Enerplus Corporation - Water 2018

W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Enerplus Corporation (Enerplus) has a diversified portfolio of oil and gas properties throughout Western Canada and the United States and produced an average of approximately 84,711 BOE/day, with 52% of the total production originating from natural gas, and 48% from crude oil and natural gas liquids throughout 2017.

The head office is located in Calgary, Alberta, and the United States office is located in Denver, Colorado. Enerplus has nine offices located throughout British Columbia, Alberta, Saskatchewan, Montana and North Dakota. As of December 31, 2017, Enerplus employed a total of 392 people, including full-time benefit and payroll consultants, 254 of whom were in Canada and 138 of whom were in the United States.

Enerplus strives to continuously improve the efficiency of its energy consumption, reduce our greenhouse gas emissions intensity and provide resources, training and technology to meet our environmental objectives. We have several ongoing environmental initiatives in this regard, including:

- greenhouse gas (GHG) emissions and small pneumatic venting equipment inventory
- site environmental inspection and audit program;
- water management planning;
- waste management and waste reduction programs;
- fugitive emissions management program; and
- reclamation of disturbed landscapes to equivalent land capability.

In 2017, for the third year Enerplus reported its key environmental and safety metrics in its Sustainability Report. Enerplus' efforts in key performance indicator disclosure, stakeholder engagement, activity and culture demonstrate its commitment to responsible resource development and to continuous improvement in environment, health and safety and social performance.

W-OG0.1a

(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?

Upstream

W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1 2017	December 31 2017

W0.3

(W0.3) Select the countries/regions for which you will be supplying data.

Canada

United States of America

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

CAD

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Companies, entities or groups over which operational control is exercised

W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	Fresh water is vital for drilling, completions, operations and maintenance. Often non-fresh water can be used in place of fresh water, however non-fresh water must be chemically compatible with the formation and economically viable. Early in development stages, the primary use of fresh water is for drilling and completions (i.e., hydraulic fracturing), because recycled/brackish/produced water is usually not economically readily available. Importance rating of vital was chosen because without sufficient fresh water development would no longer be possible due to economics (i.e. increased costs would lead to capital spent elsewhere for greater potential returns on investment). Indirectly, freshwater is important to Enerplus' supply chain. For example steel is used in oil/gas well construction, pipelines and facilities; steel manufacturing requires fresh water. Sufficient amounts of economically viable, good quality freshwater are important for the production of steel.
Sufficient amounts of recycled, brackish and/or produced water available for use	Vital	Vital	Sufficient volumes of recycled/brackish/produced water are vital for operations. Primary use of recycled/brackish/produced water is for Enhanced Oil Recovery (EOR) water floods. Water is vital to maintain voidage replacement ratio (VRR) in reservoir. For every barrel of oil removed from the reservoir, a barrel of water must be added to the reservoir to maintain VRR. If water was not available to maintain VRR, water flood operations would no longer be possible. From an indirect use perspective, sufficient amounts of recycled, brackish and/or produced water available for use are important to Enerplus' supply chain as well. For example, steel manufacturing uses large amounts of recycled/brackish/produced water for once through cooling. Sufficient amounts of economically viable, recycled/brackish/produced water are important for the production of steel.

