Sustainability Merit Badge

BOY SCOUTS OF AMERICA®
UTAH NATIONAL PARKS COUNCIL™

SUSTAINABILITY MERIT BADGE

Introducing Sustainability Video

http://youtu.be/B5NiTN0chj0

Requirement 1.
Write in your own words the meaning of sustainability.

- Before starting work on any other requirements for this merit badge, write in your own words the meaning of sustainability. Explain how you think conservation and stewardship of our natural resources relate to sustainability. Have a family meeting, and ask family members to write down what they think sustainability means. Be sure to take notes. You will need this information again for requirement 5.

Requirement 1.

Write in your own words the meaning of sustainability.

Sustainability is a consideration in both design and day-to-day actions. It means thinking about people, the environment and systems, and how they're all interdependent. It means not shortchanging tomorrow by just thinking about today.

There are three pillars to sustainability:

- **Economics—** The flow of money and growth are critical to business and can benefit quality of life. Continued job growth, shareholder value, and employee wages are ingredients to sustainability.
- **Environment—** Natural systems support the life of all things. Bees pollinating crops, forests filtering pollutants from air, and wetlands purifying water are another form of valuable capital.
- **People—** Our family and neighbors are the engine of our economy. Long-term health and welfare of people is intertwined with these other pillars of sustainability.

Requirement 1.

Write in your own words the meaning of sustainability.

http://www.youtube.com/watch?v=B5NiTN0chj0&feature=share&list=TL5iR0I83N7j4

Requirement 2.

Water. Do A and either B or C

Courtesy of Vanilla Partners

Requirement 2.
Water.

A. Develop and implement a plan that attempts to reduce your family's water usage. Examine your family's water bills reflecting usage for three months (past or current). As a family, choose three ways to help reduce consumption. Implement those ideas for one month. Share what you learn with your counselor, and tell how your plan affected your family's water usage.

Graywater Recycling Shower Houses at the Summit Bechtel Reserve

http://www.youtube.com/watch?v=xhy73y4RvhA&feature=player_detailpage&t=11

Requirement 2.

Water. A.

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION

ACCOUNT NUMBER	BILL DATE	PAYMENT DUE BY	AMOUNT DUE	AMOUNT ENCLOSED
80001-01234-001	Dec 28, 2006	Jan 25, 2007	$ 5,362.96	$

YOUR ACCOUNT NUMBER

BILL ISSUE DATE

DUE DATE

AMOUNT DUE

name/address
e reverse side)

011800010123400112282006000005362961

Make check payable to: NYC Water Board.
Please send payment in the
enclosed envelope to:

A C7 W 120 800010123400 1 C
ANY WHERE MANAGEMENT
199 YOUR STREET #1A
NEW YORK, NY 10077-4043

YOUR MAILING NAME AND ADDRESS

TEAR OFF PERFORATION

PLEASE DETACH AND RETURN THIS PORTION WITH YOUR MAILED PAYMENT. PLEASE WRITE YOUR ACCOUNT NUMBER ON YOUR CHECK.

ACCOUNT NUMBER	BILL DATE	PAYMENT DUE BY	AMOUNT DUE	AFTER JAN 25, 2007 LATE PAYMENT CHARGES (LPC) AT THE RATE OF 0.75% PER MONTH ARE INCLUDED.
80001-01234-001	Dec 28, 2006	Jan 25, 2007	$ 5,362.96	

PAYMENTS RECEIVED AND/OR INTEREST CHARGED SHOWN HERE

BILLING INFORMATION

Previous bill - Sep 26, 2006 $6,242.36

Payment Received - Oct 16, 2006 Thank you 6,242.36-

IOR BALANCE 0.00

BILL DETAIL BEGINS

PREVIOUS READ DATE

DATE OF READING

DAYS

RATE: BASIC WATER AND SEWER

Meter Number P11221782 From 9/18/06 To 12/18/06 Days 91
Read type ACTUAL Prior Read 1396300 Current Read 1510700 Usage 114400 Cu
144 Hundred Cubic Feet (HCF) 1144 HC

WATER USED IN C.F.

YOUR METER NUMBER

READINGS FROM YOUR METER

Water charge
Sewer charge 3,292.32

This bill reflects payments processed before Dec 28, 2006.
Your next bill date is scheduled for Mar 29, 2007.
Your meter(s) will be read during the preceding week.

Total amount due $5,362.96

PLEASE PAY THIS AMOUNT $5,362.96

Please see the back of the bill for an explanation of the rates.

