
Environmental Department Newsletter Articles

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The Keystone XL Pipeline

By Tim Nelson

A decision will be made soon concerning the future of America's ongoing dependence of oil. The issue, currently awaiting the response from the President, involves the approval or denial of the expansion of the controversial Keystone XL pipeline, the main transport of tar sands oil from Canada to the United States. Opponents to the pipeline argue that the extraction process of oil from tar sands uses vast amounts of energy and water, destroys sensitive cultural and environmental areas, causes pollution, and is a step backwards in regards to America's vision on climate change. In addition, the economic impact of the pipeline will only worsen as the pipeline would serve as a transport of domestic oil from northern reaches (i.e. Montana) to southern reaches (i.e. Texas) for export thus, potentially leading to an increase in the price of gas in the United States. Proponents argue that the pipeline is a safer means of conveyance as opposed to conventional modes of transportation (i.e. tanker, rail) that result in higher greenhouse emissions and put the environment at a higher risk. Also, proponents argue that the Keystone XL pipeline will create 20,000 new jobs and up to \$7 billion in revenue for the U.S. economy.

Currently, the Keystone XL pipeline, operated and owned by TransCanada Corporation, connects Canada's tar sands to the United States via pipelines running from Hardisty, Alberta to Steele City, Nebraska where it is routed east to Wood River and Patoka, Illinois (online 2010) and south to Cushing, Oklahoma (online February 2011) (Figure 1). Phase 3 of the proposed pipeline extension would continue from Cushing, Oklahoma where it will terminate in Nederland and Port Arthur, Texas. An additional extension, Phase 4, will enter the U.S. at Morgan, Montana and travel to Steele City, Nebraska. Most environmental opposition has been voiced over this extension due in part to the area in which it will traverse. One of these regions would be over the Ogallala Aquifer in Nebraska. The Ogallala Aquifer is one of the largest sources of freshwater in the world, spans 8 states, supplies water to nearly 200 million people, and supports a \$20 billion agricultural industry. A major leak in this region would contaminate water resources thus, posing health problems and resulting in the endangerment of agricultural food supply.



Figure 1. Keystone XL pipeline (current and proposed lines). Photo: Wikipedia

In addition to our dependence to this non-renewable resource, there are a slew of issues that surround the production, shipment, and use of petroleum based products. Some of these

examples include, but are not limited to, pollution, climate change, habitat destruction, and much more. Tar sand, or bituminous oil, is referred to as unconventional oil since it is unlike hydrocarbons produced from a more traditional oil well. Tar sands, according to Canadian authorities are referred to as “petroleum that exists in the semi-solid to solid phase in natural deposits. Bitumen is a thick, sticky form of hydrocarbon, so heavy and viscous (thick) that it will not flow unless heated or diluted with lighter hydrocarbons. At room temperature, it is much like cold molasses.” For this reason, bitumen must be heated or mixed with other hydrocarbon sources for transportation. Additional steam injections and refining result in a 12% increase in greenhouse gas emissions per barrel for this oil source.

Environmental threats surrounding the production of oil from tar sands are greater than conventional means of pumping oil from wells. Due to the viscosity of the resource, bitumen is heavily concentrated in metals and is further contaminated by the extraction process. Since up to 90% of Canada’s bitumen is below ground, open pit mining is not a viable option. Instead, injection of steam and other solvents to liquidize the product increases the likelihood of contamination of water resources and results in higher carbon emissions. Water contamination by these extraction processes has been linked to abnormalities in fish eggs and tumors and other deformities in fish from Lake Athabasca and its tributaries. Similarly, human and wildlife health concerns have been linked to the extraction of oil from the tar sands since the products of hydrocarbons (i.e. benzene, toluene, ethyl benzene, and xylene) are known carcinogens. Migratory birds and other wildlife (i.e. moose) utilizing the fragile, nearby boreal forests are at risk of contamination and threat of habitat loss. In addition, cultural resources such as clean water sources, loss of gathering grounds, and destruction of sacred places and artifacts are at risk near the source of bitumen extraction at tar sand mines and all along areas where the pipeline exists or is proposed to run. Currently, the existing Keystone XL Pipeline is located within 30 miles of over 150 Indigenous communities in Canada, and TransCanada Corporation has facilities on a dozen First Nation reserves. Over 100 miles of the pipeline pass through Native American reservations, and numerous Native American communities are within few miles of TransCanada departments.

