

**Funder**

Funding is provided in part by the Nebraska Environmental Trust – providing grants to protect Nebraska's natural resources.

**INTRODUCTION**

**Narrator:**

When we wake in the morning, we don't give it a second thought. We just expect it to be there.

Twenty-four.

Seven.

Three hundred sixty-five.

Every day, by the twist of our hands clear, clean water pours out of our faucets and into our lives.

Every day, we take this finite resource for granted.

Every day, we continue to use more and more leading competing interests to debate - is the glass half full or half-empty?

Of all the water that covers the earth, 3 percent is fresh water, 2 percent is frozen in glaciers, leaving only 1 percent available for the world to drink.

As an infant, water makes up 78 percent of our body. By the time we reach adulthood, it drops to around 60 percent. Our body is so dependent on water that without it, we can only survive four days.

As important as fresh water is to our individual health it is equally important to the financial health of our nation. In the state of Nebraska, several years of drought combined with escalating water use by industry, agriculture, and communities have caused Nebraskan's to examine where their water is going. Or rather, where it's not.

**Ann Bleed:**

The real question I think for the state is whether we simply ignore it and in some areas see the amount of water decrease and eventually the use will decrease with it or whether we try to manage our supplies so that they can be sustained.

**John Lawson:**

Someday, maybe this nation will understand that that loaf of bread that's on the shelf in the grocery store starts out here.

**Tom Wurtz:**

You really can't have a viable city without water. I mean you can lose a lot of things, but you cannot lose water for a population of a half million people.

**Renaë Held:**

I think the endangered species and the human population can definitely co-exist. Sometimes it takes some compromise.

**Narrator:**

Compromise may be the only effective way to solve Nebraska's water crisis. But really, what do we know about our water? Where does it come from, who uses it, and for what purpose? And, with so many demands on this vital, limited resource - what is being done – and what can we do to sustain our water for the future?

**"The Water Under Nebraska" The Ogallala Aquifer and the connection between ground and surface water**

**Jim Goeke:**

This is all Ogallala that you see up here. These are cemented sandstones with inter-bedded silts and sands and gravels.

**Narrator:**

Near Roscoe, Jim Goeke has discovered a section of the Ogallala Aquifer that has been exposed by erosion.

**Jim Goeke:**

Outcrops like this give us an idea, a surfacial idea of what the aquifers are like below the land surface. The only thing these sands and gravels lack is water to be an aquifer.

***Narrator:***

Plainly put, an aquifer is underground body of water. It isn't a huge lake trapped within walls of a massive cave, but more like wet dirt. More accurately, very deep, very thick layers of sands, gravels, and clay that are saturated with water.

**Jim Goeke:**

The Ogallala, when you stop and think about it is a geologic garbage dump. It's a very complex formation of all these sediments that for millions of years have been carried eastward from the Rocky Mountains.

***Narrator:***

Flushed from the hyper-active mountains by ancient rivers, the eroded rock and sand eventually came to a rest on the Great Plains, as did the water that brought them. Scientists estimate that it took 14 million years to create the Ogallala Aquifer.

**Jim Goeke:**

The ground water systems have to move through these materials and it's not easy. Groundwater, because it has to move through the open spaces between these materials it only moves a matter of feet per year.

***Narrator:***

Only one-third of the Ogallala's land mass lies under Nebraska, but it contains sixty-five percent of the water. The deepest part of the entire aquifer system is located in the Sand Hills. Formed by ancient rivers that now lay buried under grass covered dunes, the Ogallala's main source of new water comes from rainfall.

**Jim Goeke:**

You have to envision the fact that rainfall falling on this land surface has to move through these materials in many places to recharge the ground water system. And those recharge rates when you look at these cemented silt stones and sandstones, can be very small. Matters of an inch or less a year.

***Narrator:***

What is also important about this aquifer and has been the subject of intense debate is its connection to many of Nebraska's rivers.

**Jim Goeke:**

Oftentimes when we're here, we wonder where the water is and we can come to this point and we can explain everything about where the water is and what the water cycle entails. We can look at atmospheric moisture in the clouds, we can imagine that rain falling on the land surface, moving through a hundred and ten feet of unsaturated materials to a point where everything is saturated - which is described by the green vegetation in the bottom of the canyon where the land surface actually intersects the water table and ground water reaches the land surface and becomes surface water. This is the point where we can identify the connection between surface and ground water. Ground water ceases to become an act of faith. You can go down and stand on that groundwater as it becomes surface water.

**Jim Goeke:**

There's been a tremendous dialogue, controversy in Nebraska about the connection between surface water and ground water. If they weren't connected, it wouldn't be a problem. We could irrigate all of the ground we wanted to in Nebraska wouldn't have to worry about pumping that ground water if it wasn't connected to surface water. But in fact it's connected, so we have to be careful about how much groundwater we develop.