A copy of yo MANAGEMENT

YOUR SERVICE ADDRESS

DO NOT SEND PAYMENTS HERE. JUST CORRESPONDENCE

Service Address:
242 SAMPLE ST
NEW YORK NY 10012-3434

Please direct correspondence or calls to:
DEP/BCS CUSTOMER SERVICE
PO BOX 739055
ELMHURST, NY 11373-9055
(718) 595-7000

AVERAGE COST PER DAY. BOTH LAST AND CURRENT READINGS MUST BE 'ACTUAL' FOR THIS TO BE VALID. .

IMPORTANT MESSAGES

This billing period:

For meter P11221782
Your daily average usage = 12.57 HCF (9402 GALLONS)
Your daily average cost = $ 58.93

ACCOUNT HISTORICAL USAGE

TO ENSURE YOUR PAYMENT IS APPLIED TO THE CORRECT ACCOUNT NUMBER, PLEASE WRITE YOUR ACCOUNT NUMBER ON THE FACE OF YOUR CHECK OR MONEY ORDER.

TO ENSURE YOUR PAYMENT IS APPLIED CORRECTLY, PLEASE DOUBLE CHECK YOUR ACCOUNT NUMBER ON THE BILL AND THE FACE OF YOUR CHECK.

Printed on recycled paper

SAVE WATER

000099

PAGE 1 OF 1

Requirement 2.
Water.

B. Using a diagram you have created, explain to your counselor how your household gets its clean water from a natural source and what happens with the water after you use it. Include water that goes down the kitchen, bathroom, and laundry drains, and any runoff from watering the yard or washing the car. Tell two ways to preserve your family's access to clean water in the future.

Two Ways to Preserve Access to Clean Water:

1. _____
_____
_____

2. _____
_____
_____

Requirement 2.
Water.

C. Discuss with your counselor two areas in the world that have been affected by drought over the last three years. For each area, identify a water conservation practice (successful or unsuccessful) that has been used. Tell whether the practice was effective and why. Discuss what water conservation practice you would have tried and why.

Requirement 2.

Water. C.

One of the worst droughts of the Twentieth Century occurred in the Horn of Africa in 1984 and 1985. This image shows the Normalized Difference Vegetation Index (NDVI) anomaly for August 1984. NDVI anomaly indicates the vigor of vegetation relative to the long-term average. Dark red indicates the most severe drought, light yellow areas are normal, and green areas have denser than normal vegetation

The Sudanese are at high risks for contracting waterborne diseases. In 2006 there were 476 deaths caused by diarrhoea in just five months, with Cholera-causing bacterium present in stool samples. Similarly, the Darfur region had 3753 reported cases of hepatitis E from May to August 2004. Contaminated drinking water may also cause Dracunculiasis, or Guinea Worm Disease. It can rapidly affect a water supply for a village by one infected person, harming the total area. Three out of five cases of Guinea Worm Disease come from Sudan. Open water sources, such as standing ponds, are common modes of transferring diseases in villages.

In Sudan, the climate ranges from arid in the north and northwest to wet-and-dry tropical weather in the southwest. In semi-arid zones in Sudan such as the West region, safe drinking water is rare. In particular, areas in North Darfur and South Kordofan States rely on groundwater supply (wells) or water storage methods called *hafir* or earth dams for their water supply. *Hafir* are small lakes constructed in low lying areas to allow water to be stored during rainfall events. Improved water supply methods, to provide adequate water quality and water supply, are acutely needed for this region. Rainfall harvesting (RWH) methods can be implemented to improve the production of crops and livestock.

Requirement 2.

Water. C.

Drought indices assimilate thousands of bits of data on rainfall, temperature, snow pack, stream flow, and other water supply indicators into a comprehensible big picture that is far more useful than raw data for decision-making. The drought in Utah and Nevada has become more severe since about 2010. Many cities encourage water conservation by limiting lawn watering to specific days of the week. In 2013 some cities in central Utah ran out of water and prohibited lawn watering altogether.

http://earthobservatory.nasa.gov/Features/DroughtFacts/drought_facts_2.php

Requirement 2.

Water.

One of the easiest steps we can take to help mitigate the impacts of drought is conserving water. If we use water wisely at all times, more water will be available to us and to plants and wildlife when a drought happens. We can lose a lot of water doing simple everyday tasks. Turning off the water while you brush your teeth can save more than 100 gallons of water a month. If you have a leaky faucet, the drips can add up to 300 gallons of wasted water a month.