The future of America’s climate change policy can easily be determined by the decision the President will soon make in regards to the expansion of the Keystone XL pipeline. If we desire to free ourselves from the quickly fading grip of oil, it would be desirable to make decisions, policies, and direct funding to sources that are renewable and worthwhile. The change will not happen overnight and it will take a gradual change to prove the worthwhile investment from nonrenewable to renewable energy. Current projections for near depletion of petroleum resources are near the year 2050! A decision by the President to halt the installation of pipe to haul more nonrenewable resources will be a step in the right direction to making our country less dependent on petroleum based products.

For more information on hydrocarbons, non-point source pollution, and ways you can help to prevent pollution, please call, email, or visit the Environmental Department.

Environmental Department's Educational Program

By Tim Nelson

This year is sure to be a blast as the Environmental Department is gearing up for another summer of fun, exciting, and helpful community projects!!! Some of the activities and field trips that are being planned include, but are not limited to, the following:

- Surf Day
- Watershed Model
- Fish Identification Workshop
- Pollution Prevention activities at TBR
- Marine Laboratory in Trinidad
- River Day (kayaking, swimming, etc.)
- Hike the Headwaters Forest Reserve
- Calculate the Stream Flow of Elk River
- Bird & Plant Exploration at the Humboldt Bay National Wildlife Refuge
- Beach Clean-up at South Spit Beach
- Tree Planting on TBR
- Camping Trip(s)
- Fishing Trip(s)

Come out and enjoy the summer with us! For more information on summer activities, please call, email, or visit the Environmental Department. Also, the Environmental Department's Facebook page has recently been modified to include all departments of the Wiyot Tribe. Become our "Friend" and/or "Like" our page to get updates on upcoming environmental education dates/times, current projects, or to contact us.

Your Trash & Global Warming

By Tim Nelson

It may be a surprise to you when you hear that what you throw away can play a huge factor in the warming of our planet. It has been told to us that the input of carbon dioxide (CO₂) into our environment either by burning fossil fuels or other means is the foremost reason as to why our glaciers are melting and our seas are rising. You may be surprised to hear that methane (CH₄), a product from the decomposition of landfill waste, is twenty three times more effective at trapping heat in our atmosphere than carbon dioxide! Solid waste landfills are the single largest man-made source of methane gas in the United States. So, the next time you throw something away, ask yourself two simple questions:

- **Can I recycle or compost this?**
- **What can I do to reduce the amount of garbage that I am depositing into landfills?**

Can I recycle or compost this?

Most often than not, the answer will be yes. Your local waste facility will take just about every item whether recyclable, hazardous, electronic, etc. for free or a minimal fee. Currently, Californians throw away millions of tons of recyclable material every year. According to the California Integrated Waste Management Board (CIWMB), up to 60% of landfill material can be recycled or composted. Unfortunately, once this solid waste is deposited into landfills and soiled, much of it is unable to be recycled. Similarly, it would be too time/resource consuming to filter through trash piles recycling plastics, metal, etc. Therefore, it is the individuals' responsibilities to make sure that items are being recycled and composted correctly. This really is a case where individual responsibility is the sole driver to overall success. More information about composting is listed below:

Composting - Structures

Composting is the controlled decomposition of organic material such as leaves, twigs, grass clippings, and vegetable food waste. In nature, organic material falls to the ground where it is either consumed by organisms or naturally decomposes and returns valuable nutrients back to the soil. These valuable nutrients aid in the growth of successive plants that in turn are either consumed or decompose and the cycle goes on. These processes will happen whether you want them to or not so it is the best option to take advantage of these available resources. The nutrients in our yard and kitchen scraps help to grow a beautiful, productive garden and can be left out of our garbage where they will eventually end up in our landfills.

