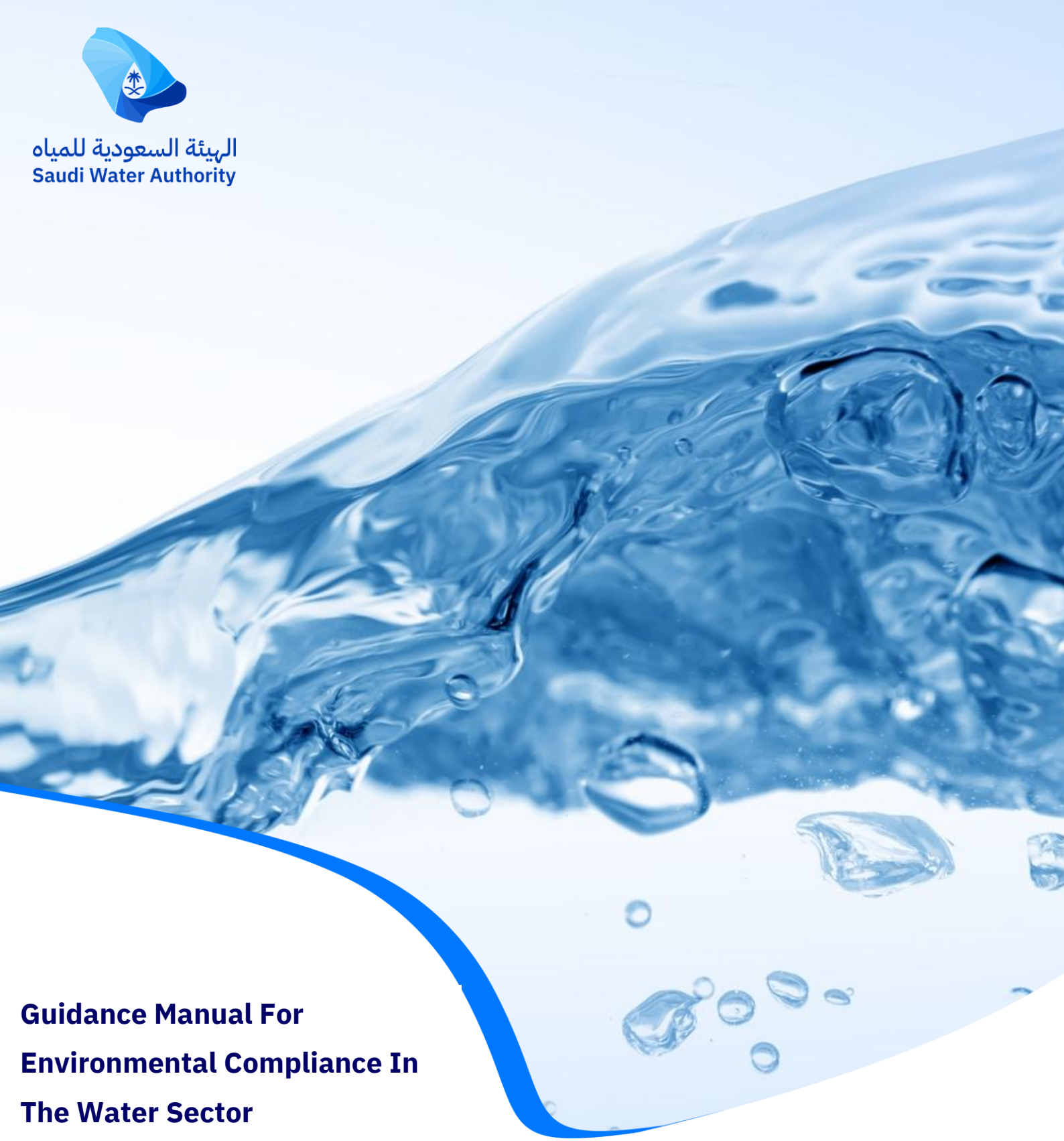
الهيئة السعودية للمياه
Saudi Water Authority



Guidance Manual For Environmental Compliance In The Water Sector

2024 - 1446 H.

Contents

1. Definitions 3
2. Introduction 9
3. Objective and scope of work 10
4. National Water Strategy (2030) 10
5. The organizational and legislative structure of the water sector 12
6. Water sector-related laws 14
7. National environmental plans 16
8. International Environmental Agreements 18
9. Environmental Compliance and Commitment in the Water Sector 20
10. Role of the Saudi Water Authority in monitoring environmental compliance in the water sector 39
11. References 41

1. Definitions

The Authority/SWA Saudi Water Authority.

Water sector: The water sector consists of a supply chain that includes production, transmission, storage, distribution, collection, wastewater treatment, and reuse for urban, industrial, and agricultural purposes, as follows:

- Production
- Transmission and storage
- Distribution, Collection, and Wastewater Treatment.
- Water Reuse.
- The principal buyer.

Production: Production includes purifying groundwater, well and dam water, and desalinating seawater to ensure the provision of clean and usable water.

Transmission and storage: The transmission of water from production sources to consumption areas through dedicated pipeline networks for storage and use when needed.

Distribution: Delivering the produced water to consumers via the distribution network.

Collection: The process of collecting wastewater from households and various facilities through wastewater networks.

Wastewater treatment: Converting wastewater, greywater, agricultural, or industrial wastewater into water that is safe for health and the environment.

The principal buyer: The primary entity that purchases water, or its services from producers and whose activities include organizing public-private partnerships in the water sector.

Water Reuse: A process aimed at promoting the sustainability of water resources through the use of treated water in areas such as agriculture, irrigation, industrial processes, and other uses.

Environmental rehabilitation: Any action taken on a site that is environmentally degraded, or has suffered environmental damage, to restore it to its natural state of ecological balance, in accordance with the standards set by the competent authority.

Metrics: Limits or ratios of pollutant concentrations, or emissions that are not allowed to be exceeded to ensure the quality level of environmental media.

Preparedness: The state of preparedness and readiness with resources, capabilities, procedures and plans to confront emergencies and environmental disasters.

Material Safety Data Sheet (:(MSDS A document containing information about occupational health and safety and environmental hazards associated with a chemical substance , or a product. This document also provides guidance on the safe use and response to spills or exposure to hazardous materials or chemical products.

Water bodies: Accumulation of water on the Earth's surface, or underground, includes: Oceans, seas, lakes and ponds, wetlands, and other geographical features through which water moves from one place to another.

Water resources: Renewable and non-renewable surface and groundwater, including water from wells, springs, dams, and rainwater.

Desalinated water: The Seawater that is converted into potable water through desalination plants.

Purified water: Water whose source is groundwater or dams has had its pollutants removed and its salinity reduced through a series of industrial and chemical processes via purification plants to convert it into pure water suitable for urban, industrial, and agricultural uses.

Surface water: Collected water, or water flowing on land, and seawater.

Seawater: Water found in the seas and oceans of the world. Or it is a type of surface water that can be converted into pure water suitable for urban, industrial, and agricultural uses through desalination plants.

Groundwater: Water found below the Earth's surface in the pore spaces of rocks, soil, and in fractures of rock formations is called groundwater reservoirs, some of which are used as primary sources of drinking water.

Treated water: water sourced from sewage, industrial, or agricultural sources that has been treated by biological, physical, industrial, or natural methods to remove its pollutants and convert it into environmentally dischargeable water or for reuse in urban, industrial, or agricultural purposes according to the degree of treatment.

Irrigation water: It is water that is directed from various sources such as rivers, lakes, groundwater, or even treated wastewater to agricultural lands to provide the moisture necessary for plant growth.

Water desalination: The production of desalinated water by removing its pollutants and all or part of its salinity through a series of industrial processes at desalination plants to convert it into pure water suitable for urban, industrial, and agricultural uses.

Injection/Recharge: Pumping water into groundwater aquifers that meet the technical standards specified by the regulations of the Ministry of Environment, Water and Agriculture (MEWA).

Wastewater: Water resulting from urban use.

Treated wastewater: Water that has undergone treatment processes to remove pollutants to make it safe for discharge, or reuse for urban, industrial, or agricultural purposes.

Commercial Wastewater: Water generated from commercial activities such as restaurants, hotels, offices, and shops is discharged into the wastewater network.

Treated wastewater: Water coming out of a wastewater treatment plant after it has been treated according to specific standards and criteria.

Liquid waste: Any liquid or oily substance that causes pollution of the environment.

Municipal solid waste: This includes residential waste, commercial and administrative waste, waste generated from park and garden maintenance, street cleaning and sweeping services, and the contents of public municipal containers.

Construction and demolition waste: (C&D Waste) All waste generated from construction, demolition, maintenance, renovation, and rehabilitation work on buildings and infrastructure, including, for example: Bricks, concrete, and rubble.

Healthcare waste: This includes both hazardous and non-hazardous healthcare waste.

Marine Craft Waste; Waste generated from all means of transport and floating units used for maritime activities, including ships, fishing boats, marine pleasure crafts, or marine sports crafts.

Agricultural Waste: Waste generated from activities and facilities related to crop development, animal and livestock production, slaughterhouses, abattoirs, forest management, tree and plant waste, fishing, and aquaculture. Agricultural waste can include inorganic waste generated from these activities such as chemical fertilizer residues and feed bags.

