UNIT OF STUDY

Title: Human Population Subject/Course: Environmental Science Length: 5 weeks Topic: Population Dimensions and Development Grade: 11-12 Designer: D Wright	
UNIT GOALS AND EXPECTATIONS	
IMPORTANT CONCEPTS/UNDERSTANDINGS: 1. Human population size can have adverse environmental impacts. High absolute numbers create a variety of negative environmental consequences; but smaller absolute numbers of people will, if consumption rates are high, also produce adverse impacts. 2. The age structure and fertility rate of a population can be used to predict the future size of a population. As the birth rate increases, the age structure shape becomes more pyramidal. 3. Improvements in agriculture, public health, and medical access decrease death rates. Decreased death rates, not increased fertility rates, increase the human population size. 4. The four phases of the demographic transition have been observed in developed countries. We do not know if economic development caused the transition; we know that the two are correlated. 5. There are many factors influencing family size. Knowing these factors and how they are interrelated can provide solutions to excessive population growth rates. 6. Economic development has been the traditional mode for promoting decreased fertility rates. Development focused on large-scale projects does not necessarily change the living conditions of the poorest individuals who have the highest fertility rates. 7. Development focused on improving access to education, family planning, and health care and enhancement of the management of resources are potentially effective means of reducing fertility rates.	ESSENTIAL QUESTIONS: How does human population growth affect the environment? How can we predict the future size of a population? What are the phases of demographic transition? How does studying family size provide solutions for excessive population growth? What is meant by economic development and what is the effect on the majority of the population? What are factors that affect the fertility rate of a population?
STUDENT LEARNING EXPECTATIONS: SP.3.ES.5- Evaluate the impact of different points of view on health, population, resource, and environmental issues. SP.3.ES.6-Research how political systems influence environmental decisions. NS.4.ES.1-Collect and analyze scientific data using appropriate mathematical calculations, figures and tables. NS.4.ES.3- Utilize technology to communicate research findings. BD.2.ES.2- Describe relationships in a community. BD.2.ES.3- Differentiate between primary and secondary succession. BD.2.ES.4- Construct a trophic level pyramid. BD.2.ES.5- Construct a food chain. BD.2.ES.6- Construct a food web.	BD.2.ES.7- Compare and contrast food webs and food chains. BD.2.ES.8- Describe biodiversity. NS.5.ES.1-Compare and contrast environmental concepts in pure science and applied science. NS.6.ES.1- Research and evaluate science careers using the following criteria. SP.3.ES.12- Explain the impact of birth rate, death rate and migration rate on population changes. SP.3.ES.11- Investigate public policy decision on health and environmental issues. NS.4.ES.2- Utilize appropriate equipment and technology as problem solving tools.

SPECIFIC DECLARATIVE KNOWLEDGE – What I know	SPECIFIC PROCEDURAL KNOWLEDGE – What I need to do
Discuss how Human population size has a big impact on consumption of resources. Calculate how the extent of Population growth can be determined using fertility rates and age structure of a population. Identify improvements in agriculture, public health and access to good medical care help increase population. Discuss how Demographic transition from developing countries to developed countries is correlated with population growth. Identify the many factors that affect family size, knowing these factors can help find solutions to excessive population growth. Discuss how Developed countries have more access to education, family planning, health care and management of natural resources.	Make clear and unbiased observations. Make predictions according to a pattern. Identify correctly information found on graphs, tables and charts. Use research skills to gather information.

UNIT ASSESSMENTS (Include tasks related to Dimensions 3 and 4 and Bloom's Taxonomy)
Discuss (in writing) the idea of a sustainable approach to the Earth's environment. Chapter Content Brainstorming Population lab Quadrant lab TI-83 lab "The Garbage Problem"

Traditional Assessments:	Other Evidence of Learning:
Unit test. Written quizzes. Chapter outline Activity analysis	Daily notebook entries. Chapter Content Brainstorming LPS 4-step Vocabulary strategy

ACTIVITIES AND LEARNING EXPERIENCES	Resources
Identify and define key words and vocabulary: (using LHS vocabulary format) Total fertility rate, replacement level fertility, population profile, demography, age structure, graying, population momentum, demographic transition, crude birth rates, crude death rates, doubling time, World Bank, social modernization, microlending, credit associations TI83 and CBL lab- "Is There A Limit" Population Lab Food Web Lab	Environmental Science: Toward A Sustainable Future Media Center Internet Smartboard Power point Newspaper/Magazines Lab exercises TI-83 calculator w/ probes

Career Connections
Politician Economist Sociologist Ecologist