Another way to save water is to install devices that use less water to perform everyday tasks. For example, we use the most water in our homes when we take a shower or flush the toilet. Companies now sell low-flow toilets and showerheads that can cut the amount of water used in half. People are even beginning to use composting toilets that require no water. Also, new washing machines and dishwashers use much less water than older machines.

Farmers and businesses are also using new inventions to help them reduce the amount of water they use to grow crops or manufacture things. New sprinkler irrigation systems can reduce water use by spraying the water out with less force so more gets to the plant and less evaporates or blows away. Some drip irrigation systems use less water by directing the water directly to the plant's roots. If you have a garden or if your parents water your lawn, many similar devices are available for use around the home too.

Xeriscaping is a type of landscaping that uses little water by only using plants that are native to the area you live in. Native plants usually need less water to grow or can make better use of the water that is available to them than other types of grasses, trees, and shrubs. People who do this type of landscaping also find creative ways to use rocks or other types of ground covers in their yards or even in front of their businesses. The keys to xeriscaping are to use only as much water as the plants need and to choose landscaping designs and plants that make use of the available rainfall. Xeriscaping is very common in drier places like Arizona, New Mexico, and even Utah, but it is catching on all across the United States and many parts of the world. You can learn more from your local extension service or landscaping or nursery businesses in your towns.

Businesses, cities, and people are finding new ways to save water by reusing it. Many businesses have started recycling water that they use in their manufacturing process. Instead of letting water run down the drain, the water is collected, cleaned (if needed) and run back through the system.

Many cities and other types of businesses are using "gray water" (waste water that is treated and cleaned) to water golf courses and city parks. Water parks like Denver Water World are recycling the splash water into other areas of the water park

Requirement 2.

Food. Do A and either B or C

Courtesy of Vanilla Partners

Requirement 2.
Food.

A. Develop and implement a plan that attempts to reduce your household food waste. Establish a baseline and then track and record your results for two weeks. Report your results to your family and counselor.

Requirement 2.

Food. A. Food Waste Log

Waste Logbook – Facility: _____

Date: _____ Weather: _____

Notes/Special Events Today: _____

Time	Recorded By	Food Type	Loss Reason	# of Portions	# of Quarts	# of Pounds
					PICK ONE	
			TOTAL			

For more information, visit www.epa.gov/foodscraps.

Special thanks to LeanPath, Inc.

Requirement 2.
Food.

B. Discuss with your counselor the ways individuals, families, and communities can create their own food sources (potted plants, family garden, rooftop garden, neighborhood or community garden). Tell how this plan might contribute to a more sustainable way of life if practiced globally.

Requirement 2.
Food.B.

Sustainable gardening refers to a garden that can be used productively over and over without the need for excessive restarting costs.

Requirement 2.
Food.

C. Discuss with your counselor factors that limit the availability of food and food production in different regions of the world. Tell three ways these factors influence the sustainability of worldwide food supplies.

Food security can be defined as "access by all to sufficient food for an active, healthy life." Food security depends more on demand, than supply (since there is currently no problem with growing enough food); agriculture is the world's largest employer. Factors that influence sustainable food security include: literacy rates; levels of farmer education; agricultural research and extension capacity; transport infrastructure; non-agricultural income opportunities; social support systems; international security and confidence in international trade; domestic civil strife; international capital movements, etc.

Requirement 2.

Community. Do A and either B or C

Courtesy of Vanilla Partners

Requirement 2.
Community. A.

A. Draw a rough sketch depicting how you would design a sustainable community. Share your sketch with your counselor, and explain how the housing, work locations, shops, schools, and transportation systems affect energy, pollution, natural resources, and the economy of the community.

Courtesy of Vanilla Partners

Requirement 2.
Community. A.

"Straw Bale" City

Courtesy of Vanilla Partners

Requirement 2.
Community. A.

Courtesy of Vanilla Partners

Requirement 2.
Community.

B. With your parent's permission and your counselor's approval, interview a local architect, engineer, contractor, or building materials supplier. Find out the factors that are considered when using sustainable materials in renovating or building a home. Share what you learn with your counselor.

http://www.regreenprogram.org/docs/regreen_guidelines.pdf

Requirement 2.

Community. B.

