

The Pipelining Newsletter

SOUTH PLATTE NATURAL RESOURCES DISTRICT

Drought Affect To Trees Is Widespread

Across the region, tree health, or rather mortality, has been an increasing concern for landowners. Hundreds of trees, primarily in conservation plantings and windbreaks, have died following unusually extreme hot and dry conditions last summer.



Trees like this should recover well from drought damage. Some trees have already seen new growth outside the damaged area.

“Our area has always provided more than its share of challenges to tree health,” says Galen Wittrock, the District’s assistant manager and tree program coordinator. “With our high pH, low rain fall amounts and wide temperature variations, trees are under stress a lot of the time.”

But few years have seen the effects of 2012, which quickly built into a long, hot period with little relief for plants. In our area, rainfall during the growing season was just less than seven inches, far less than the 17-inch average.

As a result, Wittrock and other tree specialists across the region and state have been fielding a record number of calls from landowners about trees that seem to be dying.

“We’ve seen a lot of trees, most up to 10 years old, that died because of the drought,” says Wittrock. “But we’ve also seen it happen to trees 40 and 50 years old. In a lot of cases, the tree rows have been established and no longer get

See **DROUGHT AFFECTS** page 6

District Assists NDEQ With Oliver Monitoring

The District is assisting the Nebraska Department of Environmental Quality by collecting samples for the Lake Beach Bacteria and Toxic Algae Monitoring Program.

District personnel collect samples from Oliver Reservoir near Kimball, which are sent to NDEQ.

Monitoring data is used to document existing water quality conditions, assess the support of beneficial uses, and prioritize water quality problems.

Through the program, Oliver Reservoir E. coli bacteria and toxic bluegreen algae (microcystin toxin) levels have been monitored weekly since May and will continue until the end of September.

No long term threats have been identified at Oliver Reservoir.

Information on the program, health alerts and reports on waters tested can be seen on the NDEQ Website, www.deq.state.ne.us.

Upper Platte Basin Officials Review Basin-Wide Plan Progress

The District recently hosted officials from upper Platte Basin Natural Resources Districts (NRDs) and the Nebraska Department of Natural Resources (DNR) for a review of the Basin-wide Plan for Joint Integrated Water Resources Management of the Overappropriated Portion of the Platte River Basin, Nebraska.

The joint plan went into effect September 11, 2009 and takes incremental measures to protect water resources for current and future generations. The plan and results from individual NRDs are reviewed each year. This was the fourth annual review. Natural Resources

Districts involved include the North Platte NRD, the South Platte NRD, the Twin Platte NRD, the Central Platte NRD, and the Tri-Basin NRD.

During the meeting, the DNR and the NRDs presented information on progress being made on individual integrated management plans (IMPs) including a number of programs that range from those designed to reduce consumptive use of water within the basin to various methods of tracking progress.

Adaptive management has placed the basin NRDs in a good position to meet the basin’s goals for reduction of depletions. All basin members, as well as the

DNR, have or participate in various programs to provide funding for agricultural producers that make it easier to reduce consumptive use and maintain the economic viability of the area.

The South Platte NRD’s proactive steps indicate that it should reach its first 10-year increment goal as outlined in the IMP. Since the IMP went into effect, the NRD has advanced progress in reaching its benchmark by using a number of voluntary incentive programs to permanently retire certified irrigated acres and accrue an additional 548 acre-feet of water con-

See **BASIN-WIDE** page 2

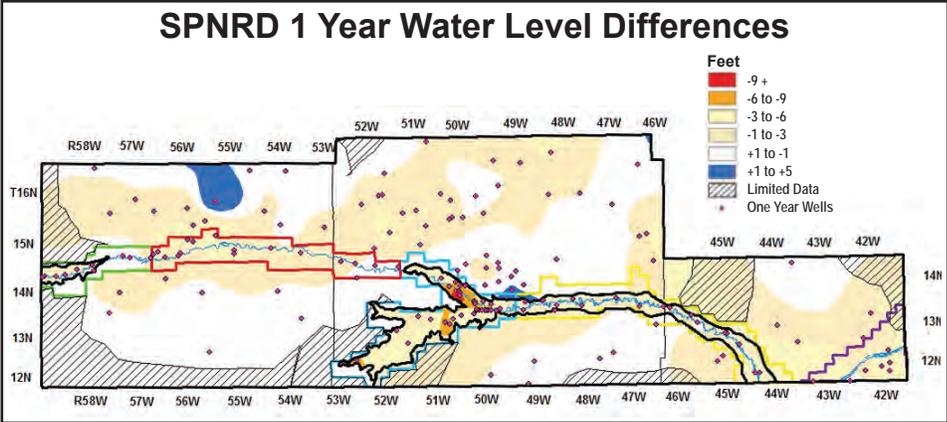
Spring Ground Water Levels Lower On Average