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	In most operational jurisdictions, water use reporting is a regulatory requirement. As a standard practice, 100% of water volumes withdrawn, purchased and received from third parties are measured, monitored and recorded internally. All water volumes are measured either with meters for continuous flows (ie. pipelines) or volumetric calculations (by volume per load multiplied by number of loads) for trucked water. Water metrics are used internally to evaluate performance and are reported externally to various audiences (regulators, sustain-ability reporting, Annual Information Form, etc.).
Water withdrawals – volumes from water stressed areas	100%	In all operational jurisdictions, applicable regulatory agencies (provincial, state and/or federal) are responsible for protection of aquatic ecosystems. Water withdrawals for industrial use are curtailed if minimal thresholds of water are not present in the environment. Enerplus does not operate in any areas where the withdrawal of water during periods of water stress are required. If Enerplus were to withdraw water from water stressed areas, it would occur within the statutory permitting process, and all withdrawals would be continually measured and monitored, using appropriate metering and/or volumetric calculations.
Water withdrawals – volumes by source	100%	As a standard practice, 100% of water withdrawal sources are measured, monitored and classified as fresh water, non-fresh water (i.e. saline groundwater), produced water, third party water from another organization or municipal water.
Produced water associated with your metals & mining sector activities - total volumes	<Not Applicable>	<Not Applicable>
Produced water associated with your oil & gas sector activities - total volumes	100%	In most operational jurisdictions, associated water produced along with oil and gas must be included with regulatory volumetric accounting (i.e. production accounting). All water volumes are measured either with meters for continuous flows (i.e. pipelines) or volumetric calculations (by volume per load multiplied by number of loads) for trucked water.
Water withdrawals quality	100%	The chemical composition and compatibility of all withdrawn water must be determined for operational purposes. Some parameters are metered continuously (temperature, hydrogen sulfide content, pressure, etc.) while other parameters are measured through laboratory analytical analysis initially and again at periodic or set intervals to ensure any material changes are detected (i.e. salinity, radioactive ions, scale forming bacteria, etc.).
Water discharges – total volumes	100%	Discharge of industrial use water to surface environment or receiving water body is not permitted. All water is discharged deep underground (greater than 600 meters depth) to maintain reservoir pressure in water flood operations or disposed via deep well injection. As a standard practice, 100% of water discharge volumes are continuously metered.
Water discharges – volumes by destination	100%	All withdrawn water is discharged to deep groundwater, either through use in water flood operations or disposed via deep well injection. As a standard practice, 100% of water discharge volumes are continuously metered.
Water discharges – volumes by treatment method	100%	All withdrawn water is released to deep groundwater, either through use in water flood operations or a deep disposal well. Treatment may be required prior to dis-charge. All treatment methods and volumes of water treated are documented. As a standard practice, 100% of treated water discharge volumes are continuously metered and monitored to track treatment efficacy and costs.
Water discharge quality – by standard effluent parameters	100%	All water discharge quality is analyzed to ensure chemical compatibility between discharged water and receiving reservoir. As a standard practice, 100% of water volumes discharged are measured and monitored to ensure quality is within acceptable parameters to avoid adverse effects within injection systems. Some parameters are metered continuously (temperature, hydrogen sulfide content, pressure, etc.) while other parameters are measured through laboratory analytical analysis initially and again at periodic or set intervals to ensure any material changes are detected (i.e. salinity, radioactive ions, scale forming bacteria, etc.).
Water discharge quality – temperature	100%	All oil and gas facilities and pipelines have minimum and maximum water temperature requirements. It is necessary to know the water temperature is within the specified temperature window at all times. Water discharge temperature is metered continuously and monitored through use of automated alarms.
Water consumption – total volume	100%	Detailed water volumetric accounting is a regulatory requirement and this data is crucial for reservoir engineers to under-stand the fluid dynamics and VRR implications to production. As a standard practice, 100% of water volumes consumed are measured and monitored, through continuous metering.
Water recycled/reused	100%	As a standard practice, 100% of water volumes recycled/reused are measured and monitored, through continuous metering or volumetric calculations.
The provision of fully-functioning, safely managed WASH services to all workers	100%	All Enerplus facilities supply appropriate WASH services. As a standard practice 100% of facilities supplying WASH services are measured and monitored, through continuous metering or volumetric calculations.

W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	16715	Much lower	Note: <5% change considered about the same; 5 to 10% change considered lower/higher; >20% change considered much lower/higher. Total withdrawals decreased by 21% compared to 2016, mostly due to divesting assets. Total withdrawals are expected to be higher in future years, due to production growth with associated water production, increased water requirements for exploration and development of new wells (i.e. drilling and completions).
Total discharges	16715	Much lower	Total discharges decreased by 21% compared to 2016, mostly due to divesting assets. All withdrawn water is released to deep groundwater, either through use in water flood operations or into a deep disposal well. Future volumes are expected to be higher, in direct proportion to the future volumes of total water withdrawn, as all water withdrawn is discharged to deep groundwater.
Total consumption	1566	Much higher	Surface water withdrawn is ultimately injected into deeper formations as primary or secondary function of oil and gas extraction. The process of transferring water from surface water to deep groundwater is considered consumptive. Water considered consumed is sum of fresh surface water and municipal water. Total water consumed increased by 38% in 2017 compared to 2016, due to greater volume of surface water used for hydraulic fracturing in US operations. Future volumes are expected to be higher to much higher, as a greater number of wells are completed and greater volumes per completion is expected. Using the formula W = D + C Where: W = total withdrawals D = total discharges C = total consumption The reported figures would not balance using this formula, as the consumed water is contained within the discharged water volume. The formula used to determine consumed water is: C = FW + MW Where: C = total consumption FW = total fresh water withdrawals MW = total municipal water withdrawals Logic: Deep saline groundwater that is withdrawn is re-injected into deep saline aquifers, no consumptive use. Only water that is removed from the hydrogeological cycle (i.e. fresh water and municipal water) is considered consumed.

W-OG1.2c

(W-OG1.2c) In your oil & gas sector operations, what are the total volumes of water withdrawn, discharged, and consumed – by business division – and what are the trends compared to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year %	Please explain
Total withdrawals - Upstream	16715	Much Lower	Total withdrawals decreased by 21% compared to 2016, mostly due to divesting assets.
Total discharges – Upstream	16715	Much Lower	Total discharges decreased by 21% compared to 2016, mostly due to divesting assets. All withdrawn water is released to deep groundwater, either through use in water flood operations or into a deep disposal well.
Total consumption – Upstream	1566	Much higher	Surface water withdrawn is ultimately injected into deeper formations as primary or secondary function of oil and gas extraction. The process of transferring water from surface water to deep groundwater is considered consumptive. Water considered consumed is sum of fresh surface water and municipal water. Total water consumed increased by 38% in 2017 compared to 2016, due to greater volume of surface water used for hydraulic fracturing in US operations.
Total withdrawals - Downstream	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total discharges – Downstream	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total consumption – Downstream	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total withdrawals – Chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total discharges – Chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total consumption – Chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total withdrawals – Other business division	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total discharges – Other business division	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total consumption – Other business division	<Not Applicable>	<Not Applicable>	<Not Applicable>

W1.2d

(W1.2d) Provide the proportion of your total withdrawals sourced from water stressed areas.