Sustainable Home Building

Site
- Minimize site disturbance
- Use site-chipped or ground clean wood waste as erosion control **SS39**

Foundation
- Install radon mitigation system **IEQ163**
- Install CO and smoke alarms **IEQ164**
- Insulate floor slab and foundation walls **EA47**

Building Envelope
- Provide proper moisture management strategies **IDP24**
- Assess vapor profile of new assemblies **IDP25**
- Optimize energy performance **EA48, EA50, EA51, EA52, EA53, EA54, EA55**
- Use FSC-certified wood **MR118** or SIP construction **MR116**
- Use high-recycled-content, formaldehyde-free insulation **MR117**
- Upgrade or replace existing windows and doors **EA56, EA57, EA59**
- Specify different window glazings for different orientations **EA60**
- Install awnings or other exterior window shading system **EA62**

Interior Walls
- Use FSC-certified wood **MR118**
- Install environmentally preferable sheathing **MR126**
- Select environmentally preferable interior doors **MR127**

HVAC
- Use ACCA Manual's J, S, and D in mechanical system design **EA63**
- Evalate different heat distribution options **EA46**
- Consider alternatives to conventional refrigerant-cycle air-conditioning **EA65**
- Provide appropriate controls and zoning for HVAC **EA64**
- Select high-efficiency HVAC equipment **EA66**
- Properly commission new (or tune existing) HVAC systems **EA69**
- Install programmable thermostats **EA67**
- Properly seal and insulate HVAC distribution system **EA70**
- Make sure ducting is clean **EA71**
- Discontinue unconditioned basement or crawl space ventilation **EA74**
- Avoid ozone-depleting refrigerants **EA75**
- Provide appropriate venting of all combustion-based heating and water-heating equipment **IEQ168**

Plumbing
- Reconfigure plumbing to distribute domestic hot water efficiently **EA77**
- Install on-demand hot water recirculation system **EA78**
- Choose high-efficiency water heater **EA79**
- Insulate water heater **EA80**
- Insulate hot water pipes **EA81**
- Consider environmental preferable piping material **MR122**

Lighting and Electrical
- Plan for the future wiring and cabling needs **MR121**
- Provide daylighting **EA83**
- Provide appropriate mix of color-correct ambient and task lighting **EA84**
- Install energy-efficient electric lighting **EA85**
- Avoid recessed lights in insulated ceilings or use insulation-contact fixtures

http://www.regreenprogram.org/docs/regreen_guidelines.pdf

Courtesy of Vanilla Partners

Requirement 2.
Community.

C. Review a current housing needs assessment for your town, city, county, or state. Discuss with your counselor how birth and death rates affect sufficient housing, and how a lack of housing—or too much housing—can influence the sustainability of a local or global area.

Requirement 2.

Requirement 2.

Energy. Do A and either B or C

Courtesy of Vanilla Partners

Requirement 2.
Energy. A.

A. Learn about the sustainability of different energy sources, including fossil fuels, solar, wind, nuclear, hydropower, and geothermal. Find out how the production and consumption of each of these energy sources affects the environment and what the term “carbon footprint” means. Discuss what you learn with your counselor, and explain how you think your family can reduce its carbon footprint.

Requirement 2.

Energy. A.

<object width="560" height="315"><param name="movie" value="//www.youtube.com/v/98frSed0F5s?hl=en_US&version=3&rel=0"></param><param name="allowFullScreen" value="true"></param><param name="allowscriptaccess" value="always"></param><embed src="//www.youtube.com/v/98frSed0F5s?hl=en_US&version=3&rel=0" type="application/x-shockwave-flash" width="560" height="315" allowscriptaccess="always" allowfullscreen="true"></embed></object>

http://youtu.be/98frSed0F5s

Requirement 2.

Energy. A.

carbon footprint is "the total of greenhouse gas emissions caused by an organization, event, product or person."[

Calculate Your Carbon Footprint at:
http://www.nature.org/greenliving/carboncalculator/index.htm

Requirement 2.

Energy. A.

Courtesy of Vanilla Partners

Requirement 2.
Energy.

B. Develop and implement a plan that attempts to reduce consumption for one of your family's household utilities. Examine your family's bills for that utility reflecting usage for three months (past or current). As a family, choose three ways to help reduce consumption and be a better steward of this resource. Implement those ideas for one month. Share what you learn with your counselor, and tell how your plan affected your family's usage.

Requirement 2.

Energy. B.