***Narrator:***

A large percentage of Nebraska households can trace a path from their kitchen tap to the Ogallala Aquifer.

**Jim Goeke:**

And that connection between surface and ground water and the source of water from the Sand Hills is a vital interest to the population centers of Nebraska because with those free-flowing streams coming out of the Sand Hills, supported by groundwater flow, contribute to the constant flow of the Platte River at the wellfields at Yutan and Ashland to supply Omaha and Lincoln. These streams are really the lifeblood of Nebraska.

***Narrator:***

Named by early settlers unimpressed with the area landscape, the Dismal River is one of six groundwater fed rivers located in the Sand Hills. Bubbling up at the edge of the riverbank in Hooker County is an artesian spring called the Blue Pool.

**Jim Goeke:**

The estimates are that the water we see emanating here at the surface comes out of the Ogallala Formation. It's older water. It's much more mineralized. We've looked at the chemistry of the water from this spring and in the river. The river is about half as mineralized as the spring here.

***Narrator:***

The high mineral content of the Blue Pool indicates that the spring is not fed by the Dismal. But rather, the pool contributes to the river.

**Jim Goeke:**

A lot of the Sand Hills streams have these. Sometimes they're on bank. Sometimes you can be walking down in the bed of the river - in water that's two or three feet deep and step into a spring. These truly mark the connection again between surface and ground water. This is groundwater and it becomes surface water. And you can see it right there!

***Narrator:***

As the water of the Dismal River continues downstream, it will connect with two other rivers before entering Nebraska's most historic river, the Platte, and its story begins in the mountains of Colorado.

**"Of Mountains and Men" The development of the Platte River**

***Narrator:***

High in the mountains of Colorado, near the granite towers of Rabbit Ears Pass, the headwaters of the North Platte River thaw under a new spring.

Drop by drop, the melting snow forms rivulets that roll over the soggy earth and leak into Grizzly Creek. The swollen creek rapidly makes its way down the mountain to the meadow below where the North Platte River begins.

The river that starts as snowmelt in the Rockies, becomes a deeper river as it winds through Wyoming. It enters Nebraska in the west and in the town of North Platte it joins the South Platte River. At that confluence it becomes the Platte River then flows east to the Missouri River.

**Ann Bleed:**

One of its unique qualities and the reason it's so valuable to us is that it is absolutely essential for life. Like the air we breathe, if there's no water, there is no life.

***Narrator:***

In the west, rivers like the Platte were key to settlement. The semi-arid environment educated early 20th Century farmers and ranchers on the need for sustainable water supplies. Tired of seeing their crops wither under the western sun they petitioned the federal government to invest in irrigation.

**John Lawson:**

They found that when the hot, dry Julys and August came and there wasn't any river flow, all their endeavors burnt up in the sun. In other words, they couldn't grow a crop.

***Narrator:***

In 1902, the United States Congress passed The Federal Reclamation Act. The act funded the construction of dams and irrigation projects on western rivers.

**John Lawson:**

Pathfinder Dam construction started in late 1904 and was completed in 1909. And the whole idea of that dam was to be able to provide supplemental water supply and assured water supply to irrigation in eastern Wyoming and western Nebraska, known as the panhandle.

***Narrator:***

The Bureau of Reclamation's Pathfinder Project put the first federal dam on the North Platte River. Soon to follow were 4 additional storage dams, along with 4 diversion dams, and some 2000 miles of canals. By the middle of the 20th Century, the dams on the North Platte River succeeded in turning dry acres into lush, cash crops.

Progress also brought hydroelectric power and, as small towns grew, so did the need for municipal water supplies. By the end of the 20th Century, what had once been sufficient began to struggle under the weight of increased demand and the return of an old and all too familiar western foe.

**John Lawson:**

In 1982, there was the Reclamation Reform Act which basically required reclamation to start asking of our customers to develop water conservation plans. Because it was even being recognized as early as that that we are now starting to approach a critical mass problem with regard to water and water needs.

***Narrator:***

Today, diminished snow pack in the Rocky Mountains has caused the water levels of North Platte reservoirs to drop to an all time low. Demand, however, remains constant.

**John Lawson:**

We're not getting snow pack anywhere near necessary even to keep up with it, what's more replenish it. In fact, what's occurred to us in the North Platte in 2002 and 3 for our irrigators, they basically got a half a water supply.

***Narrator:***

The reservoirs are experiencing what science calls – a hydrologic drought. It is when shortfalls in precipitation over a prolonged period cause water supplies to drop. Hydrologic drought can occur where ever water is stored, inman-made reservoirs like Pathfinder or even in one's created by Mother Nature, herself, like the Ogallala Aquifer.