	% withdrawn from stressed areas	Comparison with previous reporting year	Identification tool	Please explain
Row 1	0	About the same	Other, please specify (Company specific knowledge, Regulator id)	In all operational jurisdictions, applicable regulatory agencies (provincial, state and/or federal) are responsible for protection of ecosystems and habitats. These regulatory agencies curtail water withdrawals during periods of water stress. In 2017 Enerplus water withdrawals were not curtailed in any operational areas. No curtailments equates with 0% withdrawals from water stressed areas.

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	1453	Much higher	Fresh surface water withdrawals increased by 49% compared to 2016, mostly due to greater volume of surface water used for hydraulic fracturing in US operations. Use of surface water relevant as this category of water in some jurisdictions may be exposed to greater level of risk, either water availability risk, reputational risk or stakeholder relations risk. Withdrawals from surface water are expected to be higher in future years, due to increased water requirements for exploration and development of new wells (i.e. drilling and completions). Provided water scarcity is not locally occurring, fresh water withdrawals are typically the most cost effective and environmentally benign source for water.
Brackish surface water/seawater	Relevant	0	About the same	No change from previous year. This category of water is not present or available in any geographic areas in which Enerplus operates, therefore considered not relevant. Withdrawals from this category are anticipated to be about the same in future years, as Enerplus does not expect to have operations in areas where brackish surface water is available.
Groundwater – renewable	Relevant	0	About the same	No change from previous year. This category of water is accounted for in the category of fresh surface water, as all Enerplus renewable groundwater wells are at depths sufficiently shallow to functionally be considered hydraulically connected to surface waters. This category is considered to be relevant as the use of renewable groundwater may be exposed to less reputational and stakeholder risks, provided this water source is not considered scarce. Withdrawals from this category are anticipated to be about the same in future years, as Enerplus does not expect to change water accounting categorization and will continue to consider this category of water as being within the surface water category.
Groundwater – non-renewable	Relevant	850	Much higher	Non-renewable ground water withdrawals increased by 41% compared to 2016, mostly due to greater volume of water being sourced from deep saline water source wells within Canada water flood oil production operations. Use of non-renewable groundwater is considered to be relevant as this is more environmentally benign categories of water when compared to fresh surface water. Use of this water type has less availability risk, reputational risk or stakeholder relations risk, and is generally considered to be an industry best practice. Withdrawals from this category are expected to be higher in future years, as the use of surface water is displaced by use of deep saline groundwater.
Produced water	Relevant	14284	Much lower	Produced water withdrawals decreased by 27% compared to 2016, mostly due to divesting mature assets in Canada that had high associated water production. Withdrawals of produced water are considered to be relevant as an important component of water accounting and the largest category of water by volume. Withdrawals from this category are expected to be higher in future years, as increasing oil and gas production will mean an associated increase in produced water.
Third party sources	Relevant	14	Much lower	Third party water use decreased by 50% compared to 2016. During 2017 only one facility, located in southeast Saskatchewan, received third party water. Less water was taken in due to local area operators not having excess water that required disposal. Withdrawals of third party water are considered to be relevant as this is a beneficial use of water that in most cases would be disposed of via deep well injection, where no benefit would be realized. Withdrawals from this category are expected to be slightly higher in future years, as infrastructure has been installed to facilitate more efficient receipt of water by trucks.

W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	0	About the same	No change from previous year. No discharge of industrial use water to fresh surface water is permitted by regulations in any jurisdictions Enerplus operates. All withdrawn water is released to deep groundwater, either through use in water flood operations or a deep disposal well. This category of water discharge is relevant as there may be potential risk of impacting surface water if discharged into; zero discharge to this water type protects the environment. The trend of zero discharge to surface water is anticipated for the foreseeable future.
Brackish surface water/seawater	Relevant	0	About the same	No change from previous year. No discharge of industrial use water to brackish water/seawater is permitted by regulations in any jurisdictions Enerplus operates. All withdrawn water is released to deep groundwater, either through use in water flood operations or a deep disposal well. This category of water discharge is relevant as there may be potential risk of impacting brackish water/seawater if discharged into; zero discharge to this water type protects the environment. The trend of zero discharge to surface water is anticipated for the foreseeable future.
Groundwater	Relevant	16715	Much lower	Discharge to groundwater decreased by 21% compared to 2016, mostly due to decreased volumes of produced water being withdrawn and discharged, due to divesting assets in Canada. This category of water discharge is relevant as an important component of water accounting and the largest category of water discharge. Discharge to deep saline groundwater is considered environmentally benign as the receiving water quality will not be adversely affected. Discharges to groundwater are expected to be slightly higher to higher in future years, as production and associated produced water withdrawals increase, correlated discharge to groundwater will also increase.
Third-party destinations	Relevant	0	About the same	Less than half a megaliter (0.449 Ml) of water was discharged to third party destinations, this is considered to be below the minimal reporting threshold. No significant change from previous year. This category of water discharge is relevant as there is typically greater costs associated with discharging water to third parties. A low volume of water in this category is an indicator of efficient operations. Discharges to third party are expected to be about the same in future years, as Enerplus will preferentially discharge to deep groundwater whenever operationally feasible.

