**AFRICA CENTRE FOR PROJECT MANAGEMENT STUDIES (ACPMS)**

**ASSIGNMENT FOR THE MONTH OF AUGUST 2018.**

|  |  |
| --- | --- |
| STUDENT NAME: | SIMAYA LADU JAMES |
|  |  |
| COURSE: | POST GRADUATE DIPLOMA IN WASH |
|  |  |
| STUDENT REG NO. | ACPM/47/3/2018 |
|  |  |
| MODULE: | THREE |
| MODULE NAME: | WATER SUPPLY |

1. **Explain six major non-domestic use of water.**

**The following are the non domestic use of water.**

Non Domestic use of water refers to application or utilisation of water for other purpose apart from home use.

**Therefore, the following are the non domestic uses of water.**

**Water use for Irrigation purpose.**

About 70% of water used globally is in irrigation. In Ethiopia, the total area under irrigation is increasing and irrigation channels can be seen in some parts of the country. **Spray irrigation**, where pressurised water is sprayed over plants to feed them, is often used on large farms but greater efficiency of water use can be achieved by **drip-feed irrigation** systems. In drip-feed irrigation, water is fed to the roots of plants through narrow pipes dripping water onto the soil surface near the base of the plant. This takes the water directly to the growing crops and reduces losses by evaporation.

**Water use for Industrial purpose.**

In many industries water is essential. Some industries use piped water supplied from water treatment plants while others draw the water themselves from underground sources and treat it on site for use. The water may be used either as part of the production process or as an ingredient, where water is one of the components of the product, for example in a soft-drink plant In the production process, it can be used for cooling, washing, diluting, boiling or cooking, transportation of raw materials (for example, moving potatoes in a food factory), and as a cleaning agent.

**Water use for Mining purpose.**

Mining activities use huge amounts of water in processing ore to extract minerals. In Ethiopia, mining for gold and other valuable metals is an increasingly important part of the national economy and would not be possible without the use of water.

**Water Use in power generation**

The rivers of Ethiopia have enormous potential for generating **hydroelectric power (HEP)**. HEP uses the energy from moving water and converts this to electrical energy. The development of HEP has transformed energy supply in recent years and more schemes are under construction or planned. However, it is important to realise that in HEP the water is not ‘used’ in the sense of being consumed, because after passing through the HEP plant the water continues on its path in a river channel.

Another process under development in the Rift Valley area of Ethiopia is the use of **geothermal energy**, in which energy is derived from the heat of the Earth**.** This process involves drilling down into hot layers of underground rock and using this heat to convert water into steam, which is then used to drive generators to produce electricity.

**Water use for Aqua cultural purpose.**

Water can also be used in **aquaculture**, which is the farming of aquatic organisms such as fish, crustaceans and molluscs for food. Fish farming obviously needs water for the fish to live in! In this case, water is used to hatch fish eggs under controlled conditions, and the fish are grown to maturity in tanks or ponds, before being sold for food. Although not currently practised in Ethiopia, the business potential for aquaculture has been recognised and it may be introduced in the future (Rothuis et al., 2012).

**Water use for** **Recreational purpose.**

Water plays an important role in recreational activities and here again it is not consumed in the process of its use. Boat trips are popular on many of Ethiopia’s lakes and several resorts have been built on their shores

1. **Briefly describe the important roles that water plays in the human body.**

Water makes up about 70% of an adult human being’s weight. In the human body, blood contains about 82% water and our brain is made up of about 95% water. Losing just 2% of our water content can result in signs of dehydration, fuzzy short-term memory and difficulty in focusing on smaller print or words displayed on a computer screen.

**The following are the roles of water in the human body.**

* Water plays an important part in keeping us and our environment clean. It is essential for good personal hygiene. We use water to wash our hands and bodies, and also to wash places in our homes that could possibly harbour harmful micro-organisms (such as toilets).
* Many of our foods are prepared with water and others naturally contain large amounts of water (e.g. milk is made up of approximately 88% water; eggs 66%; fish 80%; potatoes 75%; and beef 77%).
* Inside the body, water serves as a lubricant during digestion of our food. Water in saliva facilitates chewing and swallowing, and the food goes down into the stomach with the help of water. The functions of all the body’s cells and organs depend on water.
* Water is involved in transporting valuable nutrients around the body in the bloodstream. Nutrients are broken down in the digestive system and transported to where they are needed in the body.
* Water is used by the body to remove harmful toxins and wastes through urination and respiration. Water also helps to reduce constipation. Drinking enough water helps body organs such as the kidneys and the liver to get rid of waste products.
* Water helps to regulate body temperature. The body controls over-heating through perspiration. When sweat evaporates from the surface of the skin, it takes heat from the body and produces a cooling effect.

