

STATE OF OREGON

COUNTY OF POLK

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

BOGDAN CACEU
6722 SE REED COLLEGE PLACE
PORTLAND, OR 97202

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-17626

SOURCE OF WATER: SOUTH WELL (POLK 53022/L98386), NORTH WELL (POLK 53096/L104629), AND SUMP WELL IN NORTH FORK ASH CREEK BASIN

PURPOSE OR USE: IRRIGATION OF 30.0 ACRES, POND MAINTENANCE, AND STORAGE OF GROUND WATER FOR IRRIGATION

MAXIMUM RATE/VOLUME: 0.02 CUBIC FOOT PER SECOND (CFS) FOR IRRIGATION OF 30.0 ACRES AND POND MAINTENANCE AND 3.0 ACRE FEET (AF) OF STORED GROUND WATER FOR IRRIGATION OF 30.0 ACRES

PERIOD OF USE:

IRRIGATION - MARCH 1 THROUGH OCTOBER 31
POND MAINTENANCE - YEAR-ROUND
STORAGE OF GROUND WATER FOR IRRIGATION - NOVEMBER 1 THROUGH JUNE 30

DATE OF PRIORITY: FEBRUARY 6, 2013

WELL LOCATIONS:

SOUTH WELL (POLK 53022/L98386) - NWSE, SECTION 6, T8S, R5W, W.M.;
2350 FEET NORTH AND 1640 FEET WEST FROM SE CORNER, SECTION 6

NORTH WELL (POLK 53096/L104629) - NWSE, SECTION 6, T8S, R5W, W.M.;
2600 FEET NORTH AND 1600 FEET WEST FROM SE CORNER, SECTION 6

SUMP WELL - NESE, SECTION 6, T8S, R5W, W.M.; 2160 FEET NORTH AND
1000 FEET WEST FROM SE CORNER, SECTION 6

RESERVOIR LOCATIONS:

ABOVE-GROUND TANKS - NWSE, SECTION 6, T8S, R5W, W.M.: 2600 FEET
NORTH AND 1650 FEET WEST FROM SE CORNER, SECTION 6

RESERVOIR LOCATION - NESE, SECTION 6, T8S, R5W, W.M.: 1900 FEET
NORTH AND 900 FEET WEST FROM SE CORNER, SECTION 6

The amount of water used for irrigation under this right, together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-EIGHTIETH of one cubic foot per second and 2.5 acre-feet for each acre irrigated during the irrigation season of each year.

THE PLACE OF USE IS LOCATED AS FOLLOWS:

NE ¼ SE ¼ 10.0 ACRES AND POND MAINTENANCE
 NW ¼ SE ¼ 12.0 ACRES AND POND MAINTENANCE
 SW ¼ SE ¼ 5.0 ACRES
 SE ¼ SE ¼ 3.0 ACRES

SECTION 6

TOWNSHIP 8 SOUTH, RANGE 5 WEST, W.M.

Measurement devices, and recording/reporting of annual water use and storage conditions:

- A. The Director may require the permittee to install a totalizing flow meter, or other suitable measuring device as approved by the Director, at each point of appropriation and at the reservoir. If the Director notifies the permittee to install a measuring device, the permittee shall install such device within the period stated in the notice. Once installed, the permittee shall maintain the device in good working order, and shall allow the watermaster access to the device.
- B. The Director may require the permittee to keep and maintain a record of the volume of water diverted and stored, and may require the permittee to report water-use and water-storage on a periodic schedule as established by the Director. In addition, the Director may require the permittee to report general water-use information, the periods of water use and the place and nature of use of water under the permit.

To monitor the effect of water use from South Well (POLK 53022/L98386) and North Well (POLK 53096/L104629), authorized under this permit, the Department requires the water user to obtain, from a qualified individual (see below), and report annual static water level measurements. The static water level shall be measured in the month of March. Reports shall be submitted to the Department within 30 days of measurement.

Static Water Level Conditions

To monitor the effect of water use from the well(s) authorized under this permit, the Department requires the water user to obtain, from a qualified individual (see below), and report annual static water-level measurements. The static water level shall be measured in the month of

March. Reports shall be submitted to the Department within 30 days of measurement.

Measurements must be made according to the following schedule:

Before Use of Water Takes Place

Initial and Annual Static Water Level Measurements

The Department requires the permittee to report an initial water-level measurement in the month specified above once well construction is complete, and annually thereafter until use of water begins; and

After Use of Water has Begun

Reference Static Water Level Determination

Following the first year of water use, the user shall report one static water-level measurement in the month specified above which will establish the reference level against which future annual measurements will be compared. The Director may require the user to obtain and report additional static water levels after the reference level has been determined. The additional measurements may be required in a different month. If the measurement requirement is stopped, the Director may restart it at any time.

All measurements shall be made by a certified water rights examiner, registered professional geologist, registered professional engineer, licensed well constructor or pump installer licensed by the Construction Contractors Board and be submitted to the Department on forms provided by the Department. The Department requires the individual performing the measurement to:

- A. Identify each well with its associated measurement;
- B. Measure and report water levels to the nearest tenth of a foot as depth-to-water below ground surface;
- C. Specify the method used to obtain each well measurement; and
- D. Certify the accuracy of all measurements and calculations reported to the Department.

The water user shall discontinue use of, or reduce the rate or volume of withdrawal from, the well(s) if any of the following events occur:

- A. Annual water-level measurements reveal an average water-level decline of three or more feet per year for five consecutive years; or
- B. Annual water-level measurements reveal a water-level decline of 15 or more feet in fewer than five consecutive years; or
- C. Annual water-level measurements reveal a water-level decline of 25 or more feet; or
- D. Hydraulic interference leads to a decline of 25 or more feet in any neighboring well with senior priority.

The period of non-use or restricted use shall continue until the water level rises above the decline level which triggered the action or until the Department determines, based on the permittee's and/or the Department's data and analysis, that no action is necessary because the aquifer in question can sustain the observed declines without adversely impacting the resource or senior water rights. The water user shall in no instance allow excessive decline, as defined in Commission rules, to occur within the aquifer as a result of use under this permit. If more than one well is involved, the water user may submit an alternative measurement and reporting plan for review and approval by the Department.

Prior to using water from any well listed on this permit, the permittee shall ensure that the well has been assigned an OWRD Well Identification Number (Well ID tag), which shall be permanently attached to the well. The Well ID shall be used as a reference in any correspondence regarding the well, including any reports of water use, water level, or pump test data.

The storage of water allowed herein is subject to the installation and maintenance of an outlet pipe, or the provision of other means to evacuate water when determined necessary by the Water Resources Director to satisfy prior downstream rights. The permittee is required to pass all surface water for which a storage right does not exist. The Director may require the user to measure inflow and outflow, above and below the reservoir respectively, to ensure that surface-water flow is not impeded. Measurement devices and their implementation must be acceptable to the Director, and the Director may require that data be recorded on a specified periodic basis and reported to the Department annually or more frequently.

STANDARD CONDITIONS

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may be subject to cancellation, unless the Department authorizes the change in writing.

If substantial interference with surface water or a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The well(s) shall be constructed and maintained in accordance with the General Standards for the Construction and Maintenance of Water Supply Wells in Oregon. The works shall be equipped with a usable access port adequate to determine water-level elevation in the well at all times. If the riparian area is disturbed in the process of developing a point of appropriation, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with ODFW's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. For purposes of mitigation, the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR 635-415, shall be followed.