W1.2j

(W1.2j) What proportion of your total water use do you recycle or reuse?

	% recycled and reused	Comparison with previous reporting year	Please explain
Row 1	76-99%	Lower	Water recycled/reused decreased by 5% compared to 2016, mostly due to substantially less production due to divestments in Canada; decreased production led to decreased associated water and a subsequent decrease in reuse of produced water into water flood operations. Water recycled/reuse is considered to be relevant as this is the preferred source of water and an indicator of operational efficiency with least environmental impacts. Water recycled/reused is expected to be slightly higher to higher in future years, as Enerplus strives to recycled/reuse water whenever technically feasible and economically viable.

W-OG1.2j

(W-OG1.2j) What proportion of your total water use do you recycle or reuse in your operations associated with the oil & gas sector?

	% recycled and reused	Comparison with previous reporting year	Please explain
Upstream	76-99	Lower	Water recycled/reused decreased by 5% compared to 2016, mostly due to substantially less production due to divestments in Canada; decreased production led to decreased associated water and a subsequent decrease in reuse of produced water into water flood operations. Water recycled/reuse is considered to be relevant as this is the preferred source of water and an indicator of operational efficiency with least environmental impacts. Water recycled/reused is expected to be slightly higher to higher in future years, as Enerplus strives to recycled/reuse water whenever technically feasible and economically viable.
Downstream	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals	<Not Applicable>	<Not Applicable>	<Not Applicable>
Other business division	<Not Applicable>	<Not Applicable>	<Not Applicable>

W-OG1.3

(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?

Yes

W-OG1.3a

(W-OG1.3a) Provide water intensity information associated with your activities in the oil & gas sector.

Business division

Upstream

Water intensity value

0.07

Numerator: water aspect

Total freshwater withdrawals

Denominator: unit of production

Barrel of oil equivalent

Comparison with previous reporting year

Much higher

Please explain

Water intensity value increased by 48% compared to 2016, mostly due to greater volume of surface water used for hydraulic fracturing in US operations. The water intensity value metric is used internally to measure, evaluate and trend water use efficiency.

W1.4

(W1.4) Do you engage with your value chain on water-related issues?

Yes, our suppliers

W1.4a

(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?

Row 1

% of suppliers by number

Less than 1%

% of total procurement spend

1-25

Rationale for this coverage

Companies that Enerplus purchases drilling and completions water from may be asked to report on their water security and supply availability. These companies are selected to ensure adequate water supply is available to meet demand of specific operations, for example high volume hydraulic fracturing. For certain services, water reporting is an important part of the scope of work. Improper or non-existent reporting is viewed as poor supplier performance, potentially impacting future business. In this regard companies are incentivized to report water use, risks and/or management information.

Impact of the engagement and measures of success

Information requested is adequacy of water source to meet demand requirements and confirmation all regulatory required approvals are in place. This information may be required as part of supplier pre-qualification, or as part of a technical evaluation in a competitive bidding process. Success is measured by the fulfillment of information request, and the subsequent supplying of adequate water volumes.

Comment

NA

W1.4b

(W1.4b) Provide details of any other water-related supplier engagement activity.

Type of engagement

Innovation & collaboration

Details of engagement

Encourage/incentivize innovation to reduce water impacts in products and services

% of suppliers by number

Less than 1%

% of total procurement spend

1-25

Rationale for the coverage of your engagement

What treatment companies have been engaged, seeking a company that can treat produced water for use is completions.

Impact of the engagement and measures of success

Initial discussions have occurred. Beneficial outcome of the engagement will be the procurement of a treatment technology that will allow the use of produced water for completions (aka fracking), where formerly only fresh water has been used. This will lead to an decrease in fresh water requirements. Success will be measured based on overall water procurement and use costs. The treatment option must be economically viable when compared to sourcing fresh water. If produced water can be treated and used for the same cost or less than suing fresh water, the supplier engagement will be measured as a success.

Comment

NA

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?

No

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

No

W3. Procedures

W-OG3.1

(W-OG3.1) How does your organization identify and classify potential water pollutants associated with its activities in the oil & gas sector that may have a detrimental impact on water ecosystems or human health?

All chemicals used on Enerplus locations have associated Safety Data Sheets, that are reviewed prior to chemical use and kept on file for future reference. SDS conform with ISO Standard 11014:2009.

The SDS for all chemicals are reviewed and the included potential impacts to ecosystems and human health are considered, typically during pre-job hazard assessments.