**“Three Men & a Puzzle”** Drought research and learning from the past

***Narrator:***

It is early morning and the wind is already blowing hard. On the high plains, wind, especially strong, gusting wind is not uncommon.

***Ambient Sound:***

If you can get it up to the top of this ridge right here. Where it goes across there. Where it goes across there? Yeah.

***Narrator:***

But, it is the winds of the distant past and the geologic story they tell about this dunefield that has caused these scientists to spend their day in the Sand Hills of Nebraska.

**Dave Loope:**

We know that periods of dune activity are periods of hydrologic drought.

***Narrator:***

How do three men find out about drought in the middle of the Sand Hills? First, they have to get something called a Geoprobe up to the top of a hill. After struggling up the steep slope, the Geoprobe has made it to top of the hill. The Geoprobe extracts sediment samples from the earth. These scientists are using it to pull long cores of sand from this dune field. From the sand they are trying to figure out how often and how severe the droughts of the distant past were.

**Jim Swinehart:**

If by finding out in the past how frequent droughts were, you know, did they occur every few thousand years, every five hundred years, and what the intervals were inbetween – that gives you some idea of what you might expect in the future.

***Narrator:***

Around a thousand years ago, there was a significant decline in the Ogallala Aquifer's watertable - a hydrologic drought. The low water table caused the innerdunal lakes to go dry. The vegetation on the dunes also dried up. The Sand Hills became a desert. This is what the core samples are telling the scientist. They believe the cause was a change in the climate.

**Joe Mason:**

We're talking about a time that's sometimes called the Medieval Warm Period. The climate was different than the present almost all over the world. Warmer in Europe and dryer here

**Narrator:**

Through dating techniques, the core samples tell the scientist when the climate changed. But it is by studying the pattern of the dunes in aerial photographs, that these scientists learned what caused a mega drought to hit the Sand Hills a thousand years ago.

**Dave Loope:**

When the dunes were active, the winds aren't like the normal winds that have been recorded by weather stations in last 100 years. The winds in the spring and summer maybe were coming from the southwest. And if they were coming from the southwest, they had to be dry winds, there's no source of moisture, there's no rain. Now, there's a drought. So, maybe the 30s, 50's, 70's and recent drought we're in isn't a drought with a capital D – just a dry spell.

**Narrator:**

As we learn more about global warming and its effect on the climate - could periods of prolonged drought with a capital "D" return?

**Dave Loope:**

Models have been generated all predict that the central part of North American will become hotter and drier. Yeah, that's sobering squared. We aren't going to know what the future's gonna hold, but – one phrase that geologist sometimes use is - what has happened, can happen.

**Narrator:**

Not a pleasant thought to consider. But if scientific research, like the work done in this dunefield, makes us more guarded about how we use and manage our water that's not only a good thing for us, it's vital for our children's future.

**"A Family of Famers" The development of agricultural irrigation**

**Vernon Nelson:**

They didn't like Illinois because it was too wet. So they chose the right climate when they moved here if they liked dry because we get really dry out here in Nebraska.

**Narrator:**

In the chain of Nelson generations that have carved a life from Nebraska soil, Vernon Nelson is the fifth link.

**Vernon Nelson:**

Lots of different hats I wear, but mainly I'm a farmer and a farmer at heart and always will be.

**Narrator:**

Descended from Nebraska homesteaders, Vernon farms about 3000 acres just outside of Holdrege. The Nelson "family of farmers" include Vernon's wife Marvel, son Chris, daughter Shari, and nephew Mike. Through the years, farming has provided Vernon's family with a good life, but like any family there were tough times.

**Vernon Nelson:**

They went broke and went completely bankrupt in the 1930s. They lost everything down in where they grew up because everything burned up from the lack of water.

**Narrator:**

The Great Depression and drought of the Dirty 30's took no prisoners. Vernon's dad went broke, but by the decade's end he was back behind the plow.

**Vernon Nelson:**

In 1938, that's when he restarted and that was when, up in this Holdrege area, the Tri-County Project came in. That was when McConaughy was built, Kingsley Dam, and they were gonna irrigate.

***Narrator:***

In 1938, water began running in the newly constructed canals of Central Nebraska Public Power and Irrigation District. For many years, surface water irrigation was the mainstay for farmers. But when it became possible to pump water from the ground, a new era in irrigation emerged.