Household Fuel Consumption in the U.S., Totals and Averages, 2009
British Thermal Units (Btu), Final

Housing Unit Characteristics and Energy Usage Indicators	Total Housing Units[1] (millions)	Total Site Consumption (quadrillion Btu)						Average Site Consumption (million Btu per household using the fuel)					
		Total[2]	Electricity	Natural Gas	Propane/ LPG	Fuel Oil	Kerosene	Total[2]	Electricity	Natural Gas	Propane/ LPG	Fuel Oil	Kerosene
Total U.S.	113.6	10.183	4.388	4.694	0.492	0.584	0.024	89.6	38.6	67.8	42.4	76.4	14.5
Census Region													
Northeast	20.8	2.235	0.573	1.064	0.079	0.503	0.016	107.6	27.6	77.3	38.0	80.3	30.0
Midwest	25.9	2.914	0.936	1.751	0.193	0.033	0.001	112.4	36.1	90.3	66.8	61.4	3.2
South	42.1	3.220	2.091	0.942	0.142	0.039	0.006	76.5	49.7	53.1	30.2	58.7	10.6
West	24.8	1.814	0.789	0.937	0.078	0.009	0.001	73.0	31.8	51.2	40.5	50.0	6.4
Urban and Rural[3]													
Urban	88.1	7.792	3.061	4.209	0.087	0.425	0.011	88.5	34.8	68.4	26.3	75.4	13.0
Rural	25.5	2.391	1.327	0.486	0.405	0.160	0.014	93.6	52.0	63.1	48.8	79.2	16.1
Metropolitan and Micropolitan Statistical Area													
In metropolitan statistical area	94.0	8.482	3.498	4.189	0.291	0.489	0.014	90.2	37.2	68.4	41.7	76.4	13.3
In micropolitan statistical area	12.4	1.080	0.551	0.380	0.092	0.049	0.007	87.3	44.6	65.9	40.8	77.8	17.7
Not in metropolitan or micropolitan statistical area	7.2	0.622	0.338	0.126	0.108	0.046	0.003	86.1	46.9	57.8	46.1	74.9	14.7
Climate Region[4]													
Very Cold/Cold	38.8	4.320	1.248	2.438	0.233	0.385	0.015	111.4	32.2	89.0	53.8	84.2	19.4
Mixed-Humid	35.4	3.241	1.538	1.317	0.184	0.193	0.008	91.5	43.4	66.5	41.4	65.6	11.8
Mixed-Dry/Hot-Dry	14.1	0.946	0.444	0.473	0.028	Q	Q	67.1	31.5	41.7	30.6	Q	Q
Hot-Humid	19.1	1.259	0.957	0.266	0.035	Q	Q	66.1	50.2	39.7	22.1	Q	Q
Marine	6.3	0.417	0.201	0.200	0.011	Q	Q	66.6	32.1	50.2	36.4	Q	Q
Housing Unit Type													
Single-Family	78.6	8.142	3.436	3.798	0.423	0.473	0.012	103.6	43.7	75.5	45.9	85.1	10.8
Single-Family Detached	71.8	7.595	3.229	3.502	0.415	0.439	0.011	105.7	44.9	76.8	46.0	85.6	10.4
Single-Family Attached	6.7	0.546	0.207	0.296	0.007	0.035	Q	81.3	30.8	63.2	38.6	78.8	Q

Requirement 2.

Energy. B.

Ideas for Home Energy Conservation

- Close interior doors and turn off the heat to any rooms that are unused during the winter. Make sure lowering temperature does not freeze pipes or cause condensation.
- Reduce heating fuel use about 1% for each degree you lower your thermostat for 8 hours/day. So lowering temps 10 degrees for 16 hours each day (while sleeping and at work) would cut your fuel use by about 20%. Using a programmable thermostat to do this will allow you to bring the heat back up to a comfortable temperature before you get up in the morning or return home.
- Weather-strip all exterior doors, including attic hatch, bulkhead door and doors to cold cellars and crawl spaces. Check and replace weather stripping when worn.
- If your exterior doors jiggle when closed or if you can see daylight around edges of a closed door, move the striker/latch plate closer to the weatherstrip so the door closes snuggly against it or add new weather stripping that snugs up against the door.
- Install storm windows and doors. Close and latch storm windows and doors tightly.
- Caulk closed all leaky windows and exterior doors that you never open.
- Close chimney and fireplace dampers when not in use. If chimney is unused, install an inflatable chimney pillow or caulked-in foam plug to better seal.
- Cover leaky windows that you do want to open in the spring with an interior plastic "storm" product, like Tyz-All, available at Energy Federation Inc. (800-876-0660, www.efi.org). Tyz-All can be removed in the spring and reused next winter. It will usually pay for itself in one year.
- Make sure all ventilation fans (dryer, bathroom, rangehood, etc.) vent to the exterior and have a flap that closes tightly when the fan is off. Clear vent flaps of lint and other debris so they close tightly.
- If you can feel and heat coming off your hot water tank or hot water pipes, cover them with an insulated tank wrap jacket or foam pipe insulation available at your local hardware store or Energy Federation Inc. (800-876-0660, www.efi.org).
- Turn your hot water on and let it run for a couple of minutes. If it is then too hot to hold your hand under the water, turn the thermostat on your hot water tank down to 120°.