The water related impacts contained on the SDS do not vary across the value chain; all personnel are trained in the proper use of chemicals, how to read an SDS, and adhere to the proper handling and safety precautions.

W-OG3.1a

(W-OG3.1a) For each business division of your organization, describe how your organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants associated with your oil & gas sector activities.

Potential water pollutant	Business division	Description of water pollutant and potential impacts	Management procedures	Please explain
Chemicals	Upstream	A potential impact of chemicals used, such as biocides, within the hydraulic fracturing process is the contamination of shallow groundwater aquifers. The pathway would be through the wellbore, if a cement barrier were to leak. The scale would be relatively minimal, as the loss of pressure would be detected and the operation would be halted, limiting the potential impacts. The magnitude would be difficult to determine, as detailed monitoring, chemical decomposition modelling and sampling would be required to quantify impacts.	Measures to prevent spillage, leaching and leakages	Wellbore cement is x-rayed and gamma-logged to ensure integrity. Once hydraulic fracturing operations begin the injection pressure is monitored closely for anomalies. Any unexpected pressure reading leads to an immediate halt of operations. Prior to fracturing operations, any existing water wells in vicinity are sampled and tested for routine parameters. If any impacts to groundwater are thought to have occurred, a follow-up sampling event occurs to conduct before/after water sample comparisons. No detectable change in groundwater chemical composition indicates success.

W3.3

(W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Direct operations

Coverage
Full

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
Annually

How far into the future are risks considered?
2 to 5 years

Type of tools and methods used
Enterprise Risk Management

Tools and methods used
Other, please specify (External consultants, internal company)

Comment
NA

Supply chain

Coverage
Full

Risk assessment procedure
Water risks are assessed as part of an enterprise risk management framework

Frequency of assessment
Annually

How far into the future are risks considered?
2 to 5 years

Type of tools and methods used
Enterprise Risk Management

Tools and methods used
Other, please specify (External consultants, internal company)

Comment
NA

Other stages of the value chain

Coverage
None

Risk assessment procedure
<Not Applicable>

Frequency of assessment
<Not Applicable>

How far into the future are risks considered?
<Not Applicable>

Type of tools and methods used
<Not Applicable>

Tools and methods used
<Not Applicable>

Comment

W3.3b

(W3.3b) Which of the following contextual issues are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	Water availability is assessed for each project to ensure that adequate water supply of chemically compatible water is available. Internal company knowledge of our asset areas is combined with third-party resource consultant information to determine if water demand will be met by local supply. Adequate water supply is fundamental to project feasibility; Asset teams are required to have this knowledge to determine if a project can succeed economically. Long-term internal company knowledge of asset areas allows trends in water supply to be incorporated into project planning. If water source risk is expected, alternative water supply types are secured prior to the supply risk causing business impacts.
Water quality at a basin/catchment level	Relevant, always included	Water quality is assessed for each project to ensure that adequate water supply of chemically compatible water is available. Internal company knowledge of our asset areas is combined with third-party resource consultant information to determine if water demand will be met by local supply. Adequate water supply is fundamental to project feasibility; Asset teams are required to have this knowledge to determine if a project can succeed economically.
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, always included	Initially, stakeholder concerns regarding water are addressed through the regulatory approval process. Long-term internal company knowledge of asset areas aids in a high level of understanding regarding stakeholder sentiment and potential conflicts. Enerplus proactively builds strong relationships with stakeholders in local communities. In addition, operations employees are active members of the communities in which they live and work.
Implications of water on your key commodities/raw materials	Relevant, always included	An adequate supply of economically viable water supply is required for our operations. Internal company knowledge includes detailed forecast of water quality required for each operational stage: exploration, development and production. Future implications on water are expected to be similar to current. Alternatives to water such as oil for completions or CO2 for enhanced oil recovery are compared during project planning and review. Currently, use of water is more economically viable than alternatives. Long-term internal company knowledge allows ongoing comparison of water versus non-water alternatives and economic viability determination.
Water-related regulatory frameworks	Relevant, always included	All regulatory frameworks must be known to ensure compliance. Internal company knowledge includes awareness of all relevant regulations that must be complied with in all of our operating areas. All pending and published regulatory changes are reviewed to determine potential business impacts on operations. Enerplus sits on several industrial associations (e. g. Canadian Association of Petroleum Producers (CAPP), North Dakota Petroleum Council (NDPC), Western Energy Alliance (WEA), Etc.) that routinely provide feedback on pending legislation. Potential regulatory changes are summarized and disseminated internally to heighten internal company knowledge and to aid in providing informed feedback to regulators.
Status of ecosystems and habitats	Relevant, always included	In all of the jurisdictions where we operate, regulatory agencies ensure that ecosystems and habitats are not adversely impacted by our operations. This is done through strict legislation and regulations for the oil and gas industry. Enerplus complies with all regulations, acquires all relevant approvals required and follows industry best practices for all developments and operations. Regulators are responsible for monitoring current state and modelling future potential changes. Through compliance with all regulations, and supporting industry funded government monitoring initiatives, the requirement to maintain internal company knowledge of ecosystems and habitats is unnecessary.
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	Access to sufficient potable water and sanitation services are not a concern within the jurisdictions Enerplus operates. All facilities have WASH services in place.
Other contextual issues, please specify	Relevant, always included	Adequate water availability and estimated cost.