**Vernon Nelson:**

I was quite young, but in 1952, Vern Larson was his name, he worked for a well-driller and he dug a well on his farm. And my father rented it, and anyway, on the year prior they got on big ring of corn off of this farm. And then they started irrigating it. They got – it was either 10 or 11 three-ring cribs of corn. They lined them out there by the road and it was just amazing. I don't recall the exact yield, but I know it was over a hundred bushels to the acre and prior to that they were lucky to get 20 or 30. That's really when irrigation wells really started going in fast and furious.

***Narrator:***

Today, Nebraska farmers irrigate seven million acres of cropland. A good majority of those acres are irrigated with center pivots. Vernon's nephew, Mike, follows the family tradition of incorporating new technology into his operation.

**Mike Nelson:**

I farm about 1400 acres. We're getting a lot better in the past 10 years of managing how much water that we've applied. Farmers are paying more attention to when the crop requires the most water. You pay attention to when crops are flowering, pollinating, pod fill or kernel fill.

***Narrator:***

Mike's farm has an ever evolving groundwater irrigation system that still uses some older methods, like flood irrigation, which uses gravity to move water through furrows. But increasing energy prices and water shortages advances the desire to be more efficient and cut costs.

**Mike Nelson:**

Center pivot irrigation around here, I mean, it's blown up in the past 8 to 10 years.

***Narrator:***

Mike demonstrates how he can better control the use of his water through the flick of his wrist. With his cell phone, Mike can turn on, or off, his center pivot and even control the rate of flow.

**Mike Nelson:**

The time savings is quite a bit. I know a lot of guys that they'll have 20 pivots and instead of having to drive around, they'll have to drive about 150 miles a day, where now they can call 'em up.

**Vernon Nelson:**

We're going to more center pivots all the time. We'll eliminate all of our gravity. It's just not efficient enough anymore. I guess call it the price of water. Mainly, it's the price of energy.

***Narrator:***

Aside from the dramatic increase in energy cost – Vernon is aware that there are other reasons he needs to conserve. His farm straddles two river basins – the Platte and the Republican.

**Ann Bleed:**

In the areas of the Platte Basin, above Elm Creek and in the Republican Basin, we are at that point where we're using more water than the supply can sustain.

**Vernon Nelson:**

Farmers aren't gonna be able to have all the water that we have enjoyed, I don't think. We're gonna have to maintain or sustain our water levels. I've been in favor of meters on wells, I've been in favor of limited pumping for a long time.

***Narrator:***

According to the United States Department of Agriculture's 2002 census the counties surrounding the Platte River Valley generated 3.7 billion dollars in ag sales. Irrigation has made much of this possible.

**Ann Bleed:**

And the choices are extremely difficult. People have made investments. They've built lives based on being able to use a certain amount of water.

**Vernon Nelson:**

It's not for one farmer to use it all himself. The water of Nebraska, that groundwater belongs to the people of Nebraska and it is to be used for the good of the people of Nebraska.

**Narrator:**

And like Vernon's fields of corn, as Nebraska metropolitan communities grow – so to does Nebraska's thirst for water.

**“Power to and for the People”** Population growth and meeting demand

**Narrator:**

There are 1.8 million people living in Nebraska today whose lives depend on access to fresh water. It is the foundation of our modern lifestyle.

In Lincoln, a developer has hired Downey Drilling to drill a well for a new subdivision.

**Tom Downey:**

Water has made our economy. Especially in agriculture and these cities have water and we're drilling for water here, to give this nice housing development a lake effect.

**Narrator:**

Tom Downey has spent a good measure of his life drilling wells. His father was a well driller and as a teenager, Tom worked in the family business. Today, Tom is part owner of Downey Drilling.

**Tom Downey:**

Probably the bread and butter, the bulk of our work is the irrigation, ag irrigation around Lexington, Nebraska.

**Narrator:**

Since the boom of center pivot irrigation, drilling groundwater wells has provided outfits like Tom's with steady work. Today, there are 101,000 registered groundwater wells in Nebraska.

**Tom Downey:**

We'll drill wherever somebody wants us to drill. Usually when you look at land use, and what they're going to do, you put it where it's most convenient and less expensive for them.

**Narrator:**

Tom has drilled wells throughout the state of Nebraska. Finding water has given him a good life and deep appreciation for the resource.

**Tom Downey:**

Nebraska does have a lot of water. We really do. And it's for us to manage and use beneficially . But yet, protect the resource.

**Narrator:**

By days end, Tom has located another source of fresh water. For the developer of this 660 lot subdivision, it's good news. Plans can now proceed to drill another well, a much larger well, that will feed the future subdivision's 70 acre man-made lake.

In western Nebraska, the uncertain future of another manmade lake forced Nebraska Public Power District to look to the ground for a solution. Just outside the small town of Sutherland, Glen Bower of the Twin Platte NRD inspects a groundwater well.