A number of factors during the 2012 growing season resulted in spring ground water levels across the District being significantly lower than the previous year.

District wide, ground water levels were down an average of 2.5 feet, with some well levels dropping up to 10 feet or more. Of the 178 wells measured this past spring, 91 percent of them had lower levels than a year ago.

“We expected some declines because of how hard everybody had to pump,” says Chris Kaiser, who develops the ground water level report. “We just didn’t expect it to be quite this much across the District.”

Nebraska was the epicenter of a quickly developing, hard-hitting drought that



touched every state. With little rain to provide help, ground water demand increased greatly as water users from every walk of life fought to maintain plant health under the hot, dry conditions.

Agricultural users, who are limited

to the amount of ground water they can use without penalty, in some cases found themselves struggling to maintain their crops within the water usage limits. Others made the choice to risk

See LEVELS LOWER page 5

Basin-Wide *Ongoing Projects Reduce Depletion To Platte*

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sumption credit. Additional credit has been earned through an aquifer augmentation program. Since the IMP went into effect, the District has tightened its water use regulations, lowering the total amount of ground water allocated in overappropriated areas. A moratorium on large capacity wells and new or expanded uses is in place.

Projects by other NRDs include retirement of irrigated acres, augmentation projects, retirement of surface water irrigated acres and similar projects.

The NRDs and the State of Nebraska have worked together to develop plans to protect the future of all Nebraska water users, including municipal, industrial, domestic, livestock and irrigation to protect everyone -- not just one organization or group.

In general the plans’ goals include protecting and increasing flows in the Platte River, working with all water users to resolve disputes, increase water use efficiency and reduce consumptive use.

SOUTH PLATTE

NATURAL RESOURCES DISTRICT

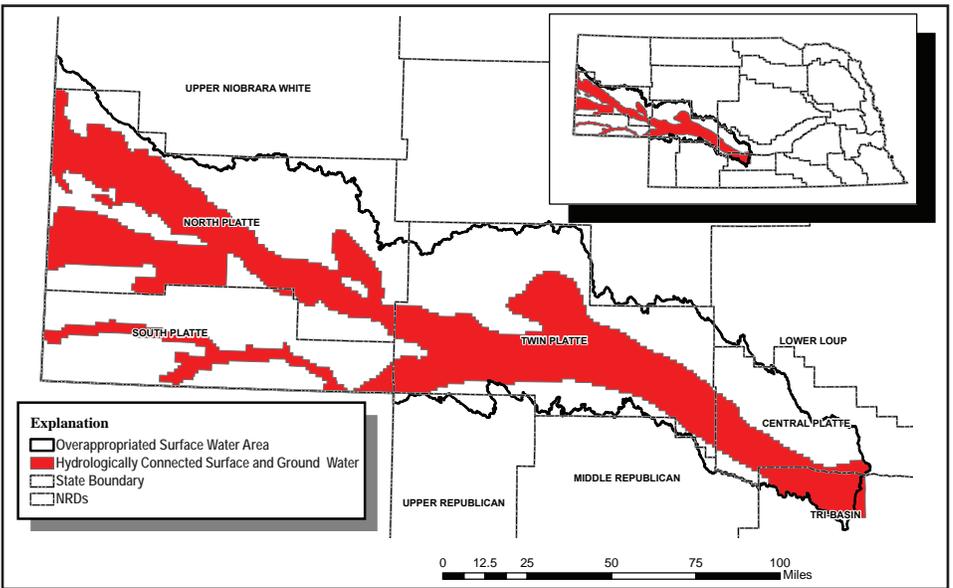
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This DNR map shows the Basin-Wide area, which includes the Overappropriated Surface Water Area and the Hydrologically Connected Surface and Ground Water.

