



Rez Recycler

What is Nonpoint Source Pollution and How Does It Affect Me?

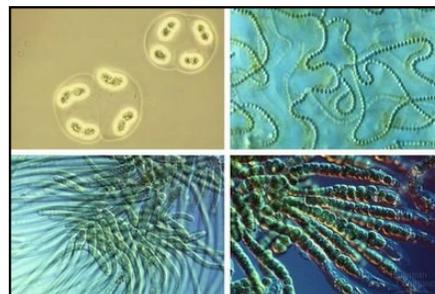
Nonpoint source pollution is water pollution that cannot be traced to a specific origin. On the Prairie Band Potawatomi Reservation, nonpoint source pollution is primarily the result of agricultural runoff with the major contributor being sedimentation. Sedimentation is the adverse accumulation of sediment in streams and other bodies of water.

You may wonder how sediment or soil could pose a threat to water quality. During a rainfall event, drops of water strike the ground with measurable force, displacing exposed soil particles. As precipitation amounts increase, loosened soil particles get transported away to the nearest stream or creek, along with any residual pesticides or fertilizers. These displaced sediments begin to accumulate causing nearby waterways to become shallow and murky. As water opacity increases, the amount of sunlight reaching aquatic plants decreases. With less sunlight available for photosynthesis, aquatic plants contribute less oxygen to the water. Dissolved oxygen levels in the water are directly related to the amount of life that water can sustain.



A raindrop striking a surface
Source: NSERL's WEPP95 CD-ROM

An additional effect of agricultural runoff is the buildup of nutrients in the water such as phosphorus and nitrogen. These nutrients are commonly found in chemically applied fertilizers. As nutrient levels in the water rise, algae such as cyanobacteria flourish. The short-lived algae rapidly reproduce and die



A microscopic look at Cyanobacterium
Source: blogs.scientificamerican.com

off, leaving their carcasses behind. The carcasses accumulate and stimulate decomposition activities. These events further deplete the water of dissolved oxygen needed to sustain fish and wildlife populations.

Along with the adverse effects to the waterways, the process of sedimentation is directly related to erosion and over time accumulates into loss of cropland. However, there are several ways to minimize nonpoint source pollution and sedimentation. A common best management practice is the planting of cover crops. This method involves planting a crop after harvest, such as legumes or rye. The cover crop foliage provides shelter from the impact of precipitation and the root systems hold soil intact, decreasing erosion, sedimentation and leaching of nutrients. Overall soil quality is improved when cover crops are plowed back into the soil by contributing organic matter below the surface. This eliminates the need to later apply a chemical fertilizer to the surface. Organic matter in the soil also serves as food for microbes that help to prevent disease and pests. Some cover crops, such as rye and oats, secrete compounds that act as natural weed deterrents.

The planting of cover crops is just one of the many ways to help reduce nonpoint source pollution. For more information on cover crops and other best management practices, feel free to contact the Planning and Environmental Protection office at 966-2946.

~ K. Hulbutta

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An Update on the Tribe's Air Quality Monitor

If you have driven on 142nd between M and N Road and managed to spot the small shelter within the Integrated Solid Waste Management Center then you have witnessed our Met One BAM-1020 PM_{2.5} monitor in action. This monitor is used to collect and estimate the concentration of particulates equal to or less than 2.5 micrometers. To get an idea of how small 2.5 micrometers is, imagine the size of an object less than 1/28th the average width of a human hair. That is tiny! And is the main reason the Prairie Band Potawatomi Air Program has focused on capturing PM_{2.5} data. These “fine” particles are believed to pose the largest health risks because they can enter deep into our lungs. Also, our reservation is located only 9 miles from the largest coal-fired power plant in the state of Kansas and we are also surrounded by miles and miles of farmland. So now that you know a little of what the BAM-1020 monitor does, I can show you what it has captured within the last year. Two additional tables - temperature and precipitation - are also shown to compare with the PM_{2.5} data.

Temperature plays a pretty significant role when capturing PM_{2.5} data. Levels of PM_{2.5} vary throughout the year but tend to be high during the winter months when strong temperature inversions are most likely (NWS 2010). Inversions occur when a layer of cold air becomes trapped at the earth's surface beneath a level of warmer air, which acts as a lid to trap