Green waste: Waste that is generated from the accumulation of grass clippings, shrubs, leaves, tree limbs, and other accumulated waste as a result of garden and green space maintenance.

Industrial and Mining Waste: Waste generated from industrial works or derived from manufacturing or mining processes.

Hazardous waste: Waste that is harmful to the environment, its components, and human health, possessing dangerous properties such as being infectious, highly toxic, explosive, or reactive, has no uses unless treated according to specific requirements.

Sludge waste: Sludge remaining from municipal or industrial wastewater treatment plants, and any other wastewater treatment plants that are similar in composition to municipal or industrial wastewater, or sludge remaining from septic tanks, and any other similar wastewater treatment equipment.

Chemical waste: Waste resulting from industrial processes or scientific research that contains chemical compounds that may be hazardous or harmful, such as liquid, solid, and gaseous waste, requires special management to protect the environment and public health.

Asbestos waste: Materials containing asbestos fibers used in industrial applications, construction, and water networks. It is considered hazardous due to its health risks, necessitating special procedures for safe disposal.

Hazardous materials: Materials that pose a threat to public health or the environment due to flammability, reactivity, corrosivity, or toxicity. Such materials must be handled and managed through safe procedures and may exist in gaseous, liquid, or solid form.

Harmful substances: Any solid, liquid, or gaseous substance that directly or indirectly leads to the pollution or degradation of water bodies.

Contaminated Site Remediation: Any action taken on a site that is environmentally degraded, or has suffered damage, to restore it to its natural state of ecological balance, in accordance with the standards set by the competent authority.

Environmental pollution: The presence of materials or factors in specific quantities, characteristics, and durations can lead, either directly or indirectly, to environmental damage.

Soil pollution: The deterioration of soil quality due to the presence of one or more substances or factors in unusual quantities or concentrations, which may directly or indirectly lead to harm to human health, animal wildlife, vegetation Cover, or surface and groundwater resources.

Best Available Techniques (BAT): Technologies adopted by the authorities responsible for setting regulations and bylaws, which meet the highest product quality standards to reduce or prevent environmental pollution.

Air quality: The characteristics defining the state of the air, based on the standards and criteria set by the competent authority for the protection of the environment and human health.

Noise: Disturbing or undesired Sound that negatively affects human health, living beings, and environmental quality, and arises from various human activities such as industry, transportation, construction work, and others.

Emissions: The release of pollutants into the surrounding air from a specific source.

Greenhouse gases: Gases released into the air as a result of human or natural activities that contribute to global warming notably carbon dioxide, methane, nitrous oxide, and ozone.

Environment sector: It includes environmental media, and activities and programs related to them, which aim to ensure the protection and safety of the environment, and the development of environmental environments to ensure their sustainability, and to protect them from any source of pollution.

Environmental disasters: Events that may result in danger to individuals, the environment, or property, and include incidents such as fire, water leaks, pollution, floods, rainstorms, and others, whether inside or outside facilities.

Facilities: Facilities operating within the water sector.

Environment/Environmental Media: Everything that surrounds a human being, animal, plant, or any living beings, including water, air, land, soil, atmospheric gases, water bodies, and the inanimate objects they contain, various forms of energy, habitats, natural processes, and the interactions between them.

Environmental considerations: All aspects that must be taken into account when planning any project includes systems, decisions, strategies, and environmental programs.

Environmental protection: Environmental protection, including preventing and mitigating pollution, reducing environmental degradation, and ensuring sustainable development, through compliance with environmental standards, criteria, and preventive or remedial measures, in accordance with the provisions of the environmental law and its regulations.

Environmentally sensitive areas: Areas of environmental importance that, if degraded, would have negative environmental impacts. These areas encompass protected areas, parks and forests, wetlands, important bird areas (IBAs), scenic landscapes, water catchment and runoff areas, seashores, waterways, aquifers, or any area identified or declared by the state, MEWA, or national environmental centers as environmentally sensitive areas.

Protected areas: Terrestrial, marine, or coastal sites, as determined by the competent authority, are designated for the protection and development of wildlife.

Sensitive receptors: The receptors are likely to be significantly affected by the activity or project due to their geographical proximity to it, or their sensitive nature. These receptors include

environmental components, living beings and archaeological, cultural and religious realities, and societal categories.

Environmental degradation: Severe damage to the environment due to the depletion of natural resources, destruction of habitats, extinction of wildlife, pollution of the environment media, and decline in the quality of air, water, and soil.

Marine and coastal environment: Marine areas, coastal areas, islands, or any of their natural components, whether trees, shrubs, plants, grasses, algae, coral reefs, marine life, microscopic organisms, and the like.

Coastal plants: Plants that grow entirely within marine saltwater, and which rise above the water's surface level, include mangrove trees.

Vegetation Cover: Natural plants, whether they are grasses, shrubs, or trees.

2. Introduction

In implementation of Council of Ministers Resolution No. (918) dated 28/10/1445 H (May 7, 2024), which stipulates the transformation of the Saline Water Conversion Corporation (SWCC) into the Saudi Water Authority, the Authority undertakes the tasks of supervising and monitoring the implementation of strategies related to the water sector, including the various stages of the supply chain, which include production, transmission, storage, distribution, and collection, in addition to the treatment of wastewater and its reuse in the fields of irrigation and industry. The Authority is also responsible for planning water security management, and monitoring the implementation of environmental, social and governance sustainability standards across the sector.

The Ministry of Environment, Water and Agriculture is also responsible for developing water resources, ensuring their sustainability, developing the water sector, managing risks, and promoting research and development for the sector. It undertakes comprehensive planning and management of the water sector, monitoring and evaluating the sector's performance, managing groundwater and surface water resources, enhancing professional competencies, developing cooperation within the sector, in addition to collecting and managing water data and ensuring its quality.

In line with achieving the goals of Saudi Vision 2030 in the field of environmental compliance and sustainable development, especially with regard to water resources management, the Authority issued the Guidance Manual for Environmental Compliance to provide a comprehensive overview of the laws and regulations that govern the environmental impacts resulting from the operations and activities related to the water sector. The Guidance Manual highlights aspects of environmental compliance and adherence to environmental legislation and the potential impacts of activities within this sector.

This Guidance does not constitute an amendment to any of the provisions of the laws and regulations in force in the Kingdom. Official sources in the Kingdom should be consulted regarding laws, regulations, decisions, orders, and guidance manuals issued by national centers, and all updates thereto.

3. Objective and scope of work

This guidance aims to direct and guide licensed entities and stakeholders in the water sector, which consists of a supply chain that includes production, transmission, storage, distribution, collection, wastewater treatment, and reuse, including for urban, industrial, and agricultural purposes, towards promoting compliance with environmental regulations and adhering to related executive regulations. It also aims to achieve a tangible improvement in the level of environmental sustainability within facilities with environmental impact by promoting effective environmental management and raising the efficiency of environmental practices in the water sector. The guidance also seeks to promote environmental awareness and clarify the pivotal role of legislative and regulatory entities in ensuring the achievement of this compliance.

4. National Water Strategy (2030)

The Royal Approval was issued for the National Water Strategy for the year (2030) on 06/05/1439H (January 23, 2018), based on the objectives set by the Saudi Vision (2030). This strategy comes to form a comprehensive and integrated roadmap aimed at developing and modernizing the infrastructure of the water sector in the Kingdom, and facing current and future environmental and economic challenges efficiently and effectively.

The strategy's vision is also embodied in achieving the sustainability of the water sector through the development and preservation of water resources. It also includes protecting the environment, providing safe water supplies, and high-quality, efficient services that contribute to economic growth and social development. This vision was developed by identifying five key strategic objectives, including ensuring continuous access to sufficient quantities of safe water in both normal and emergency situations, and improving water demand management across all uses to achieve optimal consumption. It also includes providing high-quality water and wastewater services at a reasonable cost to ensure affordable prices for consumers, working to preserve water resources and improve the efficiency of their use, while paying attention to protecting the local environment to ensure the present and future interests of the community. The vision will also ensure the competitiveness of the water sector and its effective contribution to the national economy, through strengthening governance, encouraging private sector participation, localizing expertise, and innovation.

The strategy includes developing indicators that focus on environmental sustainability in the water sector, and developing laws and regulations to protect water resources from pollution. These laws and regulations represent essential pillars for achieving the objectives of the National Water Strategy (2030), and seek to establish an integrated and sustainable water management system in

the Kingdom, ensuring a balance between development requirements and environmental preservation.

As a complement to the National Water Strategy, this guidance was issued to support and enhance efforts to achieve environmental compliance in the water sector.

5. The organizational and legislative structure of the water sector

5.1. Developing strategies and policies

The Ministry of Environment, Water and Agriculture is the entity entrusted with developing policies and strategic plans for the water sector in the Kingdom of Saudi Arabia. The ministry is responsible for drafting laws and regulations for the water sector, and seeks to promote the sustainable use of water in line with international environmental standards, risk management, and the promotion of research and development for the sector.

5.2. Executive and regulatory oversight and supervision of the water sector

The Authority serves as the regulatory and supervisory aspect in the water sector, where it undertakes the task of supervising and monitoring the implementation of national policies and plans. The Authority ensures compliance with standards, laws and regulations related to water to ensure the achievement of water sector objectives with high efficiency and transparency, in accordance with Council of Ministers Resolution No. (918) dated 28/10/1445 H (May 7, 2024) , which stipulates approval to transform the Saline Water Conversion Corporation into the Saudi Water Authority. This step comes within the framework of efforts to regulate and monitor activities and services in the water sector, and to develop mechanisms for working with them, in line with achieving the objectives of the National Water Strategy (2030).