SPNRD, Sidney Officials Hear Drainage Alternatives

The District board of directors and the Sidney city council held a joint meeting in June where they saw several options developed to alleviate problems caused by excessive drainage in southeast Sidney.

The entities have formed the Joint East Sidney Watershed Authority (JESWA) to manage a joint effort to reduce runoff and associated problems from the drainage area.

For a number of years, large rains have been a problem as development continues, changing runoff patterns. Flooding that has the potential to carry contaminants and silt, as well as resulting erosion, has prompted the effort for controlling the runoff.

The area boundaries run from Lodgepole Creek to just south of Interstate 80 and from 11th Ave. to County Road 117 and covers approximately 2,300 acres. Several separate drainages feed north from the area down to the creek.

All of the water eventually drains to Lodgepole Creek and the effects of the silt and possible water contamination are a concern. Another concern is the potential for damage to developed areas, as well as future development.

JESWA was formed to allow the entities – the city as the immediate jurisdictional entity, and the NRD with authority to assist with flood mitigation – to pool resources and funding options to find a solution.

Carter Hubbard, with engineering firm Olsson Associates of Lincoln, presented three alternatives the firm feels would be viable solutions to control runoff. The alternatives address concerns to alleviate issues in regard to both water quality and flood damage.

All three alternatives use a combination of water quality ponds, vegetated bioswales (a bioswale is a densely vegetated shallow channel that slowly channels water downstream) and hardscape features such as culverts to divert water. Hubbard said the firm recommends Alternative 1, which he told the elected officials provides the most pro-



Concerns over the southeast Sidney drainage, outlined in red, have increased with further development. Heavy rains can result in ground water quality problems from runoff and silt, as well as possible flood damage.

tection for quality issues. He said the option is also less expensive overall at \$4,324,000 because has fewer culverts and hardscape-related costs.

Alternative 1 includes suggestions for 12 water quality ponds and five vegetated bioswales. Alternative 2 has seven ponds and five bioswales and Alternative 3 would have the same number except the locations of ponds and bioswales would change. Cost for Alternatives 2 and 3 range from \$4,475,000 to \$4,558,000. All estimates also include

contingency funds for unexpected costs.

Hubbard said the alternatives are suggestions and could be changed if necessary. The suggestions from Olsson Associates are based on their review of land type, flow patterns and other factors. Criteria also included estimates of how the project would handle 2-year, 10-year, and 100-year storm events. Hubbard explained the rainfall amounts in such storms would be amounts of 2.0 inches, 3.1 inches and 5.0 inches,

See **DRAINAGE** page 5

District Lot Development Shows Landscape Options

Those passing by the District office this spring may have noticed a number of changes to the scenery on lots west of the main building complex.

The District purchased those lots on Queen Drive, along with several on Circle Court south of the office, in late 2009. The lots were purchased in part due to the fact that the District had at that time used all of its lot space.

“There was a concern that if legislative or administrative mandates required additional space, we would have nowhere else to build,” says Don Ogle, information and education coordinator. “The lots were available and it made sense to purchase them, rather than run the risk of having to relocate or build separate facilities if we might have to expand in the future.”

As part of the short term plan for the lots, one of the NRD’s priorities has



Signage shows the scientific and common names of many NRD lot trees.

been to make them an attractive feature in the neighborhood.

“We want to be good neighbors,” Ogle says. “The new landscaping work, which will take place in several phases, cleans up the look of the lots and will provide functionally as part of our overall mission.”

Since the lot purchase, the District has planted more than 80 trees and shrubs on the lots, with more than 60 of those done this spring.

Many of the newest trees, on the west lot, have signs near them (shown at the left) to provide identification by common and scientific names.

Assistant Manager Galen Wittrock, who runs the District tree programs, says the area will serve as a sort of arboretum, where visitors can see different varieties of trees and how well those trees perform in our area.

“We have a few ‘experiments,’ but most of the trees and shrubs are proven successful in our area,” says Wittrock.