W3.3c

(W3.3c) Which of the following stakeholders are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Customers	Relevant, always included	The customers of Enerplus' produced oil and gas are midstream and/or refining companies. Long-term sales contracts are agreed upon early in project development.
Employees	Relevant, always included	Environmental stewardship is a company value for which all Enerplus employees are responsible. New employees read the company Sustainability and Social Responsibility Policy, which includes reference to water stewardship. Relevant employees are interviewed as part of the water risk assessment process. In addition, employees are engaged through our sustainability materiality survey, risk registry analysis and employee engagement surveys.
Investors	Relevant, always included	Financial impacts related to water risks are relevant and included. Economic performance can be affected by water risks and reflected in stock prices. Investors are engaged through our corporate website, sustainability materiality survey and Enerplus' published sustainability report.
Local communities	Relevant, always included	Local communities are included within water risk assessments. Potential impacts to local communities are identified and mitigated. Enerplus proactively builds strong relationships with stakeholders in local communities.
NGOs	Relevant, always included	NGOs active in the operational area are included in the water risk assessment. Reputational risk related to NGOs is assessed. Engagement method includes corporate website, sustainability materiality survey and Enerplus' published sustainability report.
Other water users at a basin/catchment level	Relevant, always included	Other water users are included in the water risk assessment. Potential collaboration opportunities are identified and pursued where feasible. Engagement methods include direct dialogue, business agreements, and sustainability materiality surveys.
Regulators	Relevant, always included	Regulators are included in water risk assessments. Regulatory compliance and awareness of new/developing regulations are critical factors related to water risk. Engagement methods include conversations, official correspondence, applications/receipt of approvals, and , sustainability materiality surveys.
River basin management authorities	Relevant, always included	River basin management authorities are included for water risk assessments if present. Understanding of and compliance with management goals is relevant to water risk. Engagement methods include attending meetings, sustainability materiality surveys, reading relevant published documents.
Statutory special interest groups at a local level	Relevant, always included	Statutory special interest groups are included for water risk assessments if present. Potential impacts to these groups are identified and mitigation strategies developed. Engagement methods include discussion with regulators, attending meetings, sustainability materiality surveys and reading relevant published documents.
Suppliers	Relevant, always included	Suppliers are included for water risk assessments. Supply of key goods and services is crucial for development and operations. Potential risks of supply disruptions are identified and contingency plans developed. Engagement methods include discussion, service agreements, proposal requests/receipts and sustainability materiality surveys.
Water utilities at a local level	Please select	Water utilities/suppliers are included for water risk assessments. Water supply is crucial for development and operations. Potential risks of supply disruptions are identified and contingency plans developed. Engagement methods include discussion, service agreements and proposal requests/receipts.
Other stakeholder, please specify	Not considered	NA

W3.3d

(W3.3d) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

A comprehensive risk assessment is completed for all operational areas within the company. This approach has been taken because an in-depth understanding of all potential risks is necessary to quantify the likelihood and severity of the risk, and to develop mitigation strategies to bring the risks within acceptable levels. The risk assessment includes risks to direct operations and potential risk of interruption to supply chain. These risk assessments include water related risk, as access to economically viable water is vital.

Risk-response is translated into economic metrics for purpose comparing project risks across varied jurisdictions and operational areas. For example, risk of adequate water supply would be assigned a cost, to represent risk of using an alternative source of water if supply disruption were to occur with primary source. If the risked cost were greater than potential project profits, the project would have to be de-risked prior to implementation.

Annual project risk assessments are conducted to assess the short (<1 year), medium (1-3 years) and long-term (3+ years) time horizons.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

No

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

Substantive impact is defined as impacting the economic viability of an operational area or facility, triggering a new evaluation of whether the facility is a net asset or liability. For instance, if the cash flows no longer exceed the anticipated abandonment or the cumulative positives are less than the book value (up front capital), there may be net loss.

Metrics used to determine substantive impact include: proved reserves, annual production, net income, cashflow, fixed and variable operational costs, finding and development costs and capital efficiencies. These metrics are reviewed annually. Due to variable economic parameters, specific thresholds used to determine if substantive vary by operational area.

Enerplus defines substantive applicable to direct operation only.

One example of substantive impact considered would be the lack of economically viable fresh water for hydraulic operations. If regional water shortages led to surface water withdrawal curtailments, water may have to be purchased from alternative vendors at additional costs. At some tipping point the economics of the well might no longer make business sense. These evaluations are done throughout the project life cycle.

W4.2b

(W4.2b) Why does your organization not consider itself exposed to water risks in its direct operations with the potential to have a substantive financial or strategic impact?