**Glen Bowers:**

This is the probe that measures the water level in this well and also the temperature of this well. Right now it's reading once a day at noon.

**Narrator:**

Originally drilled as part of a Platte River study, the well monitors the area water table. Today, it is one of 43 monitoring wells that surround the states largest power plant, Gerald Gentleman Power Station.

**Frank Kwapnioski:**

Gerald Gentlemen is a very important component of NPPD's total electric generation mix. Actually, it's our largest single power plant and provides the electrical needs of about a million people in the state.

***Narrator:***

Operated by Nebraska Public Power District, it is coal fired power plant that needs water to produce electricity. The cooler the water the better. That water comes from Sutherland Reservoir and it's source is Lake McConaughy. But, drought has caused MacConaughy's water level to drop - forcing its water temperature to rise.

**Frank Kwapnioski:**

The most important changes affecting our water supply is simply climate. Our water supply is entirely nature-based. I mean it follows precipitation.

***Narrator:***

Since 2000, Nebraska has been in a drought. Drought is a quiet natural disaster. It affects more people in the United States than any other natural hazard. In 2006, the direct cost of drought in Nebraska, alone, was estimated at \$342 million dollars.

**Frank Kwapnioski:**

When we recognized the implications of the drought and the possibility that our water supply coming out of Lake McConaughy may not be available in the long term we started assessing our options.

***Narrator:***

NPPD's solution was to drill 24 ground water wells for two reasons. One, to maintain Sutherland Reservoir elevation should Platte water be drastically reduced. And two, to alleviate Sutherland's rising temperatures due to warmer water flowing out of Lake McConaughy.

**Frank Kwapnioski:**

We're experiencing a temperature increase anywhere from 10 to 15 degrees coming into the plant. So, therefore, our discharge temperatures have been equivalently higher.

**John Cizek:**

By knowing the temperatures along the distance, we have a feel for whether this temperature coming out of the pond has a chance of going up towards it's regulatory limit of 94 degrees.

***Narrator:***

NPPD must keep Sutherland's water temperature below 94 degrees. Sustained overages can cause fish die-off. NPPD is using ground water, which is a constant temp of about 55 degrees, to help keep the water in the reservoir cool.

**Frank Kwapnioski:**

We've been successful so far. We fully believe that we've gotten to the point where it's a reliable and functioning resource either for temperature mitigation operations or in the event that we have to make up water to sustain the level in Sutherland Reservoir.

***Narrator:***

Development of the semi-arid west has evolved from a 19th Century dream into a 21st Century reality and challenge.

**Tom Wurtz:**

I think that the cities of the eastern Platte, the water use that we use is really very minimal compared to agricultural use I think all domestic use in the state of Nebraska for every city is really only five percent of the total water use.

***Narrator:***

Just north of where the Platte River joins the Missouri sits Omaha, the state's largest community. Water for the city is supplied by the Metropolitan Utilities District, known as MUD.

**Tom Wurtz:**

Our water system has to provide safe reliable water to the metropolitan area which is growing. MUD is growing at about 25 hundred to 3000 customers a year.

***Narrator:***

MUD has two water treatment facilities, but steady growth spurred the development of a third facility.

**Tom Wurtz:**

Our primary source of water right now is the Missouri River in North Omaha in Florence and our other source of water on the Platte River is our Platte South Line. So, the new source forms that triangle out in the Platte River in the west end of Douglas County. That is also the growth area where a lot of our population is going right now.

**Narrator:**

Planning for the Platte West treatment facility began nearly three decades ago. It is a 350 million dollar project that is projected to quench Omaha's thirst for the next 50 years.

**Tom Wurtz:**

We think we can do that because we believe very strongly in conservation. Some people have questioned that – why do you want to do that? And the reason is, is that without conservation – one, we think it's the right thing to do, but two, without conservation, your plant was only going to last 30 to 40 years. So with decent conservation, we think we can make this plant last far into the future.

**Narrator:**

MUD is a twenty-five mile wide system that in summer, has experienced peak water demand of 200 million plus gallons per day. Platte West will relieve stress on the system.

**Tom Wurtz:**

Without a water source that could have been provided on the schedule that we have now set up, basically we would not be able to attract industry or we would not be able to keep up with the building for homes

**Narrator:**

Our modern lifestyle has afforded us convenient access to water. In the United States, the average American uses 100 gallons of water a day.

**Tom Wurtz:**

The thing that amazes me about water is that it's such a precious resource. And too, that it's really a resource that's taken for granted.

**Narrator:**

Concern is rising over our nation's growing population and the added stress on our fresh water resources – especially in the more arid west. In Nebraska – the struggles over the Platte River may be signs of things to come.