The trees and shrubs were purchased in part with a grant through the Nebraska Statewide Arboretum, called Trees for Nebraska Towns. It is part of a proj-

See **LANDSCAPE** page 7

A Rain Garden May Seem Strange, But Is A Good Tool

Calling it a rain garden is, in many ways, a misnomer.

After all, the term rain garden conjures up images of a water-dependant area filled with thirsty plants. And who in arid western Nebraska wants to develop and care for a swampy area that’s just short of having a pond?

“In reality, a rain garden in our area is more xeric in nature than water dependant,” says Ryan Reisdorff, who heads the District program providing cost-share funds for rain garden installation. “it includes many plants that you would find in a xeric garden, but also includes some plants that don’t mind having their ‘feet wet’ once in a while.

“A rain garden really is a tool to protect the environment – a tool that also happens to add a good looking design element to a landscape.”

By design, rain gardens collect rain water from roofs and property that might otherwise end up as runoff, collecting and carrying pollutants and sediment down a storm drain system and ultimately discharge in areas like Lodgepole Creek.



Rain gardens serve as a protector during wet times, and as an attractive landscape feature when it’s dry. The NRD’s garden got tested just hours after planting.

“Virtually all runoff in our area ends up in the creek,” says Reisdorff. “Along the way it can pick up pollutants like oil, lawn fertilizers and chemicals and sediment that can adversely affect the creek and underlying aquifers.”

The rain garden works by collecting and holding runoff in a bioswale, or small catch basin, where it is slowly

absorbed into the soil over a couple of days rather than entering the storm drain system.

The District has begun an educational and assistance program to help homeowners use rain gardens as part of its landscape and the public is invited to visit the landscape and check with Reisdorff about cost-share opportunities.

Water Usage Up In 2012 As Drought Gripped Region

District ground water usage was up nearly across the board for 2012, in direct correlation with intense hot weather coupled with significantly less rainfall. The exception was in the industrial arena, which is also the smallest water user, and not affected as much by weather conditions.

Most uses increased from 40-60 percent during the 2012 growing season, which runs from March to October. During the same time period, rainfall across the District averaged about 40 percent of the historical average of 17.2 inches. In 2012, the District averaged 6.95 inches of rainfall.

“We knew half way through the season that usage was going to be up a

Rainfall Comparison of 2009, 2010, 2011, 2012 to Historical Averages

County	2009 Avg. Precip	2010 Avg. Precip	2011 Avg. Precip	2012 Avg. Precip	Historical Average
Kimball	18.35	16.47	18.78	6.81	16.22
Cheyenne	22.27	17.00	22.23	7.81	17.68
Deuel	24.35	17.08	15.11	6.23	17.79

lot,” says Travis Glanz, water resources coordinator. “Ag producers were pumping hard just to keep up. It was a complete turnaround from the years before. Everybody was use to pumping around 9 (acre) inches and all of the sudden they pumped 16 or 17.”

Rainfall in 2009 was one of the keys for the Ag sector’s survival. That year, the District averaged 21.66 inches

of rainfall (from 18 inches in Kimball County to more than 24 in Deuel County). As a result, ground water usage was significantly lower in most areas as some irrigation systems weren’t used until more than a month later than usual.

Some producers that year put only six inches of ground water on their

See WATER USAGE page 6

Lower Levels *Cheyenne/Deuel Brule Formations Hit Hardest*

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over-use and its penalties to make sure their crop survived and change management practices in following years.

The Cheyenne/Deuel (county) Brule, which lies in the Sidney Draw area and Lodgepole Creek from Brownson to the Colorado state line in Deuel County, saw the greatest declines. The area’s ground water levels averaged 4.65 feet lower than the previous year, with one well 10.6 feet lower.

The Kimball Brule, which lies along Lodgepole Creek from Bushnell west to the Wyoming state line, averaged 2.74 feet lower, with one well measuring 4.86 feet lower.

The District’s table lands, where ground water is stored in Ogallala based formations, were also down, with the North Table averaging 1.66 feet lower and the South Table down 1.2 feet.

Measurements from the North Table

also include one interesting anomalous, and unexplained, result. The water level in one well in north-central Kimball County rose 4.46 feet. All wells around it, however, have lower levels.