Requirement 2.

Energy.

C. Evaluate your family's fuel and transportation usage. Review your family's transportation-related bills (gasoline, diesel, electric, public transportation, etc.) reflecting usage for three months (past or current). As a family, choose three ways to help reduce consumption and be a better steward of this resource. Implement those ideas for one month. Share what you learn with your counselor, and tell how your plan affected your family's transportation habits.

Requirement 2.

Energy. C.

Save money—and the environment—with the fuel-efficient five

Adopt these five driving techniques to cut your fuel consumption and carbon dioxide emissions by as much as 25 percent:

- Accelerate gently
- Maintain a steady speed
- Anticipate traffic
- Coast to decelerate
- Avoid high speeds
- You could save hundreds of dollars at the pump each year; avoid costly speeding tickets, bumper repairs and insurance hikes and even prevent unnecessary wear on your vehicle.

http://www.fueleconomy.gov/feg/driveHabits.shtml

Requirement 2.

Stuff. Do A and either B or C

Courtesy of Vanilla Partners

Requirement 2.
Stuff.

A. Keep a log of the "stuff" your family purchases (excluding food items) for two weeks. In your log, categorize each purchase as an essential need (such as soap) or a desirable want (such as a DVD). Share what you learn with your counselor.

Requirement 2.
Stuff.

B. Plan a project that involves the participation of your family to identify the "stuff" your family no longer needs. Complete your project by donating, repurposing, or recycling these items.

Courtesy of Vanilla Partners

Requirement 2.

Stuff.

C. Discuss with your counselor how having too much "stuff" affects you, your family, and your community. Include the following: the financial impact, time spent, maintenance, health, storage, and waste. Include in your discussion the practices that can be used to avoid accumulating too much "stuff."

Courtesy of Vanilla Partners

Requirement 3.

Do A and B

A. Explain to your counselor how the planetary life-support systems (soil, climate, freshwater, atmospheric, nutrient, oceanic, ecosystems, and species) support life on Earth and interact with one another.

Requirement 3.

A. Our World - Life Support System

http://youtu.be/FI4Dwzwoa2M

<object width="560" height="315"><param name="movie" value="//www.youtube.com/v/FI4Dwzwoa2M?version=3&hl=en_US&rel=0"></param><param name="allowFullScreen" value="true"></param><param name="allowscriptaccess" value="always"></param><embed src="//www.youtube.com/v/FI4Dwzwoa2M?version=3&hl=en_US&rel=0" type="application/x-shockwave-flash" width="560" height="315" allowscriptaccess="always" allowfullscreen="true"></embed></object>

Requirement 3.

Do A and B

B. Tell how the harvesting or production of raw materials (by extraction or recycling), along with distribution of the resulting products, consumption, and disposal/repurposing, influences current and future sustainability thinking and planning.

Many countries have financed their development through resource extraction. However, there are risks related to natural resource wealth. These include volatile economic growth; limited job creation; violent conflicts; corruption; environmental degradation; gender violence; and spread of HIV and AIDS among communities impacted by extraction activities. Such negative outcomes of resource extraction, however, are not inevitable. They can be tackled through effective strategies, legal frameworks and policies.

Bingham Canyon Mine Landslide

Requirement 4. A.

A. **Plastic waste.** Discuss the impact plastic waste has on the environment (land, water, air). Learn about the number system for plastic recyclables, and determine which plastics are more commonly recycled. Find out what the trash vortex is and how it was formed.

Courtesy of Vanilla Partners

Requirement 4. A.

A. **Plastic waste.** Learn about the number system for plastic recyclables, and determine which plastics are more commonly recycled.

#1: **PET or PETE** (polyethylene terephthalate): easily recycled, not found to leach. Used in water, juice and soft drink bottles. We recycled this type of plastic and make it into other products; bags, packaging, and more. Call us at **800-720-2247** about what we can create with this material.

#2**: HDPE** (high-density polyethylene): easily recycled, not found to leach. Used in milk jugs, plastic shopping bags, detergent and shampoo bottles.

#3: **PVC or Vinyl** (polyvinyl chloride): *not* recyclable; soft PVC **can** leach toxic phthalates. Used in some cling wraps, children's toys, fashion accessories, rain gear, building materials, detergent and spray bottles.

#4: **LDPE** (low-density polyethylene): recyclable at recycling centers; not found to leach. Used in most plastic shopping bags, cling wraps, some baby bottles and reusable drink & food containers.