**“Where Are The Wild Things? Protecting water for wildlife**

**Narrator:**

During their bi-annual migration, legions of sand hill cranes flock into central Nebraska and counted among them are a small number of whooping cranes. And though it is largely the sand hill cranes that draw tourists to the Kearney area to observe nature's grand parade, it is the fate of the whooping crane that is effecting change in the Platte River basin.

**Ann Bleed:**

The regime of the river has changed and not surprisingly, so has the wildlife that depends on that river change.

**Chad Smith:**

Endangered species are ultimately an indicator that from an ecological perspective something's not right.

**Narrator:**

Found only on the North America continent, whooping cranes that had numbered in the thousands were down to less the 20 in 1941. It was their plight that helped inspire the Endangered Species Preservation Act of 1966.

**John Lawson:**

There was a lot of changes starting to occur in the 60s and the 70s. And what you were finding was that society was changing somewhat at least on a national level on where they felt the importance of the water resources were used and how they should be used and how they should be developed.

***Narrator:***

Believing the original law wasn't tough enough, the United States Congress passed the Endangered Species Act of 1973. Five years later, the Act was used to designate the Central Platte River Valley as critical habitat for the whooping crane. This section of the Platte is considered one of the most important habitats for migratory birds in the United States.

Nebraska has enacted its own endangered species act and the Nebraska Game and Parks Commission monitors listed species on the state's behalf. Renae Held and Joel Jorgenson cruise the Lower Platte River on a warm day in July to survey two listed birds -interior least terns and piping plovers.

**Joel Jorgensen:**

Our emphasis right now is primarily monitoring least tern and piping plovers out here on the river to determine actual numbers and whether they are successfully reproducing during the breeding season.

**Joel Jorgensen:**

The least tern is both federally and state listed as endangered and the piping plover is both state and federally listed as threatened.

***Narrator:***

"Endangered" means a species is on the brink of extinction while "threatened" means a species is likely to become endangered. What it boils down to is the birds are losing their habitat and loss of habitat means the birds don't reproduce.

**Renae Held:**

In the past, the birds nested on high dry sandbars in a braided river system. And floods every few years, maybe 5 or 6 years, would move the sand and sediment around in the river creating these high dry sandbars. And these sandbars protect the birds from predators and they also protect them from human disturbance and humans coming into the area.

**Renae Held:**

When I first started, we had quite a few sandbars that were good habitat for the birds. Now we're seeing with the drought and the lack of water and floods that are coming down the river that the islands are becoming vegetated.

**Joel Jorgensen:**

I think it's primarily water diversion is what has changed the river.

***Narrator:***

Water diversion caused by dams, irrigation, and growth has altered the flow of the river. Sandbars once bare and three feet above water level are now only inches high and choked with plant growth – much like cholesterol blocking the flow of blood in our arteries.

For terns and plovers, the river has become substandard habitat. The birds are relegated to laying eggs on sandbars vulnerable to the slightest change in water level. The night before this scene was shot it rained as a result, the nests and eggs were washed away as the river rose.

**Renae Held:**

We're seeing fewer colonies of least terns and piping plovers trying to utilize the last sandbars that are available to them. One issue with that is if the birds aren't spread out, that opens them up to say if predators find a colony, they can wipe out an entire colony and take out one-fifth of the population.

***Narrator:***

The concentrated populations are similarly threatened by disease, natural disasters, and by people.

**Renae Held:**

In the case with recreation out here on the river, if you see an area where terns and plovers are nesting and you hear that call and you see the birds get up, that's their cue to let you know that, hey you're in their area.

**Joel Jorgensen:**

It doesn't take much disturbance to upset these birds to keep them off the nest when it's hot like it is today. It doesn't take long for the nest, for the eggs of the young to become overheated and to die, essentially. The situation does not look very good at the present time for piping plovers and least terns. It may just come down to a question of ethics and stewardship.

***Narrator:***

As it stands, the future for life along the Platte River for the interior least terns and piping plovers remains uncertain and unwritten. Much like our own.

**“The Cooperative Approach”** Nebraska’s progressive water policy

**Dane Daigger:**

If the lake ever goes dry – this is our favorite place to come to. We’d have to go to a different place and won’t have as much fun.

***Narrator:***

Perhaps when Dane Daigger grows up, summer afternoons on Lake McConaughy with his father will be among his favorite memories. But his apprehension over the sustainability of Lake McConaughy is a subject of concern for many Nebraskans and, for some college students, a subject to study.

On the downstream side of Kingsley Dam, overlooking Lake Ogallala, sits the University of Nebraska’s Cedar Point Biological Station. It is an educational research facility that allows students to learn through hands on experience. At the South Platte River, students collect organisms to study the effect of fluctuating flows on the river’s ecosystem.

