasses45 values is also preferred. Values parameterBoundaryValueClasses34 and parameterBoundaryValueClasses45 could be omitted for AWB and HMWB.	BLOCKER
2	Record uniqueness test	Tests the uniqueness of the records. The combination of the values of CountryCode, parameterWaterBodyCategory, observedPropertyDeterminandBiologyEQRCode and parameterNCSWaterBodyType. Please verify if the duplicate records have different values in the parameterNaturalAWBHMWB field (i.e. reflect different class boundaries established for natural, artificial or heavily modified water bodies).	WARNING
3	Data types test	Tests that the format of reported values matches the Data Dictionary specifications.	BLOCKER
4	Valid codes test	Tests the validity of the values against the respective code lists. The following values are checked: CountryCode, observedPropertyDeterminandBiologyEQRCode, parameterWaterBodyCategory, parameterWFDIntercalibrationWaterBodyType, parameterNaturalAWBHMWB, parameterICStatusOfDeterminandBiologyEQR, and resultObservationStatus.	BLOCKER
5	Reporting country code test	Tests whether the reported CountryCode matches the one of the reporting country.	BLOCKER
6	Water body category test	Tests whether data is reported only for surface water bodies (parameterWaterBodyCategory = RW or parameterWaterBodyCategory = LW)	ERROR
7	Determinands and Water body category test	Tests whether only the relevant observedPropertyDeterminandBiologyEQRCode is reported for a given water body category: • For lakes (parameterWaterBodyCategory = LW), only Macrophyte and Phytoplankton • For rivers (parameterWaterBodyCategory = RW), only Invertebrate and Phytobenthos	ERROR
8	Boundary values - mathematical relation rules test	Tests a set of mathematical relation rules between the boundary values: • parameterBoundaryValueClasses12 > parameterBoundaryValueClasses23 • parameterBoundaryValueClasses23 > parameterBoundaryValueClasses34 • parameterBoundaryValueClasses34 > parameterBoundaryValueClasses45	WARNING