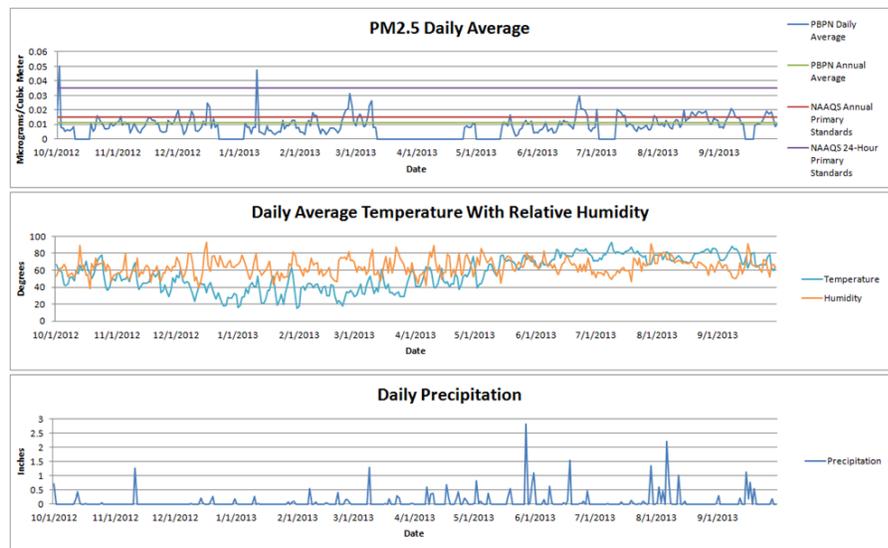
pollutants at the earth's surface (UDEQ 2009). Inversions contribute to poor air quality, primarily increased levels of particulate matter (UDEQ 2009; NWS 2010) caused by contributors like vehicles, fireplaces, and industry during the winter months. As you can see the PBPB PM_{2.5} levels had high spikes during the colder months.

Precipitation is also interesting to compare with PM_{2.5} levels because like many of us notice, the air looks, smells, and even feels cleaner after a storm. The reasoning for this is rain droplets act as sort of a sponge and absorb particles that have mixed with sulfur dioxide and nitrous

oxides gases. These gases are the primary types emitted into the air from power plants and vehicles. So, after it rains the air is “cleaned” from the particulate matter that looms in the sky. This isn't a good thing for it leads to acid rain, but that is another story. Now to get back to the data, it may be hard to see that the PM_{2.5} levels dropped significantly after a thunderstorm but it's there.

This is a little glimpse of what the Air Program is currently working on and it will be exciting to see the data after we have reached our 3-year baseline.

~ S. White



October 2012 – September 2013 PBPB PM_{2.5} Monitoring

The Glacier Petroleum Oil Spill of 1997

“In the spring/early summer of 1997, there was an oil spill as a result of a failure of a check valve at an oil pumping rig at approximately 214th and E Road that went unobserved for as long as a day. When the check valve failed at the tank, it overflowed and traveled a half of a mile and spilled into Big Soldier Creek and on downstream. It is estimated that hundreds to thousands of gallons of Kansas Sweet Crude oil spilled.” *E. Wendt - PBPB Environmental Inventory.*

Glacier Petroleum and the land owner did not compen-



sate for recovery efforts provided by PBPB, Jackson County and US EPA Region 7 employees. The Holton Recorder's Vol. 146, Issue 23 dated March 20, 2013 made the public aware that seismic testing for oil will be conducted in Soldier. Our public water supply comes from surface & ground waters. When our waters are tainted with contaminants, this does affect you and your loved ones.

Please be aware that oil exploration and production is among us. What can you do if you are aware of any type of spill? Immediately contact

the National Response Center at 1-800-424-8802 or EPA-R7 contact is Scott D. Hayes, Branch Chief, phone 913-551-7670, e-mail hayes.scott@epa.gov .

*“The primary function of the **National Response Center** is to serve as the sole national point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. The NRC also takes Terrorist/Suspicious Activity Reports and Maritime Security Breach Reports.” -U.S. EPA*

Wetland Program News

The Division of Planning and Environmental Protection coordinated a wetlands educational activity and photo demonstration for the youth participants at the PBPN Boys and Girls Club. Staff mem-

bers, Kyle Miller, Verna Potts and Virginia LeClere presented information on wetland characteristics, functions, and species identification. The youth participants were encouraged to explore the

wetland area and record their experiences through photographs. They were all very creative and took many good pictures of the wetlands. Some of the pictures are included below.