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	During annual asset area reviews, water risks (likelihood and potential severity) are assessed using internal company knowledge, conversations with vendors and regulators. Risk of water supply disruption exists; in all cases the water risks were deemed to be temporary in nature and limited in geographic scale. During a disruption to water supply, a contingency water source would be used. For example, fresh surface water from a river is used for one of our EOR water floods; drought conditions forced the curtailment of water withdrawals from the river, but alternative groundwater withdrawals were used to make up the water shortfall. The additional costs incurred due to temporarily switching withdrawal sources were not substantive. During the annual reviews, no risks with potential business impacts greater than the assigned thresholds were identified. Risk assessments are completed annually.

W4.2c

(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	By using available databases and conversations with vendors, Enerplus conducted a risk assessment of supply chain water risk, and concluded these risks are not substantive, no potential business impact greater than $10M likely. Supplier water risk was assessed but no substantive risk was identified. Individual areas of increased water risk were identified; however these areas were limited in geographic scale to specific river basins and only for specific times of the year. Adequate project planning could mitigate these risks to acceptable levels. Geographically diversified operation reduces the water related risk to acceptable levels that are not likely to cause significant business impacts. In the event that a supply disruption occurs, alternative supply would be secured, minimizing business impacts. Risk assessments are completed annually.

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity

Efficiency

Primary water-related opportunity

Cost savings

Company-specific description & strategy to realize opportunity

In North Dakota, we used temporary above ground pipelines to move water from the water source to the wellsite for our hydraulic fracturing operations. Typically, water is hauled to the site by water tankers. We saw many positive results including: cost savings, a significant reduction in the number of trucks using local roads; decreased road noise and dust; reduction in vehicle emissions; less impacts to wildlife.

Estimated timeframe for realization

Current - up to 1 year

Magnitude of potential financial impact

Medium

Potential financial impact

45

Explanation of financial impact

The financial impact was arrived at by comparing inclusive costs of moving water by both means. A 45% cost reduction in cost of conveying water was realized. Based on 10 mile distance, inclusive temporary surface pipeline costs $0.63/bbl (USD), trucking costs $1.15/bbl (USD).

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?

Yes, we have a documented water policy that is publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

	Scope	Content	Please explain
Row 1	Company-wide	Description of business dependency on water Description of business impact on water Description of water-related performance standards for direct operations Company water targets and goals Commitments beyond regulatory compliance Commitment to stakeholder awareness and education	Enerplus is committed to proactively mitigating our impacts on water resources. Although we require water to explore and produce oil and natural gas, we always ensure we comply with all regulations to extract and dispose of water appropriately. Additionally, wherever possible, we use non-potable water and we recycle water to reduce the amount of water we use.

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes

W6.2a

(W6.2a) Identify the position(s) of the individual(s) on the board with responsibility for water-related issues.

Position of individual	Please explain
Director on board	The Enerplus Board of Directors Safety and Social Responsibility (S&SR) Committee is established by the Board for development and implementation of an effective S&SR management system, to ensure activities are planned and executed safely and responsibly, and to ensure regulatory compliance, emergency response plans, and stakeholder engagement activities. The S&SR Committee reviews the Corporation's performance related to S&SR quarterly to ensure that long-range preventative programs are in place to limit or mitigate future liability. The S&SR Committee is comprised of at a minimum of three independent Board of Director members which are appointed annually following the annual general meeting of the Corporation. The Enerplus Chief Executive Officer is responsible for Board Liaison. The S&SR Board Committee Chairman presents verbal and/or written reports regarding the Corporation's S&SR performance, Committee meetings and discussions at scheduled meetings of the Board of Directors.

W6.2b

(W6.2b) Provide further details on the board's oversight of water-related issues.

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - some meetings	Monitoring implementation and performance Reviewing and guiding annual budgets Reviewing and guiding business plans Reviewing and guiding risk management policies	The Manager of S&SR Department briefs the board on relevant matters related to water risks, such as potential water short areas due to regional climate trends. The board reviews and approves all new capital projects. If water risks are deemed substantive, mitigations must be put in place to bring the water related risks within acceptable risk tolerances.

W6.3

(W6.3) Below board level, provide the highest-level management position(s) or committee(s) with responsibility for water-related issues.

Name of the position(s) and/or committee(s)

Chief Executive Officer (CEO)

Responsibility

Both assessing and managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

More frequently than quarterly

Please explain

The CEO is ultimately responsible for all financial business decisions within the company. Any substantive risks, including water-related issues, that arise that may affect a projects economic viability will be reported to the CEO during recurring monthly meetings, when asset managers give debriefs to senior leadership team.

W-FB6.4/W-CH6.4/W-EU6.4/W-OG6.4/W-MM6.4

(W-FB6.4/W-CH6.4/W-EU6.4/W-OG6.4/W-MM6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

No, not currently but we plan to introduce them in the next two years

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?

Yes, trade associations

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

The process used to ensure consistency between activities to influence public policy and our own water policy is to communicate with a single point of contact, that is well versed on our water policy. The communication path between industry and government runs through Canadian Association of Petroleum Producers (CAPP), the main trade association for our industry. CAPP collates conversations from individual companies and compiles response letters that go to government. These response letters must align with industry best practices, water policies and commitments prior to being signed off on by member companies.