1. **List the types of people who are most vulnerable to waterborne diseases. Explain your answers why and how to overcome the diseases**

The types of people who are more vulnerable to water borne diseases are:

* Pregnant Women.
* Infant
* Young Children.
* Sick people.
* Old/elder

These groups of people are vulnerable because they are more susceptible to other disease due to their immune compromised (low immune status) especially the sick, old and the young children.

Children, especially those under 5 years of age, are vulnerable to infection because they frequently put their unwashed fingers in their mouths.

Children are more likely to be affected because their immune systems are not fully developed; they constitute important reservoirs of the infections

This situation can be overcome by provision of safe drinking water, effective sanitation and good hygiene behaviour, including food hygiene, environmental and handwashing.

1. **Suppose that inhabitants of a village obtain water from a spring. What advice would you give to the users about the prevention of contaminants entering the spring?**

A spring is a place on the earth's surface where groundwater emerges naturally. The water source of most springs is rainfall that seeps into the ground uphill from the spring outlet. While springs may seem like an ideal water supply, they need to be selected with care, developed properly, and tested periodically for contamination.

**Spring Protection**

Springs are susceptible to contamination by surface water, especially during rainstorms. Contamination sources include livestock, wildlife, crop fields, forestry activities, septic systems, and fuel tanks located upslope from the spring outlet. Changes in color, taste, odor, or flow rate indicate possible contamination by surface water. To protect springs from contamination the users should be advice to take the following measures.

1. Divert all surface water away from the spring as far as possible. Do not allow flooding near the spring.
2. Construct a U-shaped surface drainage diversion ditch or an earth berm at least 50 feet uphill forms the spring to divert any surface runoff away from the spring.
3. One has to be careful not to dig deep enough to uncover flowing groundwater. Prevent ponding in the diversion ditch.
4. Construct an earth berm adjacent to the spring or a second U-shaped diversion ditch lined with concrete tile for added protection.
5. Fence an area at least 100 feet in all directions around the spring box to prevent contamination by animals and people who are unaware of the spring's location.
6. Avoid heavy vehicle traffic over the uphill water bearing layer to prevent compaction that may reduce water flow.
7. There should be chlorination of the well/spring to prevent contamination .
8. **The following are pollution sources. Give two specific pollutants for each source.**
9. **A residential area**: the pollutants are animal and human wastes (faeces), smoke and carbondioxde from burning gasses.
10. **A metal plating plant**: the pollutants here are heavy metals like lead, mercury and chromium.
11. **Agricultural activities**: the pollutants are pesticides and fertilizers.
12. **An uncontrolled landfill site:** .Liquid wastes containing toxic chemicals or pathogenic micro-organisms on the surface of the land can seep slowly into the soil and may percolate down to contaminate groundwater, animal or human faeces which are spread through open defecation and leaking swage storage tanks.
13. **Urban surface water run-off**. The pollutants here are gasoline, motor oils, heavy metals and trash.

**References**

The water footprint of food in Water Program. Recovered from gracelinks.org

Industrial water use. Retrieved from water.usgs.gov

Water consumed this year in Water consumption statistics. Retrieved from worldofmeters.info

Overview in Irrigation & Water Use. Retrieved from ers.usda.gov

Car washes and water efficiency in Tommy Car Wash Blog (2015). Retrieved from tommycarwash.com h

Water - who uses how much? In Auto landry news (2011). Recovered from casrwashmag.com

Indoor Water Use Toilets. Retrieved from home-water-works.org

Showers in Indoor Water Use. Retrieved from home-water-works.org

Clothes washer in Indoor Water Use. Retrieved from home-water-works.org

Water use and quality in the oil and gas industry in Water and energy. Recovered from corporate.exxonmobil.com

Built in dishwasher vs hand washing: which is greener? In Kitchen design (2009). Retrieved from treehugger.com.