Gish Hale snaps a pic

KJ and Kyle Miller

Danielle Rector and Halina Williamson

Photo by Nahconbe Wahwassuck

Photo by Isaac Hale

Photo by Knowee Potts

Photo by Antonio Dominguez

Photo by Gish Hale

Photo by Kio LeClere & Alyssa Garcia

Department Completes EPA Region 7 Wetlands Monitoring Workshop

This past August several PBPN employees (Virginia, Kyle & Verna) completed the EPA's Wetlands Monitoring Workshop held at EPA headquarters and a field day at Haskell & Baker wetlands. Topics included: reasons for monitoring a wetland, methods/indicator development, regulatory and non-regulatory issues, probabilistic status & trends monitoring, GIS mapping and Rapid Floristic Quality Assessment. EPA staff, State & Tribal employees gathered and

shared wetland knowledge. Dr. Dan Wildcat met with trainees during day two of the workshop. He gave a historical presentation of the significance of Haskell Wetlands. The Haskell Wetlands had been channelized to drain the wetlands to make it available for agricultural practices. The channels can still be viewed from 31st Street. Today, the wetlands are used as an outdoor classroom, for cultural activities and a place to reconnect with the great outdoors. ~ V. Potts



Workshop participants at Haskell Wetlands

What is a Watershed?

It's the land that water flows across or under on its way to a stream, river, or lake.

How do watersheds work?

The landscape is made up of many interconnected basins, or watersheds. Within each watershed, all water runs to the lowest point—a stream, river, or lake. On its way, water travels over the surface and across farm fields, forest land, suburban lawns, and city streets, or it seeps into the soil and travels as ground water. Large watersheds like the ones for the Mississippi River, Columbia River, and Chesapeake Bay are made up of many smaller watersheds across several states.

Are all watersheds the same?

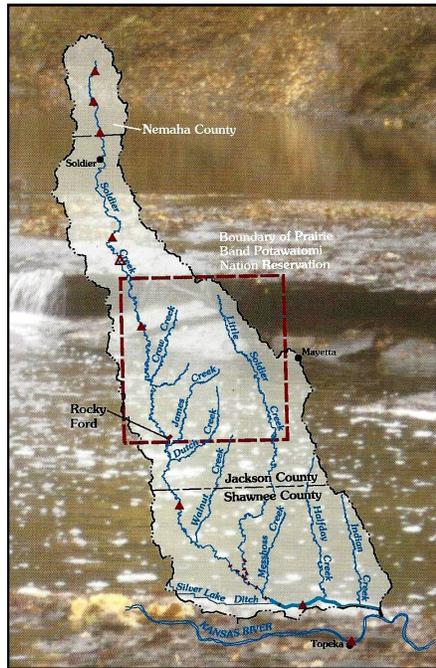
Not at all. Watersheds come in many different shapes and sizes and have many different features. Watersheds can have hills or mountains or be nearly flat. They can have farmland, rangeland, small towns, and big cities. Parts of your watershed can be so rough, rocky, or marshy that they're suited only for certain trees, plants, and wildlife.

Your watershed community.

Everyone lives in a watershed. You and everyone in your watershed are part of the watershed community. The animals, birds, and fish are, too. You influence what happens in your watershed, good or bad, by how you treat the natural resources—the soil, water, air, plants, and animals. What happens in your small watershed also affects the larger water-

shed downstream.

There are many things you and your watershed community can do to keep your watershed healthy and productive. To learn what you can do to take care of your watershed, call 1-800-THE-SOIL or your local Natural Resources conservation Service office. It's listed in the telephone book under U.S. Government, Department of Agriculture. ~ *from NRCS Program Aid Number 420*



*Soldier Creek Watershed
Source: USGS/WRIR 02-4047*

We all live in a watershed.

Everything we do in our watershed affects the soil, water, air, plants, and animals.

Let's work together to keep our watershed healthy. Here are some things you can do.

1

On the farm

Keep plant residue on the surface of sloping cropland. This reduces runoff and prevents sediment, fertilizers, and pesticides from entering streams, rivers, lakes, and ponds.

2

At home

Landscape your yard with plants that need a minimum of water and fertilizer. Use only the amount of fertilizers and pesticides that plants need.

3

In your community

Protect wetlands that serve as natural buffers against pollution, soil erosion, and flooding.

New Addition to the Planning & Environmental Protection Team



Environmental Technician Kalonie Hulbutta and her family

Please welcome Kalonie Hulbutta, the newest addition to the Division of Planning and Environmental Protection! Originally from Oklahoma City, OK, she is a member of the Apache Tribe of Oklahoma. Kalonie currently resides in Lawrence with her significant other James Green, daughter Kendall Green and their dog Nala. In her leisure time, she enjoys playing competitive softball and spending time with her family.

Kalonie received a Bachelor of Science in Environmental Studies from Haskell Indian Nations University. While at

Haskell, she worked as a research assistant in KU's Pharmaceutical Chemistry Labs and as a GIS researcher for the Center for Remote Sensing of Ice Sheets. After graduation, she worked as a Geographic Specialist for the Regional Census Center in Kansas City, MO.