Among the key initiatives for this transformation in the scope of the Authority's work in the field of environment and sustainability, the importance of the initiative to enhance the level of commitment to environmental standards and develop mechanisms for monitoring and applying sustainability standards in the water sector stands out. The Authority's role in the water sector also includes monitoring the implementation of environmental sustainability standards, which include environmental compliance, through examining the environmental management system, for example, an environmental risk register, environmental safety procedures, water quality monitoring, waste disposal, and storage. It also includes verifying the implementation of environmental protection policies and procedures, evaluating the effectiveness of environmental management activities, reviewing environmental performance reports, and ensuring compliance with relevant regulations. Therefore, the Authority seeks to actively contribute to achieving Saudi Vision 2030 by enhancing the level of compliance with environmental standards and ensuring their effective implementation.

5.3. Enforcement of laws and executive regulations

The National Environmental Centers carry out environmental executive responsibilities in the water sector in accordance with the strategic directions of MEWA. The National Centers are as follows:

- National Center for Environmental Compliance (NCEC): It is concerned with preserving critical environmental resources and biodiversity. The center also enforces the environmental law and its executive regulations.
- National Center for Waste Management: It is charged with implementing policies and programs related to waste management and achieving sustainability in this field.
- National Center for Meteorology: It contributes to providing data and accurate weather forecasts to enhance national capacity to cope with climate change.
- National Center for Vegetation Cover Development and Combating Desertification: It is concerned with developing programs and initiatives to promote vegetation cover and combat desertification.
- National Center for Wildlife: It is concerned with preserving biodiversity, developing nature reserves, and wildlife programs.

Additional information regarding the roles of these centers can be obtained from their official websites.

6. Water sector-related laws

6.1. The Environmental Law

The Environment Law was issued in accordance with Royal Decree No. (M/165) dated 19/11/1441H (July 10,2020), with the aim of consolidating the foundations of environmental protection, its development, and ensuring its sustainability, while emphasizing adherence to environmental standards and regulating activities and environmental services. The Law emphasizes the importance of obtaining the necessary permits and licenses for projects with environmental impact, and specifies the legal penalties for violations. The Law also addresses aspects for the protection of various environmental media such as water resources, vegetation cover, the marine environment, and wildlife. The Law establishes a framework for managing protected areas and dealing with emergency environmental disasters. The Law also mandates procedures for rehabilitating damaged environments. It sets out mechanisms for compensating for environmental damage. This Law is considered an integral part of the Authority's commitments to environmental protection, and to ensure its sustainability, in accordance with the regulations and laws in force in the Kingdom of Saudi Arabia.

6.2. The Water Law.

In support of the sustainable development process in the Kingdom of Saudi Arabia, the Water Law was issued in accordance with Royal Decree No. (M/159) dated 11/11/1441 H (July 2, 2020), which aims to build integrated legislative foundations that achieve the preservation, development, and protection of water resources to ensure their sustainability and regulate their optimal use. The Law also seeks to ensure the provision of safe drinking water of high quality that meets approved standard criteria, in line with national laws and regulations that set strict standards for water quality and safety.

Within the framework of this law, innovation is encouraged, and modern technologies in the field of water production and treatment are developed with the aim of achieving improvements in efficiency and the sustainability of work operations. This also includes working to protect water sources from any potential pollution, and promoting and strengthening integrated water resources management to maintain ecological balance and support the national economy.

The water law aims to find the required balance between the urgent need for water in various uses and the need to preserve this precious resource to ensure its sustainability and quality.

6.3. The Waste Management Law

The Waste Management System was issued in accordance with Royal Decree No. (M/3) dated 05/01/1441 H (September 4, 2019), which aims to establish a regulatory framework for the

processes of producing, collecting, transporting, sorting, storing, importing, exporting, treating, and disposing of waste in a safe manner, in addition to setting standards for the care of waste disposal sites after they are closed.

The law emphasizes the importance of achieving optimal environmental and economic outcomes while adhering to the principles of recycling and resource conservation. The law prohibits improper disposal of waste and sets penalties for violations that may harm public health or the environment. This law contributes to protecting water resources, whether surface or groundwater, from pollution in the absence of integrated management of all types of waste.

7. National environmental plans

7.1. National Contingency Plan for Combatting Marine Pollution by Oil and other Harmful Substances in Emergency Cases

In view of the increasing environmental challenges facing the marine environment, and in order to protect it from the dangers of oil pollution, the National Contingency Plan for Combatting Marine Pollution by Oil and other Harmful Substances in Emergency Cases was issued under Council of Ministers Resolution No. (157) dated 20/11/1411 H (June 3, 1991)

The plan aims to establish an integrated system for rapid response to emergencies that ensures the preservation of the marine environment and the beaches of the Kingdom of Saudi Arabia from the negative effects of pollution, with optimal use of available resources at the regional and international levels. The plan also seeks to fulfill the Kingdom's commitments in regional and international agreements concerning the protection of the marine environment, without prejudice to any other agreements to which the Kingdom is a party.

The various activities related to responding to pollution incidents in emergency situations are assigned to the responsible authorities that have marine or coastal activities or facilities. In addition to the responsibilities assigned to them under this plan, the responsible authorities shall develop, publish, and monitor the implementation of policies, regulations, and procedures for combating and reducing pollution. These responsibilities include coordination, surveying, monitoring, surveillance, protection, control and cleanup, oil disposal, conducting studies, and submitting necessary reports.

The plan is also implemented through multiple phases, namely reporting, assessment, containment, preventive measures, cleanup, disposal, and documentation. All these activities and procedures are carried out under the supervision of the National Committee for Combating Marine Pollution, as defined by the national plan.

Therefore, every facility that has marine activities, or coastal facilities, must have an emergency plan that is consistent with the national plans for protecting the marine environment and the Saudi coasts from the effects of pollution, making maximum use of available capabilities.

7.2. Environmental Emergency and Disaster Preparedness and Response Plans

The Ministry of Environment, Water and Agriculture issued the executive regulations for the controls of preparing and implementing environmental emergency and disaster preparedness and response plans for the Environment Law issued by Resolution No. (5169012) dated (07/06/1445 H (December 19, 2023)Which aims to ensure effective coordination and rapid response to any

environmental disasters, by developing systematic plans, procedures and controls to protect the environment and reduce potential damage.

With regard to environmental disasters related to the water sector, these plans, procedures, and controls play a vital role in preparing to address any water pollution incidents that may result from oil spills, marine pollution incidents, or groundwater pollution. Therefore, facilities should commit to preparing environmental emergency and disaster preparedness and response plans to ensure the protection of water resources from degradation, and to comply with precautionary measures that contribute to enhancing the sustainability of water resources and ensuring the safety of the aquatic environment.

8. International Environmental Agreements

International agreements play a significant role in promoting environmental compliance globally, as they provide a legal framework that supports national and international efforts to protect the environment and address pressing environmental challenges.

It is essential that facilities comply with the legal frameworks of International Environmental Agreements. This compliance contributes to strengthening environmental protection efforts and effectively addressing current environmental challenges.

Among these agreements that facilities are required to adhere to are:

A. Protocol Concerning the Conservation of Biological Diversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden Region:

Adopting the Protocol Concerning the Conservation of Biological Diversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden Region represents a crucial step in the journey of protecting the marine environment and preserving the unique biodiversity in this vital region. This Protocol clearly reflects the commitment of the signatory states to joint and sustainable cooperation in preserving natural resources, thereby enhancing the region's status as a home to a rich and diverse natural heritage.

The protocol was signed in the year 1429 H corresponding to 2008 within the framework of the Regional Convention for the Conservation of the Environment of the Red Sea and Gulf of Aden, and the Preservation of Biodiversity in the Marine Area (Jeddah Convention).

The main objectives of the Protocol include:

- Protecting biodiversity and natural sites of special importance in the Red Sea and the Gulf of Aden.
- Strengthening cooperation among member states in the region for the management and protection of marine areas.
- Establishing a network of protected areas to ensure the protection of endangered species and important ecological sites.
- Developing and implementing management plans for protected areas.
- Promoting scientific research and data collection on biodiversity in the region.
- Encouraging environmental awareness and community participation in protecting biodiversity.

B. The Protocol on the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden Region:

The Protocol to Protection the Marine Environment from Land-Based Activities in the Red Sea and the Gulf of Aden is a pioneering step towards enhancing the health of the marine environment and ensuring its sustainability in this strategic region. It demonstrates the commitment of the signatory states to close cooperation in addressing pressing environmental challenges and preserving valuable natural resources. The protocol was signed in the year 1429 AH corresponding to 2008, and it is considered an important addition to the Regional Convention for the Conservation of the Environment of the Red Sea and Gulf of Aden (Jeddah Convention).