The use may be restricted if the quality of downstream waters decreases to the point that those waters no longer meet state or federal water quality standards due to reduced flows.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit to the Water Resources Department the results of a pump test meeting the Department's standards for each point of appropriation (well), unless an exemption has been obtained in writing under OAR 690-217. The Director may require water-level or pump-test data every ten years thereafter.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

Completion of construction and application of the water shall be made within five years of the date of permit issuance. If beneficial use of permitted water has not been made before this date, the permittee may submit an application for extension of time, which may be approved based upon the merit of the application.

Within one year after making beneficial use of water, the permittee shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner.

Issued April 17 , 2014

E. Timothy Wallin

E. Timothy Wallin, Water Rights Program Manager
for Phillip C. Ward, Director



RE: CREP

Liz Graham <Liz.Graham@polkswcd.com>
To: Bogdan Caceu <bcaceu@gmail.com>

Wed, Jan 6, 2016 at 3:55 PM

Bogdan,

To be quite honest, I am not sure how long it will take. Your CREP plan and the plant sale are the top priorities within the next month; after the plant sale, your CREP and one other CREP plan will be the bulk of my workload until completed. I anticipate the contract being ready by March. The funds are guaranteed to be reimbursed once the contract is signed. The first conservation practice (cost shared practice) is to take place in June of this year, so the plan will be completed well before then. Sorry I can't give you a more definitive timeline, hope that is as clear as mud.

Regards,

LIZ HABLEY GRAHAM

Resource Conservationist

Polk Soil & Water Conservation District

[503-623-9680](tel:503-623-9680) ex. 107

From: Bogdan Caceu [mailto:bcaceu@gmail.com]
Sent: Wednesday, January 06, 2016 2:13 PM
To: Liz Graham
Subject: Re: CREP

What's your expectation in terms of our CREP project:

- when would we sign & submit the application?
- when would we have a decision on whether funds are granted?

Thanks,

Bogdan



Bogdan Caceu <bcaceu@gmail.com>

RE: water storage project in Polk County

Jordan Mercier <Jordan.Mercier@grandronde.org>
To: Bogdan Caceu <bcaceu@gmail.com>

Thu, Dec 3, 2015 at 10:02 AM

Good Morning,

Thank you for reaching out to the Tribe and notifying us of your project proposal. We appreciate the opportunity to express concerns and provide comments regarding potential impacts to cultural resources. The project area of potential effect does not appear to have any documented cultural resources within. There are cultural resources in the vicinity, but they are far enough removed that they will not be impacted by the proposed project. Because the project area has never been formally surveyed for cultural resources, there is potential for the project to impact cultural resources not previously documented. Therefore, I recommend having an inadvertent discovery plan in place that outlines protocols and procedures to follow if cultural resources are encountered during project activities. If an inadvertent discovery of cultural resources occurs please halt project operations, contact our office as well as the State Historic Preservation office, and follow all applicable laws. If human remains are encountered please contact the Oregon State Police Department and notify our office.

Again, the Tribe thanks you for soliciting information regarding your proposed project. If you have any further questions please do not hesitate to contact me.

Respectfully,

Jordan

Jordan Mercier

Cultural Protection Coordinator

Tribal Historic Preservation Department

Confederated Tribes of the Grand Ronde Community of Oregon

Jordan.Mercier@grandronde.org

503-879-2185

From: Bogdan Caceu [mailto:bcaceu@gmail.com]

Sent: Wednesday, December 02, 2015 10:21 AM

To: THPO

Subject: water storage project in Polk County

Hello,

Per my discussion with Jordan, please find attached a description of my proposed project, including a map of its location. I also know that should excavation during site prep uncover any tribal cultural resources, work would be immediately stopped until state and tribal archeologists determine any further course of action.

Best regards,

Bogdan Caceu

La Creole Orchards

Dallas, Oregon

[503-929-3460](tel:503-929-3460)

otic marketing relationships and the real or perceived difference in oil quality that is generally produced in cooler growing regions. It is likely, however, that the warmer Central Valley will have an agricultural advantage over the cooler coastal valleys when it comes to olive yields.

The two potential advantages for the North Coast counties is the association with fine wines for symbiotic economic production of olive oil. The Central Valley and Sierra Nevada foothills have a great potential to produce both high-quality and high-volume olive oil at a much lower cost.

Table 2.1. Orchard conditions affecting fruit yields in oil olives

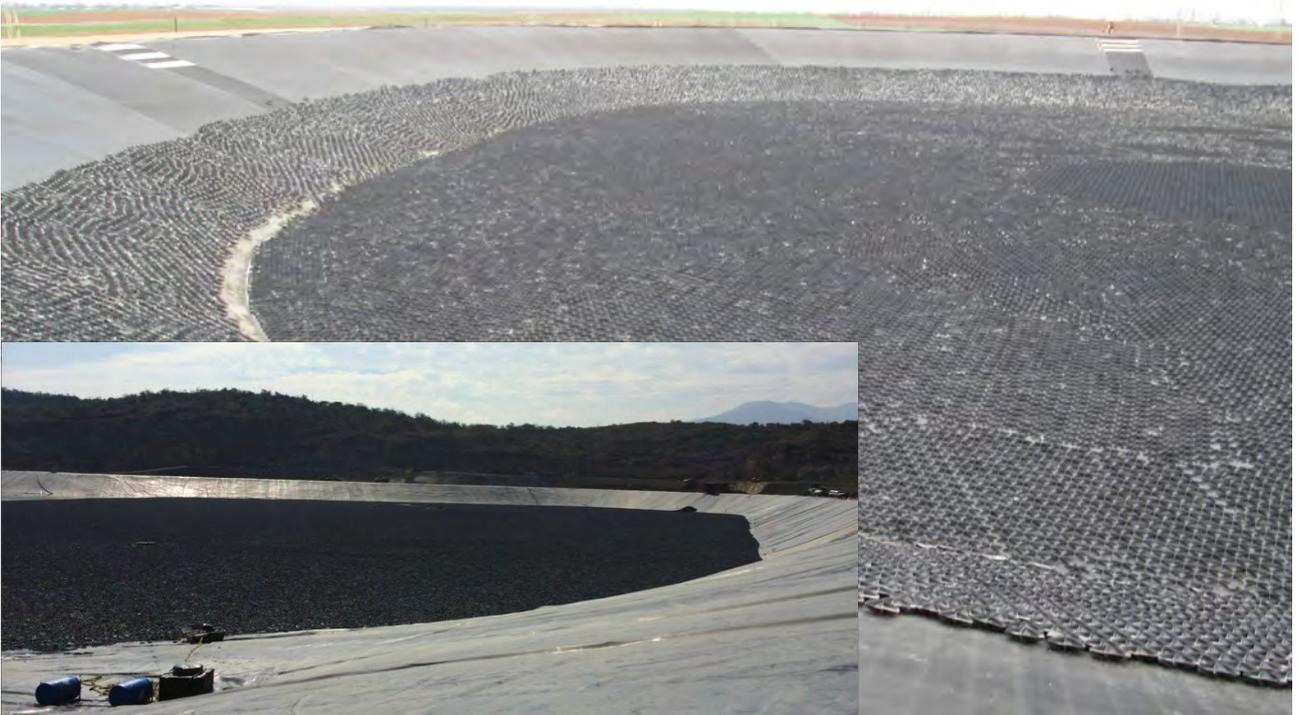
Fruit yield	Conditions affecting yield
1 ton per acre (2.24 T/ha)	<ul style="list-style-type: none"> widely spaced orchard in the 5th to 6th year; or older orchard with close spacing that is shading out in the lower portions of the trees poor irrigation, weed control, pruning, and nutrient management excessively vigorous or weak growing conditions poor pollination from rain, cold, drought stress, hot and dry wind during bloom, or inadequate pollinizer trees alternate "off" year of production super-high-density orchard in the 2nd year
2 tons per acre (4.48 T/ha)	<ul style="list-style-type: none"> widely spaced orchard in the 6th to 8th year with excessive shading poor irrigation, weed control, pruning, and nutrient management excessively vigorous or weak growing conditions poor pollination from rain, cold, drought stress, hot and dry wind during bloom, or inadequate pollinizer trees alternate "off" year of production from very heavy production previous year super-high-density orchard in the 3rd year
3 tons per acre (6.72 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 9th to 10th year with some shading good irrigation, weed control, pruning, and nutrient management acceptable vigor and growing conditions some lack of pollination due to poor weather during bloom or a lack of pollinizer trees probable maximum yield from a coastal hillside orchard super-high-density orchard in the 3rd year
4 tons per acre (8.96 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 10th+ year with little or no shading very good irrigation, weed control, pruning, and nutrient management correct vigor and growing conditions very good pollination and weather conditions sustainable yield under very good management well-managed super-high-density orchard in the 4th+ year
5 tons per acre (11.2 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 10th+ year with no shading excellent irrigation, weed control, pruning, and nutrient management ideal vigor and growing conditions excellent pollination and weather conditions alternate "on" year of production from a low yield previous year very well-managed super-high-density orchard in the 4th+ year
> 6 tons per acre* (> 13.44 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 10th+ year with no shading superior irrigation, weed control, pruning, and nutrient management ideal vigor and growing conditions ideal pollination and weather conditions unsustainable yield from alternate "on" year of production from a very low yield previous year superior management in a super-high-density orchard in the 4th+ year