"I appreciate the opportunity to make a positive impact and look forward to learning about Non Point Source Pollution in the Soldier Creek watershed and ways to mitigate its effects."

Oil, Gas & Coal—Our Love/Hate Relationship

Energy that is produced by oil and natural gas has revolutionized humanity and forever changed the landscape of our planet. The Second Industrial Revolution provided people with kerosene for lamps and heaters during the 1850's. One upside to this newfound process is that it helped to save the whale population from ultimate demise due to people's dependency upon whale oil. Upon refining the oil, an unwanted byproduct was produced: Gasoline. Once automobiles were mass produced after 1914, this transformed the land and gave people the means to travel, explore, & opened up new economic avenues. Oil and natural gas has become interwoven in almost all aspects of current living conditions of most Americans. We utilize this energy every day: driving to work, researching on computers, cell phones, etc. Being a consumer/polluter of our landscape, it becomes necessary to understand, contemplate, consider the ramifications of our actions in relation to oil and natural gas exploration and its' waste/byproducts such as "produced water, brine water, or fracking wastewater".

We need to take a more proactive approach from the beginning of the process to ensure quality plans are developed. By identifying potential problems from the start, this can help to mitigate future tribulations that may develop. As we seek new processes for energy, there are new problems that may arise as well. Take corn for instance, with ethanol being blended into gasoline, we are now seeing more Conservation Reserve Program (CRP) lands being plowed under for more

cropland, more fertilizer applied, and more water being used to provide us with a new source of 'clean energy'. Since corn is now a lucrative commodity, we also pay more at the grocery store for corn products and livestock that feed upon corn. Does this contribute to the high cost of bacon? Maybe, drought conditions coupled with corn used for ethanol are now contributing factors that have doubled the price of bacon.

A recent exploratory wildcat oil well was spudded adjacent to the Prairie Band Potawatomi Reservation last week ~ week of November 11th. Spudding means to initiate drilling operations, it is also an oil & gas term for first break or drill of

the surface before a well is introduced. You can visit the Kansas Corporation Commission website to view oil & gas. Once here click on "Intent to Drill". Permit # 1165625 can be viewed. Another source of information is the Kansas Geological Survey website to view oil & gas. We can ask ourselves this: our ancestors lived without electricity, automobiles, cell phones, computers (which all rely upon a source of energy) but can we? Probably not, so we need to be vigilant in being the best stewards of our land, air & water for our current and future children.
~ V. Potts

Wells on the Reservation				
Well	Location	Depth	Year	Shows of O or G
Wabaunsee #1	Sec 3-T8S-R14E	2,953'	1928	No shows—plugged
Gates #1	Sec 16-T9S-R14E	2,662'	1928	No shows—plugged
Miller #1	Sec 12-T9S-R13E	3,168'	1978	No shows—plugged
Wells near the Reservation				
Well	Location	Depth	Year	Shows of O or G
Pine #1	Sec 27-T7S-R13E	3,540'	1960	No shows—plugged
Meyer #1-24	Sec 24-T7S-R14E	3,485'	1982	No shows—plugged
DeVader #13-24	Sec 24-T7S-R14E	2,368'	2001	CBM test ?—plugged
Biddison #1-24	Sec 22-T7S-R15E	?	1982	No shows—plugged
Zule #1	Sec 14-T8S-R15E	2,587'	1964	No shows—plugged

Source: U.S. Department of the Interior, Assistant Secretary - Indian Affairs, Division of Energy & Mineral Development

In the Spirit of Halloween

The department exercised their creativity with a Recycling Pumpkin named Bale-y for HR's Pumpkin contest. He helped promote the department's mission to recycle.



Craig Wahwahsuck's son helped pass out candy at P&EP's Trunk or Treat table.

Wishkno Wakole gave bystanders quite a scare at this year's Trunk or Treat event!



**PRAIRIE BAND POTAWATOMI NATION
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[www.pbpindiantribe.com/
epa.aspx](http://www.pbpindiantribe.com/epa.aspx)**

Reminders from the Solid Waste Staff...

- Trash and recyclables are to be bagged and stowed in the provided receptacles with the exception of cardboard
- Recyclables do not need to be sorted
- Containers need to be **at the end of the driveway no later than 8:00 AM** on recycling and trash days
- Bagged waste outside the containers will be collected after an additional charge of \$15 has been paid
- A request for assistance form is available for residents needing to dispose of large or bulky items
 - The charge for this service is \$10 for non-seniors
 - Items will be removed by Solid Waste staff after payment has been received

If you have any questions or would like to start or stop waste collection services, please contact the office at 966-2946.



Hunter Potts sits on a plastic bale he worked on this summer



REDUCE, REUSE, RECYCLE!