The main objectives of the Protocol include:

- Reducing Marine Pollution Resulting from Land-based Activities: The Protocol aims to minimize the negative impacts of pollution originating from terrestrial sources.
- Strengthening Regional Cooperation: The protocol encourages cooperation among member states in exchanging information, experiences, and technologies to minimize marine pollution.
- Development of Programs and Action Plans: The Protocol calls on member states to develop national and regional programs and action plans containing measures to mitigate the negative impacts of land-based activities on the marine environment.
- Promoting Environmental Awareness and Implementing Environmental Measures: The Protocol emphasizes the importance of environmental awareness and education to raise understanding of the need to protect the marine environment from pollution caused by land-based activities, and to implement appropriate environmental measures to reduce pollution risks.

C. Paris Agreement:

It is a legally binding international treaty aimed at reducing global warming, strengthening efforts to adapt to climate change, and promoting economic and social transitions toward more sustainable practices.

D. Stockholm Declaration:

This declaration placed the environment among the top priorities of international concern, established a dialogue between developed and developing countries on balancing economic growth with environmental protection, and led to the establishment of the United Nations Environment Programme (UNEP). he Stockholm Declaration consists of (26) principles that establish a broad framework for environmental protection and sustainable development, including:

- Development and the Environment: The Earth's Natural Resources must be preserved for the benefit of current and future generations through comprehensive planning and management.
- Environmental Impact Assessment: Environmental impact assessments must be carried out to ensure that human activities do not lead to environmental damage.
- Pollution Prevention: The impact of environmental pollution must be minimized and monitored to reduce significant damage.
- Environmental Planning: Planning must incorporate environmental considerations into development decisions to avoid negative impacts.
- Environmental Monitoring: Regular monitoring of environmental quality and its changes must be conducted to inform policy-making and administrative decisions.
- Pollution Control Measures: Effective measures must be taken to control and reduce pollution from all sources.
- Waste Management: Waste must be managed in environmentally friendly ways to minimize its impact on human health and the environment.
- Resources Conservation: The conservation of resources, including energy and raw materials, must be a priority to ensure their availability for future generations.
- Environmental Standards: National and international environmental standards must be established and enforced to protect human health and the environment.

E. Basel Convention:

The Convention regulates the transboundary movement of hazardous wastes and aims to protect public health and the environment from the harmful effects of such wastes, thereby contributing to environmentally sound waste management. The Convention also encourages states to develop national policies, systems, and regulations to meet its requirements and promote environmentally sound waste management practices. The Basel Convention is directly linked to environmental compliance, as it establishes international rules and procedures for the management of hazardous and other wastes.

9. Environmental Compliance and Commitment in the Water Sector

Managing and protecting water resources is a priority for the Kingdom of Saudi Arabia to achieve sustainable development and improve water resource management. Therefore, environmental compliance and commitment in the water sector is considered an urgent necessity to protect the environment and public health.

The SWA seeks to promote compliance with environmental regulations to enhance efficiency and reduce environmental impact. This is carried out across all stages of the supply chain to ensure a balance between meeting water needs and protecting the environment.

9.1. Environmental Considerations

Environmental considerations refer to the set of natural factors that should be taken into account when developing policies, plans, or programs, such as the conservation of biodiversity, air and water quality, the use of natural resources, and waste management. These considerations aim to reduce negative impacts on the environment and promote sustainability. Hence, the importance of Strategic Environmental Assessment arises, as it represents a systematic tool for analyzing potential environmental impacts. This assessment enables environmentally informed decision-making at the strategic level and evaluates the effects of different policy and program alternatives at early stages, thereby contributing to more effective environmental protection.

9.2. Environmental Compliance and Commitment Prior to the Practice of Activities

Before starting any activity, the necessary measures must be taken to ensure environmental compliance and commitment, starting from the site selection phase until obtaining a license to practice activities, to ensure that the facility is ready to operate in accordance with approved environmental standards.

9.2.1. Environmental Considerations to be Observed when Initiating a Project:

When selecting a site for a new facility, it is essential that the location complies with the relevant laws, regulations, and requirements issued by the competent legislative and regulatory authorities. An environmental impact assessment of the proposed site must be prepared and submitted for notarization of the current environmental conditions, including an analysis of the potential impacts of construction, operation, and closure activities, along with proposals for all necessary mitigation measures and the development of an appropriate environmental management plan.

It is also necessary to take into account special or sensitive areas that are subject to specific laws and regulations and ensure compliance with their legislation, such as coastal zones, special economic zones, industrial zones, or royal authorities.

9.2.2. Environmental Permits

The National Center for Environmental Compliance Oversight supervises the issuance of environmental permits, which are divided into permits for construction and permits for operational activities. This is carried out through several key steps according to the project classification:

1- The process of issuing environmental permits begins with submitting the classification form. If the project is located near coastal areas, preliminary approval must be obtained

from the Marine Environment Protection Committee (MEPC), while ensuring that any activities near sensitive shores are avoided.

2- Based on the classification result from the National Center for Environmental Compliance Control, which ranges into three categories, general requirements are determined such as the classification form, national address, and financial fees, in addition to technical requirements such as preparing an environmental management plan, an environmental impact assessment study, or determining the scope of the environmental impact study.

3- General and technical requirements are attached as required by the project classification result, and the guidelines for issuing and renewing environmental permits for construction and operation activities issued by the National Center for Environmental Compliance Control explain the general and technical details.

It is also necessary to obtain a permit from the National Center for Environmental Compliance for time extensions or for the discharge of treated wastewater into environmental media before carrying out the discharge, in order to ensure compliance with environmental standards and to protect water resources and surrounding ecosystems.

9.2.3. Activity Practice License

The process of issuing a license to practice water sector activities includes specific steps in accordance with the laws and regulations issued by the Ministry of Environment, Water and Agriculture under Royal Decree No. (M/159) dated 11/11/1441 H (July 2, 2020) in accordance with Cabinet Resolution No. (710) dated 19/11/1441H (July 10, 2020) which stipulates these laws and regulations.

The process of issuing a license to practice water sector activities begins with obtaining the necessary environmental permits from the relevant authorities, then filling out the license application form, and then attaching the necessary documents to the SWA (Regulatory Affairs Sector), so that the application can be submitted.

The required license is issued after the Authority reviews the application to ensure its compliance with all regulations, including the guidelines and conditions for practicing water and wastewater service activities, environmental compliance requirements, and the completeness of the submitted documents.

The licensee must comply with all laws and executive regulations pertaining to the water sector. This includes, in particular, the following:

A. Laws, regulations, and decisions related to water.

B. Laws, regulations, and decisions related to the environment.

C. Laws, regulations, and decisions related to occupational health and safety.

D. Laws, regulations, and decisions related to industrial security.

The Saudi Water Authority is responsible for licensing and supervising the following activities:

A. Activity: The main buyer.

B. Activity: Trading in desalinated and purified water.

C. Activity: Trading in wastewater.

D. Activity: Desalinated water production.

E. Activity: purified water production.

F. Activity: Transporting desalinated and purified water.

G. Activity: Strategic storage.

H. Activity: Desalinated and Purified Water Distribution and Retail.

I. Activity: Collection and transport of wastewater.

J. Activity: Wastewater Treatment

K. Activity: Treated Water Transport, Distribution, and Retail.

L. Activity: Production of desalinated water and potable water.

M. Activity: Production of purified water and potable water.

The licensee must refer to the Guidelines and Conditions for Practicing Water Service Activities concerning the applicable regulations, and the regulations for practicing water and wastewater service activities for detailed reference.

9.3. Environmental Compliance and Commitment during the Practice of Activities

9.3.1. Environmental Monitoring

Environmental monitoring in the water sector is the cornerstone for ensuring the sustainability of water resources and protecting them from pollution. The Authority emphasizes the importance of environmental compliance as an essential part of its strategic objectives, as protecting the environment and preserving water resources is a shared responsibility that requires the cooperation of all Competent Authorities. Environmental monitoring includes, but is not limited to, the following:

- Compliance with laws and regulations and environmental licenses.
- Environmental management system, and environmental policies and procedures.

- Identification and assessment of environmental aspects and risks.
- Compliance with applicable laws and legislation.
- Identification the environmental needs of stakeholders.
- Environmental training and awareness.
- Preparedness and response to emergencies.
- Measurement, monitoring of environmental performance, and continuous improvement.
- Internal auditing and periodic monitoring.
- Handling non-conformities cases.
- Chemical management and storage.
- Rationalizing the consumption of natural resources.
- Waste management.
- Reporting environmental incidents.

Therefore, it is essential that facilities adhere to the necessary environmental control measures to enhance environmental protection efforts and effectively address environmental challenges. These measures include the following:

9.3.1.1. Environmental Management Plan

The Environmental Management Plan constitutes a comprehensive document that defines the strategies and measures to be implemented by the facility to manage and mitigate the environmental impacts of its operations in the water sector. It serves as a fundamental framework to ensure that all activities within the water supply chain are conducted in a manner that prevents pollution, conserves water, and protects ecosystems.

The plan includes monitoring procedures, compliance with laws and regulations, emergency response strategies, and continuous improvement practices. The importance of an environmental management plan in the water sector is evident in its ability to guide sustainable water management, protect public health, and preserve environmental integrity and biodiversity.

9.3.1.2. Environmental Records

Environmental records are considered essential official documents used to record and notarize information related to the environmental activities of facilities. These records include detailed information, environmental reports on the operational processes of activities and emissions monitoring, waste management, and preventive measures to reduce environmental impact.