One can very well begin to compost by simply starting a pile or heap in their backyard but there are disadvantages to this method. Rodents and odor can be the two major nuisances to your backyard "heap." Rats, raccoons, mice, etc. enjoy your kitchen scraps and the ever-present wet weather on the North Coast can soak your compost pile and create a smelly, nitrogen enriched environment. For these two reasons alone, it is important to create a structure that will keep

rodents at bay and shelter your pile from the elements so you can produce nutrient rich compost.

Important aspects to think about when creating your own composting structure include placement, size, shelter from rain, wind, and wildlife, air flow, and easy access when properly maintaining your pile. Usually, the placement of a compost structure will be tailored to the amount of space available but if this is not the case, an ideal spot would be away from any window in your house where odor may be a potential problem. Next, the size of your compost bin should be large enough to hold no more than a 3' X 3' pile of a green/brown material mix. As mentioned earlier, be sure to shelter your pile from wind, rain and wildlife as most troubleshooting dilemmas involve these problems. Air flow is very important in a compost pile because the bacteria and fungus alive in your compost pile need oxygen to survive. By providing a constant air flow through your structure (i.e. drilling holes) and by turning your pile every two weeks or so, you are ensuring that the survival of the beneficial bacteria and you are not delaying adequate decomposition. Lastly, you want to make sure that when you are building a compost structure that it will be easy to maintain your pile without any hassle. Make sure that you can "turn" your pile and not have to worry about any potential harm you can inflict upon yourself or the structure.

Composting – The Pile

Whether you have leaves from a tree, grass clippings from your lawn, and/or kitchen scraps from dinner, these valuable nutrients can aid in the growth of a home/community garden or to simply decrease the amount of one's weekly trash since 30% of all household waste can be composted. By doing your part to compost on a regular basis, you ensure that nutrients are returned to the soil rather than trucked to a landfill while improving the soil fertility, structure, aeration, and moisture retention. It is easy to do and this article is designed to help you begin, maintain, and use valuable compost.

A well balanced compost pile only requires the ingredients that nature supplies. These include *nitrogen-rich green material* (i.e. kitchen scraps, tea bags-NO STAPLES-, coffee grounds, grass clippings, etc.) which is needed to heat the pile and *carbon-rich brown material* (i.e. twigs no larger than a pencil, leaves, straw, dried grass) needed to feed the pile. As previously stated in part 1, air and water must be balanced as well because a pile that is too wet or dry will not decompose adequately. To avoid problems, DO NOT ADD meat, bones, dairy products (rodents and odor) or dog and cat manure (disease-risk) to your compost pile. NOTE: You may add lime, manure, soil, and blood meal to your compost pile while maintaining the proper wetness/dryness in order to speed up decomposition.

Now that we know the proper ingredients of an adequate compost pile, we must now build our working pile. Like layers on a cake, we want to build a balanced pile that will have the right amount of "wet" and "dry" material. Begin by laying down a layer of brown material no larger than 4-8 inches deep. Next, add a similar sized layer of green material on top and alternate until you have a pile no larger than 3' high X 3' wide. Maintain the pile by adding dry material when

wet or by lightly watering the pile when dry. Once your pile is completed and a balanced environment is achieved, simply “turn” the pile (top layer is now the bottom, bottom is top) every two weeks. Continuous additions of material such as kitchen scraps is acceptable but must be maintained by digging the food into the pile or covering with brown material. Compost will eventually occur in a timeline of ~6 months if left alone but if turned every two weeks, a timeline of two weeks to four months is more likely.