“We really don’t understand why it’s happening, but that one well hasn’t shown a decline for years,” Kaiser says. “Hopefully one day we’ll be able to get more geological information in that area to help better understand it.”

Drainage *Protecting Ground Water From Flood-Born Contaminants*

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respectively. He also explained that despite their designation, the chances of having such a storm don’t change.

“Just because you have a 100-year storm in a given year, doesn’t mean it will be 100 years before you see that kind of an event again,” Hubbard explained. “The chance of a 100-year storm is one percent in any given year. Even if you have one two years in a row, the chance stays the same. It will be one percent the following year as well.”

The point of the project estimates is to give the most amount of protection possible to downstream land and development.

When looking at potential funding sources, the project is in some ways fortunate. That’s because with Lodge-

pole Creek at the lower end of the drainage system, water quality concerns open up options for partial federal funding under Section 319 of the Federal Clean Water Act. Such funding, administered by the Environmental Protection Agency (EPA) through the Nebraska Department of Environmental Quality (NDEQ), is given for the prevention and abatement of non-point source water pollution. Such grants will pay for 60 percent of a project relating to water quality (other project components, such as those concerning primarily flood control, would have to be paid for in other ways).

Hubbard reviewed a number of grant and loan fund options that might be available for the project. One source will be sales tax funds approved by

Sidney voters in November. A portion of that tax was dedicated to the drainage project.

Another key to the project’s success is landowner participation. With a number of landowners involved, working to meet their needs and address concerns is paramount.

The JESWA board, made up of SPNRD Manager Rod Horn and Assistant Manager Galen Wittrock, and Sidney City Manager Gary Person and Public Services Director John Hehnke, will now continue to review the proposals and determine a possible course of action.

The JESWA project recommendation will be taken to the SPNRD and City of Sidney elected governing bodies for final approval.

Drought Affects *Damage Extensive, But Some May Survive*

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supplemental water. With the weather we got last year, they just couldn't keep up."

Wittrock says trees always benefit from supplemental irrigation, but particularly in extremely dry years. "They still need the equivalent of 10 inches of annual precipitation or more."

While many trees are obviously dead, some may look bad but aren't beyond hope.

"We have seen some evergreen trees that have a lot of brown in them, but could still recover," says Wittrock. "Some of them have shown new growth and that shows they are still viable."

Wittrock says if you want to give trees supplemental irrigation, the time to do it is now.

"The sooner we can get water to these trees the better," Wittrock says of the stressed trees. He says to properly water such trees, the water should be applied not near the trunk, but at the dripline (where the branches end).

"That's where they'll get the most benefit. Most of the feeder roots are there, and it will help the tree develop additional strength and ability to survive from those feeders."

To tell if a tree needs water, push a long screwdriver or similar object into



Tree lines across the District are filled with dead and damaged trees following the intense drought of 2012. While the tree in the middle of the picture is dead, arborist Galen Wittrock says the tree on the right might survive if it receives proper water over the next few years. Wittrock feels that with proper watering, the tree could recover with little apparent affect in several years.

the soil. If the soil moisture level is adequate, it should be fairly easy to push the screwdriver into the ground 8 to 10 inches. If the ground is dry and in need of watering it typically is very difficult to push the screwdriver in beyond a couple inches.

Infrequent deep watering, equivalent to 1-2 inches of rain, is the most beneficial to trees. Such watering two or three times through the summer

should help the trees recover if they will.

For homeowners, mulch around the tree 3-4 inches deep will help retain moisture. Mulch three feet out from the trunk on small trees, while large trees will benefit from mulch six feet out or more. When applying mulch, make sure it doesn't rest against the trunk, which can cut off the tree's ability to transport nutrients.

Water Usage *Previous Low Use Years Helped During Drought*

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fields. The year was important in that it was the first year of an allocation period for some, and the last year for others. In both instances the lower water use allowed for allocation water to be carried over into future years (allocations are established on a base total amount, which can be spread over multiple years). The following two crop years, 2010 and 2011, also had rainfall amounts that were close to equal or more than the historical average.