But it is here in the classroom that students are learning how public policy effects the management of natural resources.

**Bob Kuzelka:**

Everyone that’s a college graduate probably at some time or the other are gonna be involved in either evaluating, processing, proposing new policies, or changing policies.

***Narrator:***

Bob Kuzelka has been researching and teaching classes on natural resources policy throughout his academic career.

***Ambient Sound:***

Many of the structural solutions to water policy were seen as very effective.

***Narrator:***

Kuzelka has asked his students to design Platte River water policy based on a relatively new method of policymaking called adaptive management.

***Ambient Sound:***

The more good you have in a policy the higher the number will be.

***Narrator:***

The students must consider all parties that have a vested interest in water and then work out a new plan everyone will support.

***Ambient Sound:***

I’m saying that if our focus is on young people then why are we even looking at generalizations?

**Bob Kuzelka:**

Adaptive management is you say, well, we’re a stakeholder and they’re a stakeholder, and at least for discussion purposes, we’re all equal.

***Ambient Sound:***

I don’t know I’m starting to question that we need it now, you know.

***Narrator:***

It is a complicated process marked with frustration. But in the end, concessions will be made by every student in order to attain the larger goal of creating a new policy that has unanimous support.

**Bob Kuzelka:**

“We’re really looking at, you know, ag interest versus recreational interest versus hydro interest and instream flow versus habitat interest.

**Narrator:**

Aaron Price is pursuing a career in natural resources litigation, an interest sparked by his eighth grade teacher.

**Aaron Price:**

I had this science teacher that said our wars in the past were fought over politics. Your wars are going to be fought over natural resources. And more and more I’m seeing that he’s right on the money with that.

**Narrator:**

Though this is a class assignment, it mirrors both the State of Nebraska and the federal government’s use of adaptive management to contend with escalating tensions among water users.

**Narrator:**

Change is difficult, but adaptive management may be one of the best tools we have for ensuring a sustainable water supply. For a family business in Lincoln, their decision to embrace change put their company on the road to success.

“Doing the Right Thing”    Successfully adapting to water protection laws
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**Narrator:**

Water plays an important, if not essential, role in many things we value - including this biker’s prized motorcycle.

In 1952, a small plating business opened in Lincoln. Dale LeBaron was the new owner and the fledgling company’s only employee.

**Marc LeBaron:**

One of the biggest projects was polishing and lacquering and coating old hand-set telephones that people would use to make lights out of.

**Narrator:**

Originally called Lincoln Plating, today it is known as Lincoln Industries and it employees nearly 600 people. But, there was a time when the future of Lincoln Industries hung in the balance of a new water law.

**Marc LeBaron:**

Chromium is very important to the business. ..when you look at all the bright shiny parts that go on cars and motorcycles and all kind of equipment, those are all chrome-plated.

**Narrator:**

Heavy metals, like chromium, are instrumental in the plating process. Chrome plating increases the hardness of a surface and protects it from corrosion. But it’s also a harmful pollutant - linked to cancer.

**Marc LeBaron:**

The passage of the Clean Water Act had huge ramifications for the metal finishing business. Prior to that, the business was primarily unregulated.

**Narrator:**

To improve water quality, the Clean Water Act of 1972 placed strict regulations on municipalities and industries. Dale LeBaron knew that to stay in business, he’d have to reconfigure his plating process and it was going to be expensive.

**Marc LeBaron:**

I was just in college and he came to me with a very interesting dilemma. He said, if you’re willing to commit to coming into the business, then we’ll work together. We’ll figure out how to do this. But if you’re not, I think I’m gonna sell the business.

**Narrator:**

Marc LeBaron was a junior in college when he decided to follow his father’s path. Together they drew up a plan that included adding water treatment as part of the manufacturing process.

**Marc LeBaron:**

The cost for the new facility, including waste treatment equipment was about 1.5 million dollars. Of that million and a half, about \$500,000 was for water treatment equipment.

***Narrator:***

Their decision to invest in water treatment back in the mid-seventies propelled them toward great success.

**Marc LeBaron:**

Today, we are in a very unique position in the industry. We're probably the largest metal finisher in the U.S. today.

**Marc LeBaron:**

And we have resources, both technical and people, and fortunately capital that as new regulations come, our strategy is we want to be out in front. We want to be one of the early compliers and use that as a strategic advantage.

***Narrator:***

Lincoln Industries has received recognition, both locally and federally, for its progressive, environmentally responsible, business practices.

**Marc LeBaron:**

Environmental commitment is one of the seven beliefs that we have and it absolutely is a priority for the organization. I think the key is that we do continue to evolve. We don't look at compliance as just meeting the numbers today. We want to constantly get better.