Composting – Troubleshooting

Problems arise when composting but the solutions are easy to manage. Some common hardships usually involve odor, infestation, and/or decomposition rate. If your pile smells or has flies then your pile is too “wet” or fresh material is being exposed. The easy solution is to either mix the fresh material into the pile or mix “dry” brown material into pile. Similarly, if you notice that your compost pile is not breaking down fast enough, try lightly sprinkling your pile and turning the pile. Rule of thumb is to keep your compost pile as moist as a wrung-out sponge. Lastly, rodent infestation can be a nuisance to your compost pile as last night’s leftovers can end up strung about your yard and soon you will be sheltering animals like rats, raccoons, skunks, etc. In order to avoid becoming an animal shelter, make sure that you cover or enclose your compost pile and deter potential pests by properly maintaining the pile (i.e. decrease odor).

To learn more about composting, to pick up some very useful brochures, or to simply ask questions, call or visit the Environmental Department or visit these helpful web sites below:

www.epa.gov/compost

www.howtocompost.org

www.compostguide.com

www.recyclenow.org/r_composting_trouble.html

Besides, recycling and composting, what can I do to reduce the amount of garbage that I am depositing into landfills?

In order to deposit waste into a landfill, the item(s) must be generated first. Therefore, in order to reduce your deposit, choose items in bulk rather than individual packages. Also, reuse containers for lunches rather than using plastic bags. Another tip is to avoid individual silverware, plates, and cups by using washable items. More information about the ease and benefits of going paperless is listed below:

Going Paperless!

Paper has been in use since 105 A.D. as the Egyptians and Chinese used the product to make records and inscriptions. As you read this article hopefully you will take a minute to think about how the pieces of paper that you hold in your hand came to be. If you’re reading this article via email, then you will be happy to hear how much you are benefiting the world by simply going paperless. It’s everywhere now! Your bills, company newsletters, books, magazines, and now

the Wiyot tribal newsletter, are asking you to conserve paper and get your information via email. Simple changes on an individual basis can be viewed as small and minute but if more people joined to help the cause, the impacts would be great.

Going paperless is one of the easiest ways for an individual to go “green.” You are simply taking the stacks of paper out of your life and replacing them with information that can be viewed on a computer screen. If only one in five households switched to electronic bills, statements and payments, the collective impact would save **151 million pounds of paper, avoid filling 8.6 million garbage bags and eliminate 2 million tons of greenhouse gas emissions.** Now imagine if 2 or 3 households began to make this switch? We would collectively save 300-400 millions tons of paper, avoid filling 17-26 million garbage bags to be dumped in landfills, and eliminate 4-6 million tons of greenhouse gas emissions from paper manufacturing processes and conserve forests for carbon sequestration. It’s amazing that something as easy as a couple clicks of a mouse button can help to clean up our planet!

Accompanying the pros to going paperless, “inconveniences,” rather than cons, can deter individuals. Individuals may not be able to make this switch due to the fact that they do not have access to a computer, they are not computer savvy enough to make the switch, or they are concerned to place too much information online for fear of theft. These are all reasonable excuses as to why an individual may have difficulty making the switch, but they should not be reasons to completely ignore the important reason we all should do so. I do admit that access to a computer makes going paperless very difficult but not entirely impossible. Other than this reason alone, individuals should not have any reason to continue receiving information via paper because the process is VERY simple. Information such as your bank statements (that are most often wrong when you eventually receive it 4-5 days later) to your bills and newsletter, can all be changed over to information that can be sent to your email account. This gives you the opportunity to print at your leisure and conserve a large amount of paper that you would otherwise throw in the trash or shred. If you’re concerned about theft, companies, such as banks, offer zero-liability policies that exempt you if theft occurs.

If you haven’t already done so, take the hassle of large stacks of papers, misplaced information and consequential late payments and fees out of your life and go paperless! You’ll save millions of trees, keep millions of tons of garbage out of our landfill, and help to clean up our air by keeping carbon sequestered in the one place where paper comes from, our forests. If you do use paper, please remember to use recycled paper in order to reduce continued logging of forests, cut down emissions used in the pulp and paper manufacturing process, and reduce waste.