If inconsistency between the CAPP communication to government and our own water policy, the response and/or our policy would be revised to align.

W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	5-10	Availability of economically viable water source is integrated into the long term project reviews. All risks, including water related, that could impact the economic viability of a project are reviewed annually as part of the long-range planning (LRP) review. risks deemed not acceptable will be mitigated to a point where they are deemed acceptable risk. This applies to water related risks also. 5 to 10 years is the time horizon Enerplus uses for long term planning, as any variable beyond this horizon are considered to be too inaccurate to be considered valuable for the planning process. LRPs are conducted annually to keep the time horizon constantly looking 10 years ahead.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	5-10	Currently Enerplus does not operate in any water short areas. Looking 5-10 years ahead this is still felt to be true. The strategy for addressing water related issues in the LRP will be the same as addressing all individual risks: to identify them, and mitigate them to acceptable level before proceeding.
Financial planning	Yes, water-related issues are integrated	5-10	No water specific financial planning aspects have yet been required do to no substantive risks to water availability being identified.

W7.2

(W7.2) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

	Water-related CAPEX (+/- % change)	Anticipated forward trend for CAPEX (+/- % change)	Water-related OPEX (+/- % change)	Anticipated forward trend for OPEX (+/- % change)	Please explain
Row 1	49	10	25	10	Surface water withdrawals would be capex expenses, as they are associated with new projects. Surface water withdrawals increased by 49% from 2016 to 2017. Assuming input costs remained relatively unchanged, the change in capex would be +49% Groundwater withdrawals would be considered opex as they are associated with operating projects. Groundwater withdrawals decreased by 25% from 2016 to 2017. Assuming input costs remained relatively unchanged, the change in opex would be -25% Current exit guidance is roughly a 10% increase in BOE/year by end of 2018. This would roughly correlate to a 10% increase in water capex and opex.

W7.3

(W7.3) Does your organization use climate-related scenario analysis to inform its business strategy?

	Use of climate-related scenario analysis	Comment
Row 1	Yes	High level climate-related scenario analysis would be included within ongoing project review and long range planning project risk assessments. This would consist mainly in relation to climate-related water scarcity causing water availability concerns.

W7.3a

(W7.3a) Has your organization identified any water-related outcomes from your climate-related scenario analysis?

No

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?

Yes

Please explain

Based upon recent projects that required water procurement, the internal price of $1 per barrel is used for cost of water. Water transfer costs are estimated at $1 per barrel for pipelines and $2 per barrel for trucking.

W8. Targets

W8.1

(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Company-wide targets and goals	Goals are monitored at the corporate level	Goal is to use alternatives to fresh surface water whenever economically viable and technically feasible . For all projects, the economic viability and technical feasibility assessments comparing alternatives to fresh surface water have been completed. In cases where economics allow, fresh water alternatives are used.

W8.1b

(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.

Goal
Other, please specify (Use alternatives to fresh water)

Level
Company-wide

Motivation
Recommended sector best practice

Description of goal
Using alternatives to freshwater when economically feasible is an industry best practice. This goal also aligns with Enerplus social responsibility beliefs. When water is sourced, alternatives to fresh water are prioritized over fresh water, provided the economics are favorable.

Baseline year
2012

Start year
2016

End year
2021

Progress
Indicators used to gauge progress is the volume of freshwater withdrawn. A volume of zero freshwater withdrawn would indicate successfully meeting the goal. Currently Enerplus has greatly reduced its use of freshwater in Canada, and is looking at options for reducing freshwater use in US.

W9. Linkages and trade-offs

W9.1

(W9.1) Has your organization identified any linkages or tradeoffs between water and other environmental issues in its direct operations and/or other parts of its value chain?

Yes

W9.1a

(W9.1a) Describe the linkages or tradeoffs and the related management policy or action.

Linkage or tradeoff
Tradeoff

Type of linkage/tradeoff
Increased GHG emissions

Description of linkage/tradeoff
Consumptive use of fresh water is avoided when economically viable to do so. The net environmental effects of using alternatives to fresh water may cause more impact to the environment than using fresh water would, due to consideration for full lifecycle impacts such as fuel use for sourcing water (trucking), possible land disturbance and health and safety risks, among others.

Policy or action
Avoiding the use of fresh water at all costs does not always benefit the environment. Assessment of all possible water sources, fresh, produced, saline groundwater, recycled, third party, etc., is completed prior to making water source decisions. Enerplus utilizes a water source decision tool to compare source options prior to sourcing water during the project planning process. Net environmental and social effects of each option are compared before final source decisions are made.

W10. Verification

W10.1

(W10.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1d)?
No, we are waiting for more mature verification standards and/or processes

W11. Sign off

W-FI

(W-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

W11.1

(W11.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	Manager, Safety and Social Responsibility	Environment/Sustainability manager

W11.2

(W11.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].
No

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

Please confirm below

I have read and accept the applicable Terms