The purpose of environmental records is to notarize environmental procedures, monitor the environmental performance of facilities, and ensure their compliance with applicable environmental standards. These records are essential for minimizing environmental risks by identifying and managing potential environmental issues through the preparation of periodic reports that reflect the facilities' environmental performance and their submission to the relevant regulatory authorities, thereby ensuring the sustainability of operational activities in accordance with approved environmental standards.

9.3.1.3. Environmental Management System

The Environmental Management System is an effective tool for ensuring environmental compliance, providing an organized framework to control environmental impacts and reduce associated risks. There are several international standards for environmental management systems, among which ISO 14001 is one of the most widely recognized globally. This standard includes key elements such as setting environmental objectives, establishing appropriate systems and regulations, and monitoring environmental performance through periodic assessments.

Adopting an Environmental Management System enables facilities to enhance their resource efficiency, comply with environmental laws and regulations, reduce pollution levels, and achieve sustainability. This system also contributes to providing a competitive advantage by enhancing the facility's overall image and increasing stakeholder satisfaction, thereby strengthening its ability to adapt to environmental changes and legal obligations.

The main principles of the Environmental Management System are designed to enable facilities to manage their environmental impacts in an organized and sustainable manner. The key components of this system include the following:

1- Environmental policy: It is the core document that reflects the facility's commitment to environmental protection and defines the direction and overall framework of the Environmental Management System, including objectives, goals, and adherence to relevant laws and regulations.

2- Planning: This component includes the identification and assessment of environmental aspects and impacts, setting objectives and goals, and developing programs to address these impacts. It includes the following main activities:

- Working to identify activities, products or services that have an environmental impact.
- Identifying relevant environmental regulations and laws.
- Assessing the risk and potential environmental impacts.
- Setting measurable objectives and goals for environmental performance.

3- Implementation and operation: This section focuses on turning plans into practical reality, it includes:

- Resource Management: Allocating resources and responsibilities to ensure effective implementation of the environmental management system.
- Training and Awareness: Educating employees by preparing a comprehensive training program to raise their awareness of environmental cases related to their activity, their environmental responsibilities, and the environmental management system.
- Operational Control: Establishing management procedures for important environmental aspects, and ensuring compliance
- Emergency Preparedness and Response: Developing plans to deal with emergencies and potential environmental incidents.

4- Verification and Corrective Action: This component involves monitoring and evaluating the environmental management system to ensure it operates as planned. It includes the following main activities:

- Monitoring and Measurement: Regularly measure environmental performance and compliance with objectives and goals.
- Internal Audit: Conducting periodic reviews to assess the effectiveness of the environmental management system.
- Nonconformity and Corrective Action: Identifying and addressing instances of non-compliance cases with environmental management system requirements, and implementing corrective measures.

5- Management Review: Periodic assessment by Top Management of the genera performance of environment management system, which includes:

- Audit Results: Analyzing of the results issued by the internal and external audit.
- Performance versus Objectives: Assessing the progress made toward achieving environmental objectives.
- Resource Needs: Assessing whether additional resources or changes are needed to improve the Environmental Management System.
- Policy and System Updates: Implementing necessary updates to policies, procedures, and the environmental management system based on performance reviews and emerging changes.

6- Continuous Improvement: This component focuses on the continuous development of the environmental management system over time, using feedback from audits, monitoring, and performance reviews to ensure the system's effectiveness.

The following are the most important environmental aspects that facilities should monitor and comply with:

- **Air Quality**

Air quality is considered a vital indicator that reflects the cleanliness of the air and the absence of harmful pollutants that may negatively affect human health and the environment. These pollutants include particulate matter, nitrogen oxides, sulfur oxides, ozone, volatile organic compounds (VOCs), and other harmful substances. Air quality may also be affected by odors resulting from volatile organic compounds, which can be emitted from various sources such as waste treatment processes, sludge landfills, and wastewater treatment plants. These odors may cause nuisance and affect quality of life, and in some cases, they may pose health risks. Therefore, ensuring the monitoring of air quality and taking the necessary measures to maintain it within safe limits is essential to safeguard human health and protect the environment from pollution.

Within this framework, the Executive Regulations for Air Quality were issued by the Ministry of Environment, Water and Agriculture in accordance with Royal Decree No. (M/165) dated 19/11/1441 H (July 10, 2020). These regulations come as a strategic step to support and ensure the preservation of air quality, which aims to enhance national efforts to reduce air pollution, preserve the environment, and protect public health. The executive regulations include a set of standards for monitoring and assessing air quality, identifying the necessary procedures to reduce harmful emissions from various sources, as well as promoting environmental awareness and encouraging environmentally friendly practices.

The water sector is considered a fundamental pillar in preserving the environment and protecting human health. However, it may lead to air pollution if wastewater is not managed in a safe and sustainable manner. Wastewater treatment plants, facility-related power plants, desalination plant stacks, and potential leaks may also result in the emission of odors and polluting gases. Therefore, reducing these emissions is essential for preserving the environment, public health, and complying with environmental regulations. This includes reducing the use of materials rich in volatile compounds and implementing measures such as covering waste during transportation and ensuring that all loose materials are properly secured to prevent them from being dispersed by wind during unstable weather conditions, as well as other actions that contribute to improving air quality.

- **Noise**

Noise pollution is considered one of the pressing environmental challenges facing our societies today, as it arises from high levels of unwanted sound. Continuous exposure to such sounds can have negative effects on human and animal health, as well as on the environment.

The water sector is considered one of the sectors that may contribute to noise pollution as a result of several operational processes, including water pumping, operation of treatment plants, infrastructure maintenance work, and others. There are several sources that contribute to raising noise pollution levels in the environment, such as high-pressure pumps, ventilation and filter equipment, air conditioners, equipment noise and air pressure equipment, and noise from vapors and condensates.

These operations require continuous monitoring and focused attention to ensure the mitigation of emitted noise levels and to maintain sound levels within permissible limits, with the aim of reducing environmental impacts on surrounding communities.

Therefore, it must be emphasized that all operations related to the water sector should comply with the standards and limits stipulated in the Kingdom's relevant laws and regulations on noise, which define permissible noise levels and set maximum sound limits for both daytime and nighttime across various environments, including residential, commercial, and industrial areas, among others. Other standards related to noise pollution may vary depending on the surrounding environmental conditions and circumstances.

- **Environmental Incidents**

Environmental incidents constitute one of the most prominent environmental issues that should receive great attention, due to the damage and negative impacts they may cause on the environment and local communities. These incidents vary and include groundwater contamination, which may occur due to the leakage of pollutants such as pesticides and heavy metals from agricultural and industrial activities into groundwater. They also include wastewater contamination resulting from the discharge of untreated sewage into rivers, lakes, and oceans, as well as other incidents associated with human activities that harm natural ecosystems. It is also essential to address such incidents by taking firm measures, including the immediate reporting of any environmental incident observed by individuals or facilities. Prompt reporting is a critical step in minimizing damage and enhancing the effectiveness of emergency response.

Notarizing environmental incidents is a fundamental element of environmental disaster management, as it involves recording all details related to the incident, including its nature, location, resulting damages, and the measures taken to address it. This process is later used to analyze incidents, develop advanced strategies for preventing them, and enhance the response to future environmental incidents.

The operational procedures must also include mechanisms for dealing with environmental incidents in accordance with the laws and regulations in force in the Kingdom of Saudi Arabia. Water sector entities must also notify the National Center for Environmental Compliance Oversight and the Saudi Water Authority immediately in the event of emergencies, or during start-up or temporary shutdown operations that may result in deviations from environmental standards. This is done according to the mechanisms specified by the Center.

By contacting the following numbers:

- (988 For the National Center for Environmental Compliance Oversight)
- (0181188111 For the Saudi Water Authority).

9.3.1.4. Treated Water Quality Standards

- Treated Wastewater Quality Standards

Treated water can be discharged after obtaining the necessary permits from the National Center for Environmental Compliance for the authorized discharge point. The standards for discharging treated wastewater are divided into three categories in terms of quality:

1- Category (A): All types of crops are permitted for irrigation, including food crops consumed raw, and they may be used in urban irrigation for gardens, sports fields, and industrial applications without restrictions.

2- Category (B): Irrigation is restricted to crops under certain conditions, with specified safety distances for sprinkler irrigation, and is used for green belts and less frequented areas in urban settings.

3- Category (C): It is suitable for discharge into open environments, irrigation of non-food crops, and filling park ponds with restricted public access. Each category defines appropriate uses based on water quality and treatment level, ensuring safety and environmental sustainability, in accordance with the standards and specifications for water types under the Water System and its executive regulations issued by the Ministry of Environment, Water, and Agriculture in March 2021.

Therefore, local laws and regulations must be followed, and it must be ensured that water quality complies with the standards and limits specified in the executive regulations related to the protection of aquatic environments from pollution, as outlined in the Environmental System issued under Royal Decree No. (M/165) dated 19/11/1441 H (July 10, 2020). There are also specific standards and limits for irrigation practices based on FAO water quality guidelines for irrigation, as

well as the tolerance and sensitivity of plants to salinity. Heavy metal concentrations and bacterial levels must not exceed the permissible limits specified in the Standards and Specifications for Water Types (according to the Water System and its executive regulations) issued by the Ministry of Environment, Water, and Agriculture in March 2021.

- Commercial Wastewater Quality Standards

To ensure safe and sustainable discharge, compliance with the standards, limits, and specifications for water types (according to the Water System and its executive regulations) issued by the Ministry of Environment, Water, and Agriculture in March 2021 is required.

The discharge of flammable, toxic, radioactive, solid, or medical substances, saline solutions, and any other materials that may disrupt the sewer network, pose a risk to public health, or cause environmental harm is strictly prohibited, in accordance with applicable laws and regulations.

- Treated Water Discharge

Before discharging treated wastewater into environmental media, a discharge permit must be obtained from the National Center for Environmental Compliance (NCEC).

It is mandatory to adhere to the discharge standards and metrics stipulated by the laws and environmental implementing regulations issued by the Ministry of Environment, Water and Agriculture (MEWA) in accordance with Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020), which are related to the protection of aquatic environmental media against pollution. These vary depending on the discharge destination as follows:

- Discharge of treated water into soil, lands, or surface water.
- Discharge of treated water into coastal and marine water.

9.3.1.5. Protection of Environmental Media from Pollution

- Environmental Rehabilitation of Degraded Sites

Severe environmental degradation causes environmental media to be polluted as a result of natural resource pollution, the destruction of natural habitats, or the extinction of certain wildlife species, in addition to the deterioration of air, water, and soil quality. Therefore, the environmental rehabilitation of affected sites undergoing degradation is considered a vital process aimed at addressing the environmental impacts resulting from environmental accidents and mitigating their severity.

The environmental rehabilitation includes procedures for suspending service or the gradual closure of facilities or waste landfill sites, in accordance with the plans and mechanisms stipulated by the environmental laws and regulations issued by the Ministry of Environment, Water and Agriculture

per Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020), regarding the environmental rehabilitation of degraded sites and the remediation of polluted sites.

- **Soil Protection**

Protecting soil from pollution is vital to preserving the quality of environmental resources and ensuring their sustainability. While soil is considered an essential source of raw materials for many industries, it must be kept pure and free of pollutants. Pollutants in the soil can seep into groundwater or transfer to aquatic surface bodies via surface runoff. Soil is also exposed to pollution due to several other factors, including industrial activities, unsustainable agricultural practices, the leakage of chemical substances and waste, and other activities and practices that lead to soil degradation and reduce its fertility. This negatively affects agricultural production and threatens food security, in addition to its impact on the environment.

Therefore, soil pollution must be monitored and tracked, adhering to its protection standards according to the criteria and metrics related to preventing and remediating soil pollution mentioned in the environmental laws and regulations issued by the Ministry of Environment, Water and Agriculture, stipulated by Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020).

- **Protection of Marine and Coastal Environment**

The marine and coastal environment is fundamentally considered among the environmental standards, providing vital habitats for many marine organisms, promoting biological diversity, and acting as a food source and livelihood for many coastal communities. Therefore, national centers play a pivotal role in raising governance levels and adherence to environmental laws and regulations, ensuring effective management of marine and coastal environments.

Facilities in marine and coastal areas and islands are obligated to follow the requirements of the national centers according to the implementing regulations of the Environmental Law issued by Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020), related to the sustainable management of the marine and coastal environment to ensure environmental compliance.

The National Center for Environmental Compliance is considered one of the national centers that contribute to achieving sustainable environmental management, as it oversees the implementation of international and regional agreements adopted by the Kingdom to prevent degradation and pollution. It also contributes to implementing some research and monitoring programs for environmental media quality, and participates in preparing national reports on the quality of marine and coastal environments.

In addition, the National Center for Vegetation Cover Development and Combating Desertification oversees the management of rangelands, forests, national parks, their investment, the

preservation of vegetation resources, and vegetation cover outside protected areas in the Kingdom across all its environments, as well as combating desertification.

The National Center for Wildlife also develops management plans and protects coastal areas, contributing to ensuring their sustainability for current and future generations, and identifying threats affecting the marine environment through the results of systematic field surveys conducted by the center.

- **Groundwater and Wells Protection**

Water is the basis of life and a vital natural resource that must be used wisely and responsibly. In this context, laws and regulations have been established concerning the drilling and use of groundwater wells, issued based on Article 9(1) of the Water Law, pursuant to Royal Decree No. (M/159) dated (11/11/1441 H) (July 2, 2020). These laws and regulations clearly define the legal and regulatory framework that individuals and facilities must adhere to when drilling groundwater wells.

The Ministry of Environment, Water and Agriculture also possesses the absolute right to grant independent licenses to pump non-potable water from wells and dams and sell it retail, in compliance with the laws and regulations it issues. The pumped water must comply with approved water quality standards according to the targeted usage. The licensee must conduct the necessary tests and monitor water quality according to the laws and regulations issued under Article (3/76) of the Water Law.

- **Selecting Alternatives and Resource Conservation**

Water resources are considered one of the fundamental pillars for life and sustainable development in the Kingdom of Saudi Arabia, holding immense importance in national policies. Conserving these resources and rationalizing their consumption represents a major challenge that requires continuous efforts and cooperation among all governmental and private sectors.

The Kingdom of Saudi Arabia seeks to implement the best practices and technologies to improve water use efficiency, encourage the reuse of treated wastewater, and promote the use of alternative water resources such as seawater desalination, to ensure water availability for future generations.

The Kingdom of Saudi Arabia also attaches utmost importance to preserving non-renewable resources by rationalizing their consumption, adopting circular economy policies, and enhancing reliance on renewable energy sources, which leads to reducing the sector's carbon footprint.

In addition, the competent authorities are working on developing programs to rationalize water consumption in the agricultural, industrial, and urban sectors, by promoting the use of modern

irrigation techniques and smart monitoring systems that help reduce waste and optimize the utilization of available water resources. The Kingdom also emphasizes the importance of preserving water as a vital and rare resource, and encourages the adoption of sustainable practices in water usage to enhance water security and support the country's environmental and developmental goals.

- **Environmental Violations**

The processes of controlling violations of the provisions of the Environmental Law and its implementing regulations, and the procedures for investigating and documenting them, are carried out by qualified inspectors who hold the authority to request support and assistance from security agencies when necessary, according to the implementing regulations for environmental violation control and the imposition of penalties issued by the Ministry of Environment, Water and Agriculture, stipulated by Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020). The investigation procedures for violations aim to verify their occurrence and determine responsibility through the preparation of an accurate control report.

Therefore, several articles related to the water sector in the Environmental Law have been defined:

- **According to Article (35) of the Environmental Law, the following actions are considered a violation of the Law:**

A. Disposing of wastewater or untreated liquids into environmental media.

B. Discharging or injecting these liquids into groundwater wells, environmental media, or superficial layers of groundwater aquifers regardless of the cause.

C. Disposing of hazardous waste into environmental media.

- According to Article (40) of the Environmental Law, a person shall be punished with imprisonment for a period not exceeding ten years and a fine assessed according to what is stipulated in the law, without prejudice to any more severe penalty provided for by another law.

- **Procedures for Applying Penalties:**

Article 9 of the Implementing Regulations for the Protection of Environmental Media of the Environmental Law issued by Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020) was issued, and it includes:

A. Violations are controlled and penalties are applied according to what is determined by the Implementing Regulations for the Protection of Environmental Media, taking into account the following indicators: Severe violations are applied based on the size of the damage, the

size of the damaged site, the importance of the site, and the economic and social impacts resulting from the violation.

B. Penalties for severe violations are determined by a specialized committee comprising qualified experts, formed by a decision from the CEO of the National Center for Environmental Compliance.

- **Violations are considered severe if they include any of the following cases:**

A. Actions stipulated in Article 35 of the Environmental Law.

B. Actions leading to environmental degradation.

C. Actions causing damage to the site or to sensitive environmental receptors.

- **Penalty and Fine Estimation:**

The Implementing Regulations for the Protection of Aquatic Environmental Media against Pollution issued by Royal Decree No. (M/165) dated (19/11/1441 H) (July 10, 2020) was issued. It details the laws and regulations for the imposed fines. Therefore, it is necessary to refer to the laws and regulations to obtain specific details for penalties and fines.

9.3.1.6. Waste Management

The implementing regulations for the Waste Management Law was issued according to Resolution No. (332291) dated (18/01/1443 H) (August 26, 2021), which aims to clarify the implementing frameworks of the Law. This includes provisions for licensing, permits, extended producer responsibility, the value chain of waste, contracting for waste management services, civil and penal liability of service providers, rehabilitation, compensation, organizing voluntary initiatives, import and export of waste, controlling waste management plans, violations, penalties, inspection, and auditing.

Waste classification is done in accordance with the waste classification mentioned in the relevant technical controls issued by the National Center for Waste Management, based on:

A. Source of generation: Waste is classified into eight categories: Municipal solid waste, construction and demolition waste, healthcare waste, marine media waste, agricultural waste, green waste, industrial waste, mining waste, and sludge waste.

B. Its hazard level: Waste is classified as hazardous if it has characteristics that pose a potential threat to public health or the environment. It can be liquid, solid, semi-solid, or gaseous if it contains one of the hazardous components stipulated in the laws and regulations related to waste management, or if it is classified as hazardous based on

international agreements ratified by the Kingdom. Waste is classified into three categories: Hazardous waste, Non-hazardous waste, and Inert waste.

These are some examples of waste that affect the water sector:

- **Sludge Waste**

According to the local laws and regulations issued by the Ministry of Environment, Water and Agriculture and the National Center for Waste Management, which were prepared according to Royal Decree No. (M/03) dated (05/01/1443 H) (August 13, 2021), the Waste Management Law covers transporting waste, sorting it, storing it, importing it, exporting it, its safe disposal, and all other related activities.

The implementing regulations for the Waste Management Law also stipulates a mechanism for the disposal of sludge, and strictly prohibits disposing of sludge into wells, seas, water bodies, dams, valleys, or irrigation channels. Coordination with the Ministry of Municipalities and Housing must take place regarding its disposal, in addition to the fact that the use of sludge for agriculture is done according to requirements to use sludge as agricultural fertilizer.

It is worth noting that sludge must be transported by a carrier licensed by the National Center for Waste Management.

- **Radioactive Waste**

Effective management of radioactive waste is considered an essential pillar for preserving the environment within the water treatment sector. This is in accordance with the approved environmental standards and regulatory frameworks in the Kingdom of Saudi Arabia, emphasizing the importance of compliance with the laws and regulations issued by the Nuclear and Radiological Regulatory Commission, which outline precise directives for classifying radioactive waste according to specific criteria, and the necessity of preparing detailed records clarifying the source, physical and chemical properties, quantities, and radioactive characteristics of each type of waste.

Radioactive waste is also classified based on a specific classification system according to the technical bylaw of the Nuclear and Radiological Regulatory Commission (NRRC-R-16 for the year 2016). It requires facilities concerned with compliance to adhere to radioactive waste storage requirements, as facilities must request authorization for the temporary storage of radioactive waste according to specific procedures, encompassing transportation, safe disposal of radioactive waste, and maintaining detailed verifiable records. They are also required to submit periodic reports demonstrating the extent of compliance with environmental and regulatory standards to the Nuclear and Radiological Regulatory Commission.

Furthermore, a radiation protection program must be prepared according to what is explained in (NRRC-SG-020), ensuring compliance with the radiation safety standards stipulated in

NRRC-R-01 and NRRC-R-16.

- **Asbestos Waste**

The Council of Ministers issued resolutions No. (1419) and (1422) mandating the ban on using asbestos material, prohibiting its inclusion in technical specifications, and preventing its import, export, and manufacturing. The resolution also includes replacing used asbestos material and determining how to safely dispose of it, in addition to continuing to conduct the necessary studies regarding this material due to its health and environmental risks.

There are also requirements for dealing with asbestos in some cases that require removing it from old water transport pipes, where the requirements of the National Center for Waste Management mandate the employment of an approved service provider from the national center to ensure safe removal and disposal operations of asbestos according to the applicable regulations in the Kingdom of Saudi Arabia.

- **Chemical Waste**

Chemical waste poses a great danger to human health and the surrounding ecological system. Therefore, this specific waste must be subject to precise monitoring from competent authorities, which emphasizes the urgent need for its sound management.

It consists of a range of toxic or explosive chemical materials, or chemical materials with other properties that may pose a threat to humans or the environment due to their toxic nature. Any lapses in handling these waste materials, storing them, or disposing of them can cause environmental accidents. Below is a list of the types of hazardous chemical waste:

- Waste oils originating from pumps, diesel generators, or any other equipment that uses oil, which are waste materials that are replaced after a certain operational cycle.
- Expired chemical materials or those rejected from treatment processes, and expired paints.
- Solvents, or waste generated in laboratories.
- Sludge resulting from spills of chemical materials or oils.
- Oils and greases that have been removed from the surface of sewage waste.
- Used acidic lead batteries.
- Electrical and electronic waste, including used computers, tube lamps, and various types of detection devices, among other wastes.

- Chemical washing residues for membranes and filters.

Facility commitment to the implementing regulations of the Waste Management Law is considered essential to enhance environmental protection efforts and confront current environmental challenges. Among the compliance mandates for facilities are:

- **Waste Management Licenses and Permits**

Practicing any activity related to waste management, such as its collection, transportation, sorting, storage, treatment, recycling, importing, exporting, and safe disposal is prohibited without obtaining a permit or license. Waste recycling facilities must obtain a permit from the National Center for Waste Management stating their fulfillment of the center's controls and requirements before obtaining licenses issued by the competent authorities based on their laws, in accordance with what is determined by the laws and regulations of the Kingdom.

- **Waste Sorting**

The waste producer is obligated to separate waste at the source into waste that can be reused or recycled, by placing it in designated places after separating it in accordance with the provisions, regulations, and relevant professional health and safety regulations.

- **Waste Collection and Transportation**

The service provider is prohibited from providing waste collection and transportation services without obtaining the appropriate license and completing the transportation document information, in accordance with the provisions of the Environmental Law, its implementing regulations, and technical controls.

Also, the waste producer's responsibility does not end when disposing of it through a carrier approved by the National Center for Waste Management; rather, they must periodically verify the validity of the carrier's permit, and keep receipts or invoices confirming that the disposal process took place within an approved landfill, or an approved waste dump, strictly following the laws and regulations set by the National Center for Waste Management.

- **Treatment**

Recycling and treating waste in the water sector is an essential practice for preserving the environment and reducing pollution. These operations include all waste resulting from activities in the water sector, such as chemical materials and sludge resulting from water treatment.

Processing technologies contribute to converting waste and sludge into reusable materials, or safe disposal thereof. This significantly boosts the circular economy concept, as resources are optimally utilized and waste is reduced, contributing to preserving the environment.

Implementing effective strategies for waste recycling and treatment, and sludge handling, enhances resource utilization efficiency, and contributes to achieving sustainable development that benefits society and the environment.

- **Landfilling**

The landfill site must be selected based on approved environmental impact assessments, obtaining the environmental permit, and acquiring necessary approvals from the National Center for Environmental Compliance, in addition to the National Center for Waste Management. It must be verified that the sites are not located near environmentally sensitive areas, surface waters, or residential areas, to minimize environmental risks and preserve environmental safety. Total compliance with the environmental laws and regulations issued by the Ministry of Environment, Water and Agriculture, and the National Center for Waste Management, is also required of the landfill operators, including implementing effective measures to limit leakages and gas emissions; to ensure the protection of the environment and public health.

9.3.1.7. Digitization of Environmental Data

Digitization plays a vital role in enhancing environmental compliance in the Kingdom of Saudi Arabia, as it contributes to providing immediate and advanced monitoring mechanisms for approved environmental standards. It allows competent authorities to detect any exceedances of these standards with high efficiency and deal with them immediately and effectively by minimizing human errors. Digital systems also contribute to enhancing accuracy and reliability in data collection and analysis; which helps in preparing accurate and comprehensive reports that fulfill regulatory requirements and enhance transparency.

Moreover, predictive analytics act to enable competent authorities to oversee potential environmental problems before they occur, and consequently take necessary preventative actions to avoid them or minimize their effects. This approach helps in improving the decision-making process, works to reduce costs associated with dealing with environmental accidents, mitigates their severity to ensure environmental compliance, and achieves sustainable development.

9.4. Environmental Compliance Upon Completion of Activities

9.4.1. Project Closure Phase

Conducting technical environmental assessment is an essential step prior to the closure of facilities or projects in accordance with the laws and regulations observed in the Kingdom of Saudi Arabia; to ensure the site is free of any pollution that may have resulted from the activities previously conducted there, whether in the soil or groundwater.

Also, environmental rehabilitation procedures must be conducted according to the plans, mechanisms, and texts of the environmental laws and regulations for the rehabilitation of degraded sites, and addressing polluted sites, while ensuring the documentation of past activities. This documentation includes historical records of activities that took place in the past, with identifying any evidence of solid or liquid waste disposal on site.

The technical environmental assessment includes collecting samples from soil, groundwater, through experimental drilling or excavations, in addition to taking samples from nearby surface receptors; to verify the site's safety from pollution.

10. Role of the Saudi Water Authority in monitoring environmental compliance in the water sector

With reference to the Council of Ministers Resolution No. (918) dated (28/10/1445 H) (May 7, 2024) approving the transformation of the Saline Water Conversion Corporation (SWCC) into an authority named (Saudi Water Authority) to be the regulator for water services activities, and to Article 4(22) of the organizational arrangements which stipulates monitoring the application of environmental and social sustainability standards and governance in the water sector, the Authority has launched the Guidance Manual for Environmental Compliance in the Water Sector.

In addition to the role of the relevant regulatory authorities in monitoring environmental compliance in the Kingdom, this manual comes as an enhancer to raise the level of environmental compliance in the water sector, achieving strategic objectives in the water sector, mitigating impacts and environmental effects. The Authority will also conduct periodic visits to facilities and relevant entities within the water sector; with the aim of assessing the extent of adherence to environmental standards, ensuring compliance with relevant laws and regulations, as the visits program will include evaluating a set of basic pillars that reflect the entities' adherence to environmental standards in accordance with the axes mentioned in this manual.

These visits will also result in providing the Authority with reports tracking gap closures and observations; which enhances efforts towards achieving environmental excellence, and ensuring the protection of water resources.

In a related context, the Authority is keen on achieving sustainable environmental compliance, and obtaining accurate and comprehensive data regarding activities related to the water sector is considered an essential element. The required data includes, but is not limited to, the following:

- Environmental Licenses.
- Aspect assessment and environmental impacts registers.
- Emergency drill scenario reports.

- Environmental emergency plan.
- Environmental training plan and registers.
- Internal audit plan and reports.
- Environmental meeting minutes.
- Environmental non-compliance reports.
- List of compliance requirements for regulations and environmental legislation.
- Continuous improvement plan.
- Risk and opportunities assessment register.
- Environmental incident reports.
- List of waste, and waste disposal records.
- List of approved contractors for waste disposal.
- Monitoring and measurement plan.
- Environmental testing reports.
- List of chemical materials and their storage mechanisms.
- List of identifying the needs of stakeholders.
- Environmental, leadership, and operational performance indicators.
- Environmental inspection plan and reports.
- Recommendations and environmental instructions for contractors.
- Periodic environmental compliance reports.
- Checklist for environmental protection equipment against land and marine pollution.
- List of environmental projects.

Based on that, this manual was issued to effectively enhance environmental management, raise the efficiency of environmental practices in the water sector, and therefore the Authority emphasizes the necessity of compliance, and adherence to the contents of this manual, in addition to complying with the laws and regulations issued by the legislative and regulatory authorities.

11. References

11.1. Tasks and Responsibilities of Legislative and Regulatory Authorities

Competent Authority Tasks and Responsibilities	Ministry of Environment, Water and Agriculture (MEWA)	SWA	National Center for Environmental Compliance (NCEC)	National Center for Meteorology (NCM)	National Center for Waste Management (MWAN)	National Center for Vegetation Cover Development and Combating Desertification (NCVC)	National Center for Wildlife (NCW)
Developing strategies and policies	×						
Issuing permits and licenses related to providing water services in the Kingdom		×					
Issuance of environmental permits			×				
Executive and regulatory oversight and control of the water sector		×					

Monitoring the application of environmental, social, and governance (ESG) sustainability standards in the water sector		×					
Planning for water security management		×					
Enforcement of laws and implementing regulations		×	×	×	×	×	×
Monitoring the compliance of all development activities with the approved environmental regulations, standards			×				

and requirements							
Providing accurate weather data and forecasts to inform decisions related to water, agriculture, and the environment				×			
Implementing policies and programs related to waste management					×		
Developing programs and initiatives to enhance vegetation cover and combat desertification						×	

Preserving biodiversity and developing nature reserves and wildlife programs							×

11.2. Appendices

#	Reference	Entity	Release Date	Content
1	Resolution No. (918)	Council of Ministers	28/10/1445 H (May 7, 2024)	Changing the Saline Water Conversion Corporation (SWCC) to the Saudi Water Authority (SWA).
2	National Water Strategy	Ministry of Environment, Water and Agriculture (MEWA)	1439/05/06H	A comprehensive and integrated roadmap aimed at developing and modernizing the water and sanitation infrastructure in the Kingdom, and addressing environmental challenges.
3	Environmental Law	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Jul 10, 2020)	Establishing the foundations of environmental protection, development, and sustainability, while emphasizing commitment to environmental standards and the regulation of environmental activities and services. The law also emphasizes the importance of obtaining the necessary permits and licenses for projects with environmental impact and sets out legal penalties for violations.
4	The Water Law	Ministry of Environment,	11/11/1441 H (Jul 10, 2020)	Establishing an integrated legislative framework to

#	Reference	Entity	Release Date	Content
		Water and Agriculture (MEWA)		ensure the conservation, development, and protection of water resources, guaranteeing their sustainability and regulating their optimal use.
5	Waste Management Law	Ministry of Environment, Water and Agriculture (MEWA) National Center for Waste Management (MWAN)	05/01/1443 H (Aug 13, 2021)	Establishing a regulatory framework for the collection, transportation, sorting, storage, import, export, treatment, and safe disposal of waste, in addition to determining standards for the care of waste disposal sites after closure.
6	Implementing regulations for the preparation and implementation of emergency and environmental disaster preparedness and response plans.	Ministry of Environment, Water and Agriculture (MEWA)	07/06/1445 H (Jul 10, 2020)	The procedures and controls for preparing and implementing preparedness and response plans for environmental emergencies and disasters.
7	The implementing regulations for environmental violation control and the imposition of penalties	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Dec 20, 2023)	• Violations and imposition of penalties. • Procedures for implementing penalties. • Assessment of violations and fines.

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8	Implementing Regulations for environmental permits for the establishment and operation of activities	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Dec 20, 2023)	General and specific requirements for the issuance of environmental permits.
9	Implementing Regulations for the Sustainable Management of the Marine and Coastal Environment	Ministry of Environment, Water and Agriculture (MEWA)	1441/11/19 H	Requirements issued by the National Centers for Sustainable Management of the Marine and Coastal Environment.
10	Implementing Regulations for Ozone-Depleting Substances and Hydrofluorocarbons	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Jul 10, 2020)	Standards and metrics for noise monitoring and evaluation.
11	Implementing Regulations for Noise	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Dec 20, 2023)	Standards and metrics for noise monitoring and evaluation.
12	Implementing Regulations for the Protection of Water Environments from Pollution	Ministry of Environment, Water and Agriculture (MEWA)	1441/11/19 H	Standards and metrics for the discharge of treated wastewater into soil, land, or surface water, or the discharge of treated wastewater into coastal and marine waters.

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13	Implementing Regulations for Environmental Rehabilitation of Degraded Sites and Treatment of Contaminated Sites	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Dec 20, 2023)	Executive plans and mechanisms for the environmental rehabilitation of degraded sites and the treatment of contaminated sites.
14	Implementing Regulations for Air Quality	Ministry of Environment, Water and Agriculture (MEWA)	19/11/1441 H (Dec 20, 2023)	Standards and metrics for monitoring and evaluating air quality.
15	Implementing Regulations for the Prevention and Treatment of Soil Pollution	Ministry of Environment, Water and Agriculture (MEWA)	1441/11/19 H	Standards and metrics for soil pollution.
16	Implementing Regulations for Environmental Inspection and Auditing	Ministry of Environment, Water and Agriculture (MEWA)	1441/11/19 H	Tasks related to environmental inspection and auditing.
17	Implementing Regulations for the Waste Management Law	Ministry of Environment, Water and Agriculture (MEWA)	1443/10/8 H	Executive frameworks for the law, licensing and permit provisions, extended producer responsibility, waste value chain, contracting for waste management services, civil and criminal liability for service providers, rehabilitation,

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				compensation, organizing voluntary initiatives, waste import and export, waste management plans, violations and their detection, penalties, inspection, and auditing.
18	Terms and Controls for Issuing Licenses to Use Groundwater Sources and Well Water, and Classification of its Violations	Ministry of Environment, Water and Agriculture (MEWA)	1445H	The legal and regulatory framework that individuals and institutions must adhere to when desiring to drill groundwater wells.
19	Standards and Metrics for Water Types	Ministry of Environment, Water and Agriculture (MEWA)	1443 H (2021)	• Standards and specifications for discharging treated industrial and commercial wastewater. •Standards and Metrics for Irrigation Operations.
20	ROYAL COMMISSION ENVIRONMENTAL REGULATIONS	Royal Commission for Jubail and Yanbu	1436 H (2014)	• Standards and regulations established by the Environmental Protection and Control Department. These regulations aim to achieve effective environmental protection and ensure compliance with environmental safety requirements.

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21	Radiation Safety NRRC-R-01	Nuclear and Radiological Regulatory Commission	1444 H (2022)	• Classification of radioactive waste. • Radiation safety standards. • Storage Requirements Transporting radioactive waste, and its safe disposal. • Radiation Protection Program.
22	Management of Radioactive Waste NRRC-R-16	Nuclear and Radiological Regulatory Commission	1444 H (2022)	
23	Application for Authorization of Interim Storage for Radioactive Waste NRRC-SG-004	Nuclear and Radiological Regulatory Commission	1445 H (2022)	
24	Development of Radiation Protection Program NRRC-SG-020	Nuclear and Radiological Regulatory Commission	1445 H (2022)	
25	National Plan to Combat Marine Pollution by Oil and Other Harmful Substances in Emergency Situations	Ministry of Environment, Water and Agriculture (MEWA)	1411/11/20 H	The plan aims to establish a system for immediate response and coordination to protect the marine environment and the Saudi coasts from the impacts of pollution, by maximizing the use of available capabilities at both regional and international levels. This includes mobilizing and coordinating all available resources, including equipment, manpower, and expertise

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				necessary to address pollution incidents.
26	Protocol for the Protection of the Marine Environment from Land-Based Activities in the Red Sea and the Gulf of Aden	Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden	28/10/1445 H (May 7, 2024)	The commitment of the signatory states to close cooperation in addressing pressing environmental challenges and preserving valuable natural resources; thereby contributing to the achievement of sustainable development and the protection of the future of coming generations.
27	Protocol for the Conservation of Biodiversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden Region	Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden	20/07/1429 H (July 23, 2008)	The commitment of the signatory countries to joint and sustainable cooperation in preserving natural resources, thereby enhancing the region's status as a home to a rich and diverse natural heritage.
28	Paris Agreement	United Nations Framework Convention on Climate Change	1436 H (2014)	It aims to reduce global warming, strengthen efforts to adapt to climate change, and encourages economic and social transition toward more sustainable practices.
29	Stockholm Declaration	United Nations	1391 H (1971)	It established the foundations for dialogue between developed and developing countries on the

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				balance between economic growth and environmental protection, and led to the creation of the United Nations Environment Programme.