#5: **PP** (polypropylene): Recyclable in some curbside programs, but in most cases this can not be recycled in the United States. This material is **not** found to leach. Used in the Green Bag™ Reusable Shopping tote and among other things; baby bottles, most yogurt and deli takeout containers, Tupperware- and Rubbermaid-type reusable food and drink containers. This material is being recycled in Australia where the bag was first in use.

#6: **PS** (polystyrene): recyclable in some curbside programs, *can* leach styrene, a neurotoxin. Used in rigid foam drink cups, takeout food containers, egg containers, some plastic cutlery and more.

#7: **Mixed**: This code applies to all other plastics, notably PC, or Polycarbonate, this is where you might find the infamous, bisphenol-A (BPA). Polycarbonate also **don't** recycle. But #7 also includes the relatively **benign new** copolyester Tritan plastic. This is where it gets tricky. A lot of different plastics fall into this category and to understand what has BPA and what does't is difficult.

Requirement 4. A.

A. **Plastic waste.** Find out what the trash vortex is and how it was formed.

The Great Pacific garbage patch formed gradually as a result of marine pollution gathered by oceanic currents. The garbage patch occupies a large and relatively stationary region of the North Pacific Ocean bound by the North Pacific Gyre (a remote area commonly referred to as the horse latitudes. The gyre's rotational pattern draws in waste material from across the North Pacific Ocean, including coastal waters off North America and Japan. As material is captured in the currents, wind-driven surface currents gradually move floating debris toward the center, trapping it in the region.

Pollutants range in size from abandoned fishing nets to micro-pellets used in abrasive cleaners.] Currents carry debris from the west coast of North America to the gyre in about six years, and debris from the east coast of Asia in a year or less. Logically, the land-based sources of pollutants and plastics come from the great rivers from around the world. The Ganges, in India, is an example of a source of major sea pollution

Requirement 4. B.

B. **Electronic waste.** Choose three electronic devices in your household. Find out the average lifespan of each, what happens to these devices once they pass their useful life, and whether they can be recycled in whole or part. Discuss the impact of electronic waste on the environment.

Courtesy of Vanilla Partners

Requirement 4.C.

C. **Food waste.** Learn about the value of composting and how to start a compost pile. Start a compost pile appropriate for your living situation. Tell what can be done with the compost when it is ready for use.

How to Compost

Start your compost pile on bare earth. This allows worms and other beneficial organisms to aerate the compost and be transported to your garden beds. Lay twigs or straw first, a few inches deep. This aids drainage and helps aerate the pile.

Add compost materials in layers, alternating moist and dry. Moist ingredients are food scraps, tea bags, seaweed, etc. Dry materials are straw, leaves, and wood ashes. If you have wood ashes, sprinkle in thin layers, or they will clump together and be slow to break down.

Add manure, green manure (clover, buckwheat, wheatgrass, grass clippings) or any nitrogen source. This activates the compost pile and speeds the process along.

Keep compost moist. Water occasionally, or let rain do the job.

Cover with anything you have - wood, plastic sheeting, carpet scraps. Covering helps retain moisture and heat, two essentials for compost. Covering also prevents the compost from being over-watered by rain. The compost should be moist, but not soaked and sodden.

Turn. Every few weeks give the pile a quick turn with a pitchfork or shovel. This aerates the pile. Oxygen is required for the process to work, and turning "adds" oxygen. You can skip this step if you have a ready supply of coarse material, like straw.

Once your compost pile is established, add new materials by mixing them in, rather than by adding them in layers. Mixing, or turning, the compost pile is key to aerating the composting materials and speeding the process to completion.

COMPOST FLOW CHART

Requirement 4. D.

Species decline. Explain the term species (plant or animal) decline. Discuss the human activities that contribute to species decline, what can be done to help reverse the decline, and its impact on a sustainable environment

"Species disappearing at an alarming rate, report says"

At least 15 species have gone extinct in the past 20 years and another 12 survive only in captivity, the World Conservation Union said in a report that accompanies its annual "Red List."
Current extinction rates are at least 100 to 1,000 times higher than natural rates found in the fossil record, the report stated. The data were released as 3,500 delegates gathered in Bangkok, Thailand, for a World Conservation Union conference focused on halting what's deemed an extinction crisis.
The report concluded that humans are the main reason for most species' declines. "Habitat destruction and degradation are the leading threats," the union said in a statement, "but other significant pressures include over-exploitation (for food, pets, and medicine), introduced species, pollution, and disease. Climate change is increasingly recognized as a serious threat."