Corn crops accounted for the most acres under irrigation at 53 percent with small grains at just under 13 percent. Beans and alfalfa acres followed

at nine and eight percent, respectively.

Municipal uses for 2012 were similar in nature, where usage went up around 40-50 percent from the previous year. Despite the increase, all District municipalities remained safely under their established baseline uses.

The last use outline in the District's usage report is also the smallest and somewhat harder to report. Of the 150.1 billion total gallons used in the District, industrial use is a relative drop in the bucket at 265.4 million gallons.

That figure, represented by uses from designated industrial meters, doesn't show all use for industrial uses such

as water used for agricultural spraying, road work, oil well development, feedlots and other uses. Some of the water for those uses are accounted for in other ways. For instance, if such water comes from an agricultural well, it is reflected against the allocation held by that owner. Many of the District's towns also sell water for many purposes, and that water is accounted for in their municipal accounts.

"No matter where it's accounted from, it is a small amount," Glanz says. "On average, industrial water is only about one percent, give or take a little, of overall use in most areas."

Three From SPNRD Attend 50th Annual Range Camp

Three students from the District joined others from across the state for the 50th Nebraska Youth Range Camp at Halsey.

Nash Leef and Cody Simmons of Chappell and Hunter Hendrickson from Lodgepole all received scholarships from the District covering the camp tuition. Fifty students attended the camp to study rangeland and natural resources taught by professionals from various agencies, colleges, and universities.

The camp is sponsored by the Nebraska Section of the Society for Range Management.

With more than 50 percent of the state covered by rangeland, students learned the resource's importance in providing agricultural products, wildlife habitat, recreational opportunities, sustainable biodiversity, and key environmental functions such as carbon sequestration and water cycling.

Campers participate in field activities, lectures, leadership/team-building activities, and field trips to a local working ranch and a national forest.



Three students received tuition scholarships to attend this year's Range Camp, held at the State 4-H Youth Camp near Halsey. The students are, from left, Hunter Hendrickson, Nash Leef and Cody Simmons.

The field trips and activities illustrate different goals and the related range management activities that are implemented to achieve those goals.

Each year the SPNRD board of directors approves tuition scholarships to

Range Camp and other educational opportunities for youth interested in furthering natural resources knowledge. To learn more about these opportunities, contact the NRD or go the Website, www.spnrd.org.

Landscape *Trees, Management Practices Featured As Examples*

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ect to plant a million trees in the state to replace an aging and diminishing tree population.

In addition to the new trees, passers-by have likely noticed what appears to be a new flower garden with an unfamiliar design just off of Parkland Drive west of the District shop. The structure is a rain garden, designed to catch runoff from the shop and grounds to the north.

The rain garden is a practical example of a "green structure" designed to reduce the amount of runoff going into the city's storm drain system. It catches runoff water in a bioswale, or small holding area lined with plants. The water is then absorbed slowly over the course of a couple of days rather than rushing down gutters carrying potential contaminants to Lodgepole Creek.

Water Resources Specialist Ryan Re-

isdorff says the rain garden was developed to provide a living example where residents can see how the management practice works. Reisdorff coordinates a District program that provides cost-share funds for those wanting to implement the use of a rain garden on their property.

Another example of a best management practice that can be put in place by residents is in the form of two rain barrels catching storm water from District shops. Staff members use the collected rain water as they work to maintain plants and gardens. Addition of rain barrels by homeowners is also supported with a cost share program.

Also supported with cost share is the continuing practice of installing buffalograss as part of the landscape. The District already had a couple of areas where those interested in lawn-type

buffalograss could see how it did, and as part of the new project has added more than 3,000 sq. ft. to the available displays.

Following its practice of water-smart gardening, the District also added a xeric flower garden in the area. Among its features are native grasses as part of the landscape.

"We invite everyone to look over the grounds and see what can be accomplished in the way of landscape stewardship," says Ogle. "We're happy to have this opportunity to provide these examples for everyone, while at the same time adding to the neighborhood's aesthetic value."

The District plans to build on the examples with the continued idea of providing experiences that will allow visitors to learn while enjoying the setting.

The Pipeline

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Nebraska's NRDs

40 years of protecting the state's natural resources.