Note: * Yields have been recorded in table olives in California at 1.2 tons per acre (26.9 T/ha). This is usually preceded by a light crop and followed by a very light crop.





HEXA-COVER[®]
COVER YOUR LIQUIDS



Hexa-Cover[®] Floating Cover

for controlling such things as:

Odor

Heat loss

Emission

Evaporation

Organic- / Algae growth

Bird Deterrent



Hexa-Cover[®] Floating Cover R114 is manufactured in North America



Since its launch in 2004, the Hexa-Cover® Floating Cover has grown to be the leading solution for floating covers.

The unique and patented Hexa-Cover® Floating Cover is a brilliant cover on almost any kinds of liquids.

Hexa-Cover® Floating Cover is the ideal solution for **eliminating** such things as:

- **Evaporation**
- **Organic / Algae growth**
- **Emission**
- **Odor**
- **Heat loss**

Today Hexa-Cover® Floating Cover is in use on all forms of basins, lagoons, reservoirs, containers, ponds and tanks and is used in several applications within i.e.:

Water

- Reservoirs for Fire Protection
- Reservoirs for irrigation water
- Reservoirs for collected surface water reuse
- Bird deterrent
- Spill over tanks
- Wastewater tanks and reservoirs
- Cooling / process water reservoirs
- Reserve water reservoirs
- Compensation tanks
- Water Settlement Lagoons

Leachate

Decoction

Chemical tanks

Oil

Agriculture

- Storage facilities
- Biogas plants
- Slurry/Manure tanks (pigs, cows, poultry, mink)
- Drinking trough



Napa Berryessa Resort Improvement, CA 94558

Hexa-Cover® Floating Cover is installed at Lake Berryessa Wastewater Treatment plant, 1465 Steele Canyon Road, Napa. The application is to cover two concrete equalization basins.

Process:

Raw sewage from homes and resort, flow from gravity and lift stations into headwork’s Lakeside Spiral Screen, screened water into two equalization basins with Hexa-Cover® Floating Cover, then to Ovivo MBR, to effluent basin or alternate overflow basin, then pumped to reservoir off site for land application. Plant flow capacity approximately 30,000 GPD now and at build out 60,000 GPD.

“The visit to the plant was a bit amazing. There was no odor from the “Hexa-Covered” EQ Basins. These EQ basins have very high odor potential and algae potential because of the heavy nutrients coming off the screen. There was no algae, the discs as advertised interlocked, they floated up and down with no problem, and could not help but reduce evaporation.

A solid cover presented safety issues, the discs did not. Summit Engineers was going to put aeration in these basins but saw a sample of the Hexa-Cover® product, called references then recommended the Hexa-Cover® installation. It penciled out better than aeration. That was important to this design build project, which Western Water Constructors, Inc. did with Summit.

Adjacent to these equalization basins are the effluent basin and overflow basin – please see attached pictures. These two basins were covered with algae. The point; the Hexa-Cover® Floating Cover eliminates Algae!

As proof, side by side basins, same plant, same time, two “Hexa-Covered” basins without algae and two uncovered basins with heavy algae. Also, no odor from the EQ basins.

The discs arrived in large sacks. Installation was simple; they simply dumped the discs into the basins. Installation was less than an hour. Contrast that to an aeration system”



HEXA-COVER®

COVER YOUR LIQUIDS



Hexa-Cover® Floating Cover:

Can be installed in both empty and full (max 5 meter drop)



Hexa-Cover® Floating Cover:

“Sloped walls”: At changes in the level of the liquid, the Hexa-Cover® Floating Cover will automatically be activated and create a coherent cover



Hexa-Cover® Floating Cover:

Effective, easy, maintenance free and long lived

Picture:

104.000 m² / 1.120.000 ft² Tailing Pond (controlling evaporation)



Hexa-Cover® Floating Cover:

Hexa-Cover® Floating Cover come in big-bags, or in containers. The tiles are simply poured onto the surface, where after the Hexa-Cover® Floating Cover automatically distribute and create a coherent cover



Hexa-Cover® Floating Cover:

Very easy and simple installation



The Hexa-Cover® Floating Cover ensure:

- Up to 99,9% coverage of the surface
- Up to 95% reduction of evaporation from water surfaces
- Up to 95% stable and constant reduction of emission (i.e. ammonia)
- Up to 90% stable and constant reduction of odors
- Noticeable reduction in organic growth such as algae, weeds etc.
- Noticeable reduction in heat loss

Features and benefits:

- Storm resistance (R114 tested up to 32 m/s)
- Ease of installation, no need for any special equipment
- Installation on both full and empty "tank"
- Automatic distribution of floating tiles on liquid surface
- Automatic adaption to changes in the level
- Fits to all shapes and geometries
- Easy adaption to bigger/smaller surfaces by adding/removing tiles
- 360° free and unlimited access to the liquid for e.g. measuring, emptying or stirring
- Life expectancy of 25 years
- Favourable price
- No running cost
- No repair cost
- No maintenance cost
- No insurance cost
- Significant reduction of heating cost
- Represent a substantial value if sold secondhand
- Unaffected by rain, snow and frost
- Allows installation of aeration to ensure aerobic conditions are maintained
- "Invisible" - the solution does not disfigure the landscape

The Hexa-Cover® Floating Cover is also the environmental friendly solution as it is manufactured of 100% recycled plastic without any use of Freon or other harmful materials.

The Hexa-Cover® Floating Cover;

- Is the solid, robust and long lasting solution
- Has no weak spots, no blow- /injection holes
- Has no hollow areas that eventually will break
- Consists of 6,8 kg PP/m² (R114)

The Hexa-Cover® Floating Cover come in two versions:

Hexa-Cover® Floating Cover "R90":

Diagonal measure	180 mm	7.09 in
Height	50 mm	1.98 in
Weight	120 g	.265 lb
No. per	m ² : 43	ft ² : 4

Big Bags:

1,3 x 1,3 x 2,5 m	55 m ²	285 kg
4.27 x 4.27 x 8,2 ft	592 ft ²	628 lb

Hexa-Cover® Floating Cover "R114":

Diagonal measure	228 mm	8.98 in
Height	70 mm	2.75 in
Weight	243 g	.535 lb
No. per	m ² : 28	ft ² : 2.6

Big Bags:

1,3 x 1,3 x 2,5 m	42m ²	285 kg
4.27 x 4.27 x 8,2 ft	452 ft ²	628 lb



For further info:

Hexa-Cover, Inc
3630 Peachtree Road NE, Suite 920
Atlanta GA 30326, USA
Tel + 1 (404) 835-9424
info@hexa-cover.com
www.hexa-cover.com

More references / testimonials: www.hexa-cover.com



Since its launch in 2004, Hexa-Cover® Floating Cover has been chosen for a vast number of installations globally, making the Hexa-Cover® Floating Cover the market leading solution.

USA:

American Crystal Sugar, MN 56721:
Wastewater: controlling odor



DeBuque Water Station, CO 81630:
10.500 m2 / 113.000 ft2 reservoir: bird deterrent

Gallatin Public Utilities, Gallatin, TN 37066
Wastewater application: controlling growth of algae

Henderson Water Utility, KY 42420
Water Storage Facility: controlling organic growth



Iron City Pipe, OH 45640
Water Storage Facility: controlling evaporation



MetCon LLC, PA 15061
Acids: controlling odor and emission



Napa Berryessa Resort Improvement, CA 94558
Wastewater application: controlling odor and organic growth

Washington Suburban Sanitary Comm., MD 20708
Wastewater: controlling organic growth



Canada:

City of Nakusp
3700 m2 / 39.825 ft2 WWTP reservoir: controlling evaporation and organic growth

City of Saskatoon
Wastewater application: heat retention



Markham District Energy Utility
Hot Water Storage: heat retention



Brazil:

Polenghi
Effluent: controlling odor



Chile:

Compania Minera Dona Ines de Collahuasi:
15.000 m2 / 161.500 ft2 Tailing Pond:
controlling evaporation



ENAP:
2.700 m2 / 29.050 ft2 Wastewater
Facility: controlling odor and emission



ENAP Rinery Bio-Bio:
2.500 m2 / 26.900 ft2 Wastewater
Facility: controlling odor and emission



Xstrata Copper:
6.400 m2 / 68.900 ft2 Tailing Pond:



Controlling evaporation



Ecuador:

New Quito International Airport:
Water Storage Facility: bird deterrent and for controlling evaporation and organic growth

Mexico:

Compañía Minera Cuzcatlán

104.000 m2/1.120.000 ft2
Tailing Pond:
Controlling evaporation





October 19, 2015

Mr. Bogdan Caceu
LaCreole Orchards
Liberty Road
Dallas, OR 97338

RE: APPLICATION FOR WATER STORAGE PROJECT

Dear Mr. Caceu,

Ash Creek Water Control District is a special district organized in 1951 under ORS 553 that exists for the purpose of drainage to improve the agricultural and other uses of low lying lands adjacent to the stream that were historically flooded. While your project is outside of the District boundaries, your land is within the Ash Creek Watershed and therefore we appreciate the opportunity to review and comment on projects that potentially could impact wet weather flood levels.

Our District Engineer has reviewed the site plan and narrative for your proposed project and has discussed his findings with the District Board of Directors. Based on his comments and a consensus of the Board of Directors, Ash Creek Water Control District has no objections to your project.

Again, we thank you for recognizing that the District has a vested interest in projects that could impact stream flow.

A handwritten signature in black ink, appearing to read 'Dan Farnworth'. The signature is fluid and cursive.

Sincerely,

Dan Farnworth, Chair
Ash Creek Water Control District



July 27, 2015



Bogdan Caceu
La Creole Orchards
Polk County, Oregon

RE: Water Supply Development Grant Proposal

To Whom It May Concern:

I am writing to provide support for the La Creole Orchards grant proposal for increased water storage. The proposed project is well researched, inexpensive, and efficient. This project responsibly secures and applies water for irrigation while providing an excellent example of resource conservation to the agricultural community as we adapt to the effects of drought and climate change.

The Oregon Department of Agriculture's Water Quality Program supports this proposal because it greatly increases the effectiveness and efficiency of water delivery and storage, reduces the threat of pollutants entering waters of the state, and is good for the local agricultural community. This project will responsibly enhance the orchards capabilities while also providing a good example of best management practices in agriculture and water conservation.

Sincerely,

Ryan Beyer, Water Quality Specialist
Natural Resources Program Area
Oregon Department of Agriculture
PH (503) 986-4696
Email: rbeyer@oda.state.or.us



POLK COUNTY

BOARD OF COMMISSIONERS

POLK COUNTY COURTHOUSE * DALLAS, OREGON 97338-3174

Commissioners
(503) 623-8173 * FAX (503) 623-0896
CRAIG A. POPE

MIKE
AINSWORTH
JENNIFER L.
WHEELER

GREGORY P.
HANSEN
Administrative Officer

Bogdan Caceu

September 23, 2015

Dear Mr. Caceu,

I am submitting this letter to support your proposed irrigation water storage Project application being submitted to the Oregon Water Resources Water Supply Development Account (WSDA). Many farmers in our area face water shortage issues and this project attempts to alleviate some of this problem for your lands. It works to promote economic viability and crop diversity by increasing water storage capacity efficiency and can be modeled at other farms throughout Polk County.

After touring your farm, and witnessing your success with the above ground storage that you have accomplished on a smaller scale, I am very impressed. I can see the value of public investment on your farm through the varieties of orchard crops that are able to be grown on land that has not seen productivity in many years.

As you know, I have been a strong proponent of SB839 and preceding bills that encourage public investment in creative and results driven water projects in both public and private ventures. I encourage agency officials to give this application strong consideration and hope to be of any help that is needed to get this project across the finish line.

Sincerely,

Commissioner Craig Pope



**GREATER
YAMHILL
WATERSHED
COUNCIL**

237 NE Ford Street, Suite 9
P.O. Box 1517
McMinnville, OR 97128
Phone: 503.474.1047

Board of Directors

James Riedman
Chair, Watershed Resident

Erik Grimstad
City of McMinnville

Neyssa Hays
Watershed Resident

Marci Humlie
Treasurer/Secretary,
McMinnville Water & Light

Leonard A. Rydell
Yamhill Co. Small Woodlands Assoc.

Staff

Luke Westphal
Executive Director

August 11, 2015

Bogdan Caceu
La Creole Orchards

SUBJECT: La Creole Orchards' Letter of Support for Water Project Proposal

Dear Bogdan,

The Greater Yamhill Watershed Council would like to express our support for La Creole Orchards' irrigation water storage project proposal through the Oregon Water Resources Department's Water Supply Development Account.

Limited water availability and storage is a priority natural resource concern that impacts communities across Oregon, particularly smaller growers. Water limitations require innovative solutions and we appreciate the investments that La Creole Orchards has made to study the feasibility of and options available to improve agricultural productivity on this project site.

La Creole Orchards' proposal will provide increased productivity, additional resilience to droughts and climate change, as well serve as a demonstration water project for growers in this region.

The GYWC encourages the ORWD's support for this irrigation water storage project and we look forward to working with La Creole Orchards. Please feel welcome to contact us regarding this letter of support.

Sincerely,

Luke Westphal

Executive Director
Greater Yamhill Watershed Council



Oregon

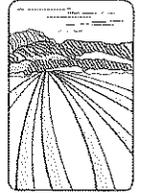
Kate Brown, Governor

Department of Agriculture

635 Capitol St NE
Salem, OR 97301-2532

July 24, 2015

La Creole Orchards
6722 SE Reed College Place
Portland, OR 97202
ATTN: Mr. Bogdan Caceu



Dear Mr. Caceau:

I am writing this letter in support of the application from La Creole Orchards (LCO) for a grant from the Water Supply Development Account managed by the Oregon Water Resources Department (OWRD).

Oregon Department of Agriculture (ODA) supports LCO's proposal to construct a lined reservoir to store water harvested from a shallow (sump) well on the property, and the new stored water will be used to:

- (a) Meet increasing water requirements as the orchard trees mature;
- (b) Supplement water supplies to meet late season water demands;
- (c) Expand orchard production to additional acreage; and
- (d) Promote adaptability and operational resilience to effects of climate variability and change, including drought conditions.

Funding for the proposed project would support a Beginning Farmer who has demonstrated exemplary efforts in conscientious, sustainable, water efficient agricultural operations. LCO has worked closely with state and federal partners (e.g., OWEB and USDA NRCS) to turn acreage overrun with invasive plants to productive orchards managed according to organic and sustainable principles.

The proposed project will contribute to more robust local and regional economies with associated cultural benefits; water quality protection and environmental conservation. ODA fully supports goals and objectives of the proposal by La Creole Orchards.

Sincerely,

Margaret A. Matter
Water Resources Specialist
Oregon Department of Agriculture
635 Capitol Street NE
Salem, Oregon 97301





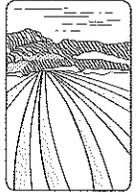
Oregon

Kate Brown, Governor

Department of Agriculture

635 Capitol St NE

Salem, OR 97301-2532



July 23, 2015

Bogdan Caceu
La Creole Orchards
Dallas, OR 97338

Dear Bogdan Caceu,

The purpose of this letter is to express support for the La Creole Orchards' application for a grant for a new irrigation water storage project through the Water Supply Development Account managed by the Oregon Water Resources Department. These grants offer an important means to mitigate drought impacts to farmers.

This project would build upon an above ground reservoir that stores 35,000 gallons, which was funded through the US Department of Agriculture, Natural Resource Conservation Service's Environmental Quality Incentives Program (EQIP). You have taken steps to conserve water by installing solar-powered pumps, which slowly pump water into the reservoir allowing water to be distributed into a micro-irrigation system in the orchard.

The new water storage project would increase La Creole Orchard's capacity with the potential for adding three-acre-feet of water as well as implement additional measures to conserve water use. Your project could serve to inform others of adjustments that maintain the orchard's economic viability by accessing stored water and employing innovative conservative measures.

The Oregon Department of Agriculture supports projects that wisely conserve water resources used for irrigation while helping to mitigate water resource challenges for farmers.

Sincerely,

Jo Morgan

Regional Water Resource Specialist

Agricultural Water Quality Management Program



College of Agricultural Sciences
Oregon State University, 126 Strand Agriculture Hall, Corvallis, Oregon 97331-2212
T 541-737-2331 | F 541-737-4574 | <http://agsci.oregonstate.edu>

October 8, 2015

Dear Mr. Caceu:

I am writing on behalf of the OSU Extension Small Farms Program to offer support for La Creole Orchards' grant proposal for increased water storage. This project is well thought out and provides a great example for many small farmers in the Willamette Valley that are facing water shortages this year and seeking drought mitigation strategies for the sustainability of their farms.

OSU Extension Small Farms Program supports this project to help expand the capability of this orchard and provide a model for other farmers to learn from.

Please do not hesitate to contact me with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Amy Garrett". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Amy Garrett
Small Farms Program
OSU Extension Service
Benton, Linn, and Polk Counties
Amy.Garrett@oregonstate.edu
Phone: 541-766-3551 | Cell: 503-739-5985 | Fax: 541-766-3549



POLK SOIL AND WATER CONSERVATION DISTRICT

Assistance in Natural Resource Management

580 Main St. Suite A Dallas, OR 97338 ☒ 503-623-9680 ☒ www.polkswcd.org

Directors

David Simmons
Chair

Chad Woods
Vice Chair

Frank Pender
Secretary

John Dalton
Treasurer

David McKibben

Kelly Gordon

Matt Crawford

Directors

Emeriti

Tom Thomson

Jim Clawson

Brian Sparks

Terry Lamers

Staff

Karin Stutzman
District Manager

Marc Bell
Resource
Conservationist

Liz Graham
Resource
Conservationist

Lucas Hunt
Stewardship
Forester

Sawyer Finegan
Youth Outreach
Coordinator

Tom Wilson
Office Admin

July 15, 2015

Dear Mr. Caceu,

The purpose of this letter is to document the support of the Polk Soil and Water Conservation District (PSWCD) for your proposed irrigation water storage project being submitted to the Oregon Water Resources Department's Water Supply Development Account (WSDA). Your project works to find a solution to continual seasons of drought and ever increasing water shortage in the Ash Creek watershed and the Willamette Valley at large. Many farmers in our area desire to continue to have productive lands, but face water shortage issues and this project attempts to help solve this problem. It works to promote economic viability, while increasing water storage capacity efficiency and can be modeled at other farms throughout the county.

By collecting and storing water during seasons of higher flow, utilizing gravity and solar power to assist in collection and irrigation delivery, and storing water in a sealed container; the project can achieve greater efficiency in total water quantity without using a conventional means of electricity or potentially creating a ground water recharge issue or becoming subject to traditional geological leakage issues faced by using an unlined pond.

The District encourages full support of this proposal by the WSDA team. The SWCD supports projects that actively conserve water resources used for irrigation and that affect positive, measurable improvement by a private land manager to meet and/or exceed public resource conservation needs.

Please contact me if you have any questions @ 503-623-9680 x110.

Sincerely,

Karin Stutzman, District Manager
Polk SWCD



Providing Natural Resource Leadership

2200 SW 2nd Street
McMinnville, OR 97128
www.yamhillswcd.org
503-472-6403

July 7, 2015

Dear Bogdan Caceu,

The purpose of this letter is to document support from the Yamhill Soil and Water Conservation District (YSWCD) for La Creole Orchards' irrigation water storage project. We also support your proposal to be considered for funding through the Water Supply Development Account offered by the Oregon Water Resources Department.

This project offers an innovative solution to common problems that many small landowners face throughout the state of Oregon: lack of water quantity and limited water storage. Over the years, the YSWCD has actively worked with private landowners to address these problems on their lands. We support projects, like this that:

- Increases productivity on working lands
- Increases plant and/or animal health
- Stores water when it is abundant so that it can be used during the dry season.

The YSWCD looks forward to seeing how La Creole Orchards is enhanced by this water storage development over time. A project like this could be a very good showcase for other landowners to be inspired by. If you have any questions, our staff contact for this project is, Michael Crabtree, Senior Conservation Technician. He can be reached at 503-472-1474 x 118.

Sincerely,

Larry Ojua
Executive Director
Yamhill Soil and Water Conservation District

Fig. 1. Schematic overview of proposed new water storage at La Creole Orchards in Polk County, tax lot 1800, NE/SE, section 6, T8S, R5W, W.M., Lat, Lon: 44.903, -123.341

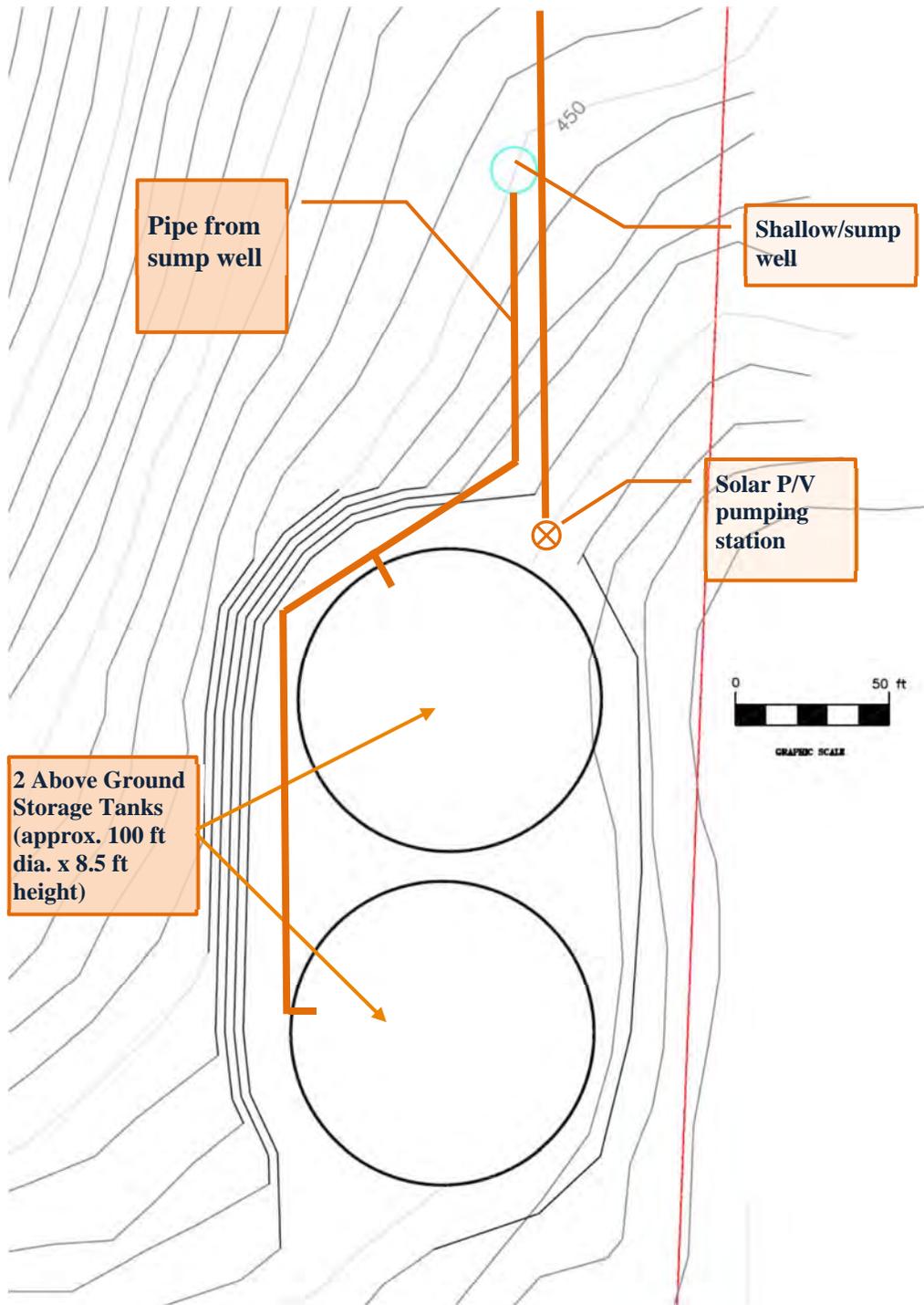
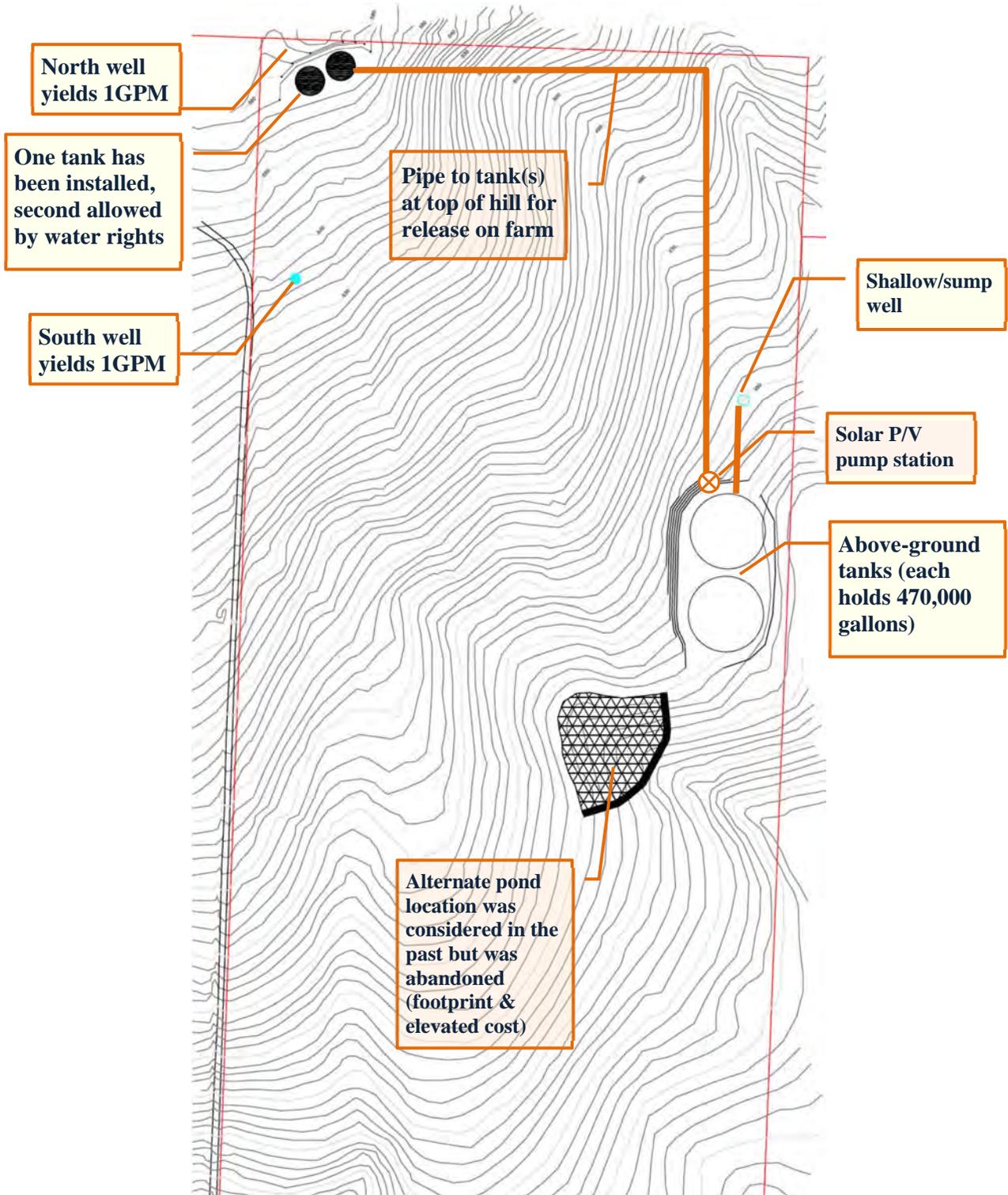


Fig. 2. Aerial overview of water-related infrastructure, including location of the proposed new water storage:



Fig. 3. Schematic overview of water-related infrastructure, including location of proposed new water storage:



Calculation Water Storage Tank/Silo

Standard calculation norms

Safety factors		Number of bolts per panel thickness			
Safety factor between real and theoretical calculation of stress ??	1,2	0,8 mm	2,0	2,2 mm	2,5
Additional safety factor	1,05	1,0 mm	2,0	2,4 mm	3,0
Ground conditions		1,2 mm	2,0	2,6 mm	3,0
Gravity of the ground	1.600	kg/m2	1,4 mm	2,0	3,0
Friction angle	20		1,6 mm	2,0	
Elastic modul for Sv ground conditions	12.000	KN/m2	1,8 mm	2,0	
Safety factor for deformation	2,0	-]	2,0 mm	3,0	

Standard Tank/Silo dimensions

Type of Silo (Water oder Manure)	Water	Minimum Panel thickness	1,0	mm
Type of panels	Std	net panel length dimension 2860 x 760mm		
Number of plates per ring	34	Diameter	30,950	m
Number of rings	3	Height	2,360	m
Digging into the soil - meters	0	Mtr.	Capacity	1756 m3
		Art.nr.	WSA3095236	

Calculation

Ground and Water pressure

Ring	Fpassive max	Factive	1,05xGd(a)+FaFp	Panel thickness	Gd.	t.o.v.1,05xGd(a)
	(N)	(N)	(N)	(mm)	(N)	(-)
	0	0	34.215	2	37	1,08

Safety factor for deformation

Volume Ground	m3
Horizontal pressure of the tank/silo	kN/m3
Minimum tension stress of the corrugation of the plate	cm4/m
Minimum Plate thickness	mm

Water pressure

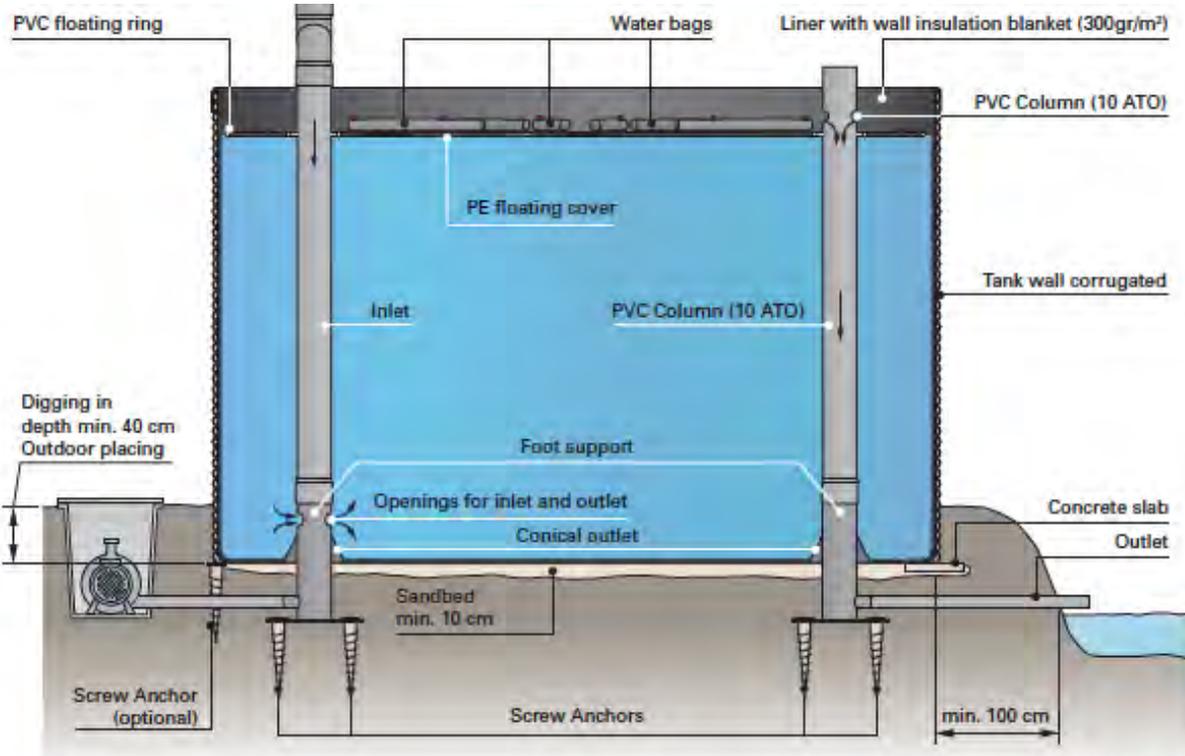
Ring	Water height	F ring	Gd(a)	1,05xGd(a)	Panel	Gd.	t.o.v.1,05xGd(a)	t.o.v. F ring	Ring pressure	Bolt strength
	(m)	(N)	(N)	(N)	(mm)	(N)	(-)	(-)	(N/mm2)	(N/mm2)
Bottom ring	2,334	27.155	32.586	34.215	2,0	36.806	1,08	1,36	335	238
2e.ring	1,574	18.166	21.799	22.889	1,4	24.192	1,06	1,33	320	341
Upper ring	0,814	9.178	11.013	11.564	1,0	17.280	1,49	1,88	226	241

Conclusion

Minimum Panel thickness type WSA watersilo is 1,0 mm

Silo will be delivered with the following specification

Ring	Panel thickness
	(mm)
Bottom ring	2,00
2e.ring	1,40
Upper ring	1,00















BUWAtank The best system for water storage

The special characteristics of the steel tank are quality, firmness of shape and mechanical strength. The steel panels of the tank are coated with zinc layer on both sides. They have a high tensile-strength (S 280 GD) according to DIN – EN 10147.

These special properties have been affirmed by the German Ministry of Construction when certifying the BUWAtank in the so-called "Prufbescheid B6-543-246".

Great variety of applications

The BUWAtank storagesystem is a flexible system with a great versatility of applications. Since many years the tanks have been used as:

- Storage of irrigation, rain and clear water.
- Storage of industrial liquids.
- Buffer-storage for mopping-up projects of polluted water or soil.
- Buffer-storage for manure.
- Biological sand-, lava- or compostfilter.
- Nurse-pond at fish-hatcheries.

Special projects with the BUWAtank

The Dutch "Calland Tunnel" project has made use of the properties of the BUWAtank in a very remarkable application. In the six tunneltubes a number of tanks were installed, filled with water as ballast when sinking the tunnelsegments. The BUWAtank had been chosen because the tanks had to overcome a gradient of 6 degrees. From calculation and simulationprogramme the BUWAtank appeared to have a great stiffness and mechanical strength.

Also in industry the BUWAtank is frequently used for the temporary storage of chemicals, oil or polluted water.

Special reinforced BUWAtank can be supplied for various roofconstructions.



Special characteristics:

Longer lifetime

Double protection layer through Plastisol coating on both sides of the panels. Expected lifetime 20 to 25 years.

High tensile strength

Use of high quality steel (S 280 GD) according DIN-norms.

Wide capacity range

Deliverable in many diameters, heights and panel thicknesses.

Fast installation

Larger bolt dimension M12, less bolt sets per panel, bolt sets treated with Zincrolyte for fast and easy installation.

Corrosion resistant through Zincrolyte

All bolts, nuts and washers are treated with a special high quality alloy, called Zincrolyte. Better fitting of the bolts and nuts.

Export packing

The panels are sealed to prevent water getting between the panels.

Technical information

All technical information and installation instructions are in pictorials available.

Strength calculation program

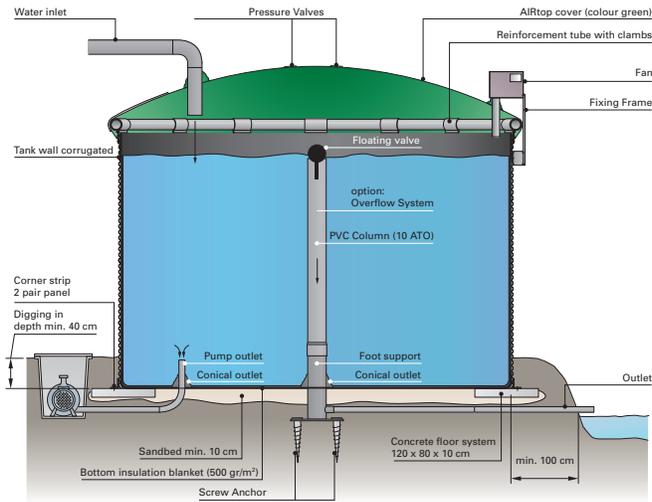
Program in Excel is based on the German calculation method Norm ENV-1993.

Available in Dutch, German and English.

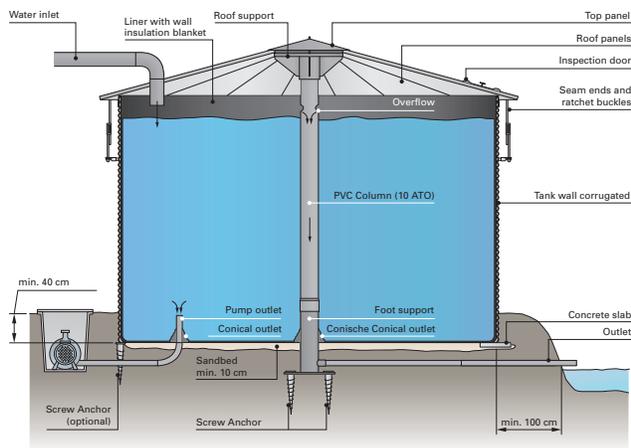


BUWAtank Exploded views

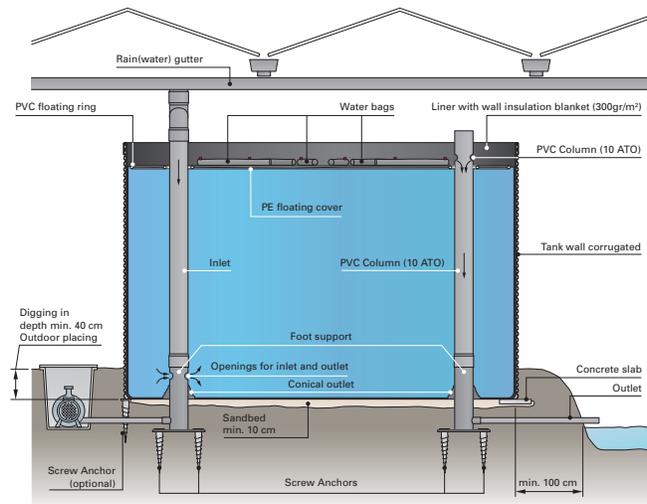
BUWA-airtop



BUWA-top



Buwa-cover



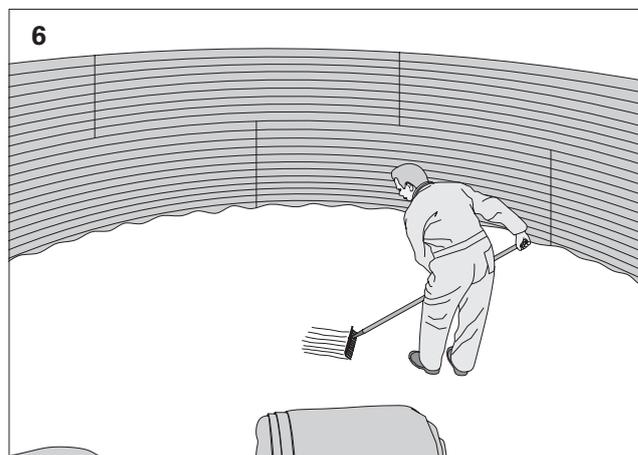
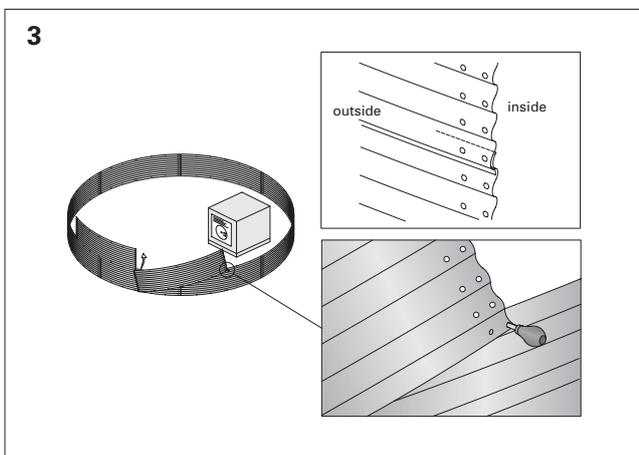