***Narrator:***

Water protection and conservation have turned out to be smart business for Lincoln Industries. For another organization, cleaning up the Big Muddy is at the heart of being a good River Rat.

**“Down & Dirty on the Big Muddy”** Grassroots effort to protect water

***Narrator:***

Since 2000, Missouri River Relief – a grassroots, volunteer organization based in Columbia, Missouri, has been cleaning up the Big Muddy. Today, they are in Omaha.

**David Stouss:**

We've been doing cleanups from St. Louis, Missouri, now all the way up to Omaha. We want to spread the word of the great resource, the excitement that we have for the river, the love we have for the river, that we're river rats and we'd like to have more river rats join us.

***Narrator:***

Joining the River Relief crew of 26 are 130 local volunteers from the Omaha metropolitan area.

***Ambient Sound:***

If you find any items that you shouldn't be touching – chemicals, syringes, weapons – backoff.

***Narrator:***

Once safety training is done, the work begins.

***Ambient Sound:***

Keep your hands away from the sides.

**David Stouss:**

I just love some of the excitement of people getting out on the river for the first time. In my area, most people think of the Missouri as a big sewer, something to avoid...

***Narrator:***

For decades, people have been dumping the things they no longer want... in the same river that is the source of their drinking water.

**Joseph Osborn:**

You know you find so much gross stuff that eventually your ability to be that shocked by it just kind of diminishes. We can pickup garbage until our hands fall off and it's not gonna stop the problem. We got to get into the hearts of people and let them know that really litter makes a difference and not littering is a great help.

**Narrator:**

But even here on the river, one man's trash is another boy's treasure.

*Ambient Sound:*

Is that trash or treasure?  
Treasure! Trash!"

**Narrator:**

As nasty as picking up garbage can be, it's evident Boy scout Troop #494 is enjoying their work.

*Ambient Sound:*

This is fun, most fun we've ever had picking up trash.

**Narrator:**

The result of this cleanup effort can be seen in the seven thousand pounds of garbage collected in a single day's work. Since the organization's inception - some 6000 volunteers have assisted River Relief in removing three hundred forty-one tons of trash from the Missouri.

**Joseph Osborn:**

As much good as we do out here picking up garbage, it does more good, I think, to have people see us out here picking up garbage. See how much garbage is brought in.

**Joseph Osborn:**

Even the people that weren't cleaning up. The people that you saw standing up there on the docks just watching us, you know, thinking "Man, look at all the garbage they're hauling out of the river," you know, "Wow. It's a big problem we didn't know."

**Narrator:**

When it comes to sustaining our fresh water resources, ignorance may be the greatest threat to our own future.

<b>"Future Resources"</b> Water awareness and conservation education
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*Ambient Sound:*

"Flo, over here!" "What are you doing up there?"  
"You said you wanted to follow one drop of water as it makes its way through the watershed – and I'm a drop of water..."

**Narrator:**

Western Hills Elementary is a magnet school and water education is at the heart of the school's curriculum. The school works in partnership with the University of Nebraska at Omaha and local community organizations.

**Margie Reed:**

And one of our community partners is Fontenelle Nature Association. Through this partnership, all of students in 2nd through 6th grade are able to go to the forest for 6 days during the school year. Each grade level is paired up with a naturalist. And that naturalist comes over and plans lessons with a teacher. Their learning doesn't just take place within the four walls of the classroom. We take it outside of the classroom.

**Narrator:**

Fontenelle naturalist Lindsay Rodgers took part in river ecology projects when she attended Omaha Public Schools. Today, she is teaching a new generation of learners.

**Lindsay Rogers:**

The H2Omaha program has been active since 1995. We see roughly thirty-five hundred students a year times ten - eleven years. We've seen approximately – off the top of my head – we've seen 40,000 students through this program.

**Lindsay Rogers:**

I don't think that we can expect to have fresh water resources in our future if we don't have education now. We can do conservation and preservation projects and restoration projects til we're blue in the face, but if we're not teaching people why we're doing them and how we can prevent doing them– we're just going to be doing the restoration projects 15 years from now.

**Margie Reed:**

I think they see water as not as the endless resource that they used to see it. They think more about conservation issues and more about conserving water. And knowing that it's not always going to be at our fingertips.

**Jordan Stark**

If we don't know nothing about water, we'll just use a bunch of it and then we won't have any more of it.

***Narrator:***

We are fortunate in Nebraska to have such an abundance of fresh water.

But, if we pollute it - we can't drink it

And, if we don't conserve it - we will run out of it.

Because the truth is, we cannot make more water.

END.