Requirement 4. E.

World population. Learn how the world's population affects the sustainability of Earth. Discuss three human activities that may contribute to putting Earth at risk, now and in the future

Human impact on the environment is a function of population size, per capita consumption and the environmental damage caused by the technology used to produce what is consumed. People in developed countries have the greatest impact on the global environment. The 20 per cent of the world's people living in the highest income countries are responsible for 86 per cent of total private consumption compared with the poorest 20 per cent, who account for a mere 1.3 per cent. The richest fifth account for 53 per cent of carbon dioxide emissions, the poorest fifth, 3 per cent. A child born in the industrial world adds more to consumption and pollution levels in one lifetime than do 30-50 children born in developing countries. As living standards rise in developing countries, the environmental consequences of population growth will be amplified with ever-increasing numbers of people aspiring, justifiably, to "live better."

Requirement 4. E.

World Population Map

Courtesy of Vanilla Partners

Requirement 4. F.

F. **Climate change.** Find a world map that shows the pattern of temperature change for a period of at least 100 years. Share this map with your counselor, and discuss three factors that scientists believe affect the global weather and temperature.

Requirement 4. F.

F. **Climate change.**

Cold and warm periods punctuate Earth's long history. Some were fairly short; others spanned hundreds of thousands of years. In some cold periods, glaciers grew and spread over large regions. In subsequent warm periods, the ice retreated. Each period profoundly affected plant and animal life. The most recent cool period, often called the "Little Ice Age," ended in western Europe around 1850. Since the turn of the 20th century, temperatures have been rising steadily throughout the world. But it is not yet clear how much of this global warming is due to natural causes and how much derives from human activities, such as the burning of fossil fuels, industrial pollution and the clearing of forests.

Requirement 5.

Do the Following:

A. After completing requirements 1 through 4, have a family meeting. Discuss what your family has learned about what it means to be a sustainable citizen. Talk about the behavioral changes and life choices your family can make to live more sustainably. Share what you learn with your counselor.

Requirement 5.
Do the Following:

b. Discuss with your counselor how living by the Scout Oath and Scout Law in your daily life helps promote sustainability and good stewardship.

Requirement 6.

Learn about career opportunities in the sustainability field. Pick one and find out the education, training, and experience required. Discuss what you have learned with your counselor and explain why this career might interest you.

Resources

- **Questions or comments on this presentation please contact: Vanillapartners@gmail.com or go to VanillaStrategies.com for more information**

- **AAS Center for Science, Technology and Sustainability**
  Website: www.aaas.org
- **American Chemical Society Green Chemistry Institute**
  Website: www.chemistry.org/greenchemistryinstitute
- **American Forest and Paper Association**
  Website: http://www.afandpa.org
- **American Institute of Biological Sciences**
  Website: http://www.aibs.org
- **Association of Fish and Wildlife Agencies**
  Telephone: 202-624-7890
  Website: http://www.fishwildlife.org
- **Center for Biological Diversity**
  Website: http://www.biologicaldiversity.org/news/center/articles/2010/new-scientist-02-24-2010.html
- **Eartheasy**
  Website: http://eartheasy.com/grow_compost.html
- **Ecological Society of America**
  Website: www.esa.org
- **EnviroLink Network**
  Website: http://www.envirolink.org
- **Environmental Protection Agency/**
  Telephone: 202-272-0167
  Website: http://www.epa.gov and http://water.epa.gov
- **Global Footprint Network**
  Website: http://www.footprintnetwork.org

Resources

- **Leave No Trace Center for Outdoor Ethics**
  Toll-free telephone: 800-332-4100
  Website: http://www.lnt.org
- **NASA Climate Kids**
  Website: http://climatekids.nasa.gov
- **The Nature Conservancy**
  Website: http://www.nature.org
- **Natural Resources Conservation Service**
  Telephone: 202-720-3210
  Website: http://www.nrcs.usda.gov
- **Reuseit**
  Website: http://www.reuseit.com/learn-more/top-facts/impact-on-oceans
- **Society of American Foresters**
  Website: http://www.eforester.org
- **Sustainable Forestry Initiative**
  Website: http://www.sfiprogram.org
- **U.S. Environmental Protection Agency**
  Websites: http://www.epa.gov/climatestudents http://www.epa.gov/P3
- **U.S. Fish and Wildlife Service**
  Toll-free telephone: 800-344-9453
  Website: http://www.fws.gov
- **USDA Forest Service**
  Website: http://www.fs.fed.us
- **Ecological Footprint Quiz**
  Website: http://myfootprint.org/