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## SUSTAINABLE WATER MANAGEMENT TECHNIQUES

The challenge for sustainable water use and management remains as water has increasingly becoming scarce. Pollution and climate change continue to affect the access of people to clean and potable water. The crisis in water has spawned for decades now and the number of people that are affected by this problem has constantly increased. In fact, the 2012 Millennium Development Goals Report stated that about 11% of the global population do have access to improved water sources. This happens while industries continue to waste and pollute waters. Royte (2010) reported that cheap and abundant water would run out soon. However, there is chance that the crisis in water could be solved. Gleick (in Royte, 2010) suggested that a combination of hard-path and soft-path solutions would solve the crisis in waters.

## What is construction consumption and management? Think in terms of examples such as erosion, sediment, or chemical construction.

Harbor (1999) cited the 1970 US Geological Survey that areas affected by construction activities have soil erosion rates of 2 to 40, 000 higher before the construction and results to about 80 million tons of sediments to lakes, rivers and waters in the US. Harbor also cited the studies made by Dunne et. al (1978-1992) that the sediments that came from construction sites blankets stream beds and alters stream ecosystems. These result to Lake Eutrophication or the process where excessive nutrients are delivered into the bodies of water that produces excessive algae. Also, the high turbidity levels brought by the sediments reduces photosynthesis in the streams and the erosion of the stream banks due to the increased frequency and magnitude of runoff circumstances destabilizes the streams and the rivers and destructs the riparian systems.
Harbor (1999) also mentioned in his study that sedimentation increases flooding incidents as it clogs storm sewer systems and reduces the storage capacities of the reservoirs; thus, construction consumption and management provides an avenue to minimize the environmental impacts of construction to land.

## How are management techniques used to help with drainage and water usage, as well as reduce erosion?

According to the US Environmental Protection Agency (EPA), management techniques help in ensuring that drainage and water usage are managed efficiently. It also reduces the possibility of soil erosion.
One of the EPA’s best management technique is water recycling. Recycled water, mostly used as non-potable source can supply the water needs of agricultural lands, landscapes, public parks and golf courses. It can also be used as cooling water for industries such as power plants and oil depots and process waters for paper mills, carpet dyers, toilet flushing, and building activities like concrete mixing, among others. For instance, in Kansas City, the Region 7 Science and Technology Center used rainwater recovery system which collected water that the center used for its processes (EPA, 2012).
Water recycling can save a lot of water, energy, and money. Apart from its advantage in different fields, it can also address water problems in places where drought exists. As for landscaping, it supplies more than 50% of the water needs. It also saves potable water intended for other usage and reduces the volume of wastewater that leads to the septic systems and treatment plants (EPA, 2012).
The environment can benefit from water recycling. It decreases water diversion from sensitive ecosystems as it prevents the water quality and ecosystem health deterioration. It also decreases wastewater discharges to the ocean, creeks, river, and stream. Instead of converting the saltwater to brackish marsh, recycled water can be used to supply the industrial process which protects the habitat for endangered species in the waters.
Recycled water can also be used to enhance wildlife and wildfowl habitat, improve water quality and reduce flooding. It can augment water flow which can improve the wildlife habitat. It can also reduce and prevent the harmful impacts of pollution as it contains more nutrients needed for the lands, thus, it reduces the need to apply harmful fertilizers. It also prevents erosion as it supplies the necessary nutrients for the soil to maintain its fertility and loamy feature.
The EPA also proved that Landscape irrigation/Xeriscaping can reduce water consumption. Xeriscaping, according to EPA, uses less water through planting of native and water-efficient plants. It does not use or minimally uses irrigation which saves about 50 percent of irrigation water (EPA, 2012). Water-efficient landscaping can be cost-effective in terms of mowing, fertilizing, removing wastes and maintaining. This reduces damages brought by drought and at the same time, prevent erosion with its control over soil moisture that have sensors.
The EPA enlisted other effective management techniques based on their practices. These proved that these management techniques can help industries contribute to environmental conservation while pursuing their construction activities.

## Do you have a strategy for recycling and use after construction?

Construction entails usage of water before, during and after its processes. During the process of construction, water can be conserved and recycled in various ways. One strategy would be its use to substitute clean, potable water in preparing for materials in construction such as concrete mixing, painting, and polishing. It can also be used for cleaning-up and flushing. Another strategy in the use of recycled water would be in maintaining a landscape. Companies can maintain a landscape made up of native, water-efficient plants where they can supply their recycled water. It would not only conserve water, but also prevent pollution as the plants would absorb nitrogen and carbon dioxide.
Another strategy would be regulation. Construction of buildings could be regulated in terms of the companies’ compliance to acceptable environmental standards. Harbor (1999) suggested that in the absence of a comprehensive regulatory program by the state, local initiatives must be harnessed to encourage companies to invest in erosion control because of its long-term benefits to the company, employees and the community. Also, companies could be encouraged to build more green buildings to ensure that environmental protection is considered from the start until the end of the project.

## How will these sustainable water-use strategies affect you in an environmentally conscious way?

Water is vital to maintain life, resources, and productivity. It plays an integral role in almost all aspects of living. The United Nations (UN) puts prime to the importance of water in aspects of human health, development, and over-all well-being of the people. As a basic human right, water and sanitation are in line with the Millennium Development Goals (MDG) which contributes to the eradication of poverty and hunger, achievement of primary health care, and above all, sustainability of the environment.
The strategies in water-use proves the growing need to ensure that every single drop of water should not be wasted. Even water can be recycled and could in fact be beneficial in farms, industries and entertainment. Water recycling encompasses daily living. From the simple cleaning up to toilet flushing to landscaping and construction, recycled water can be utilized to save more water and allow others to access clean and potable water.
EPA’s best practices in management techniques can be empowering as it instills the importance of water consumption and conservation. It reaches out to the populace to become environmentally-conscious and to contribute in the protection of the environment. With pollution and climate change continue to hound and challenge the environment, developing more strategies to conserve water can lessen its impact and resolve the water problems, and ultimately, environmental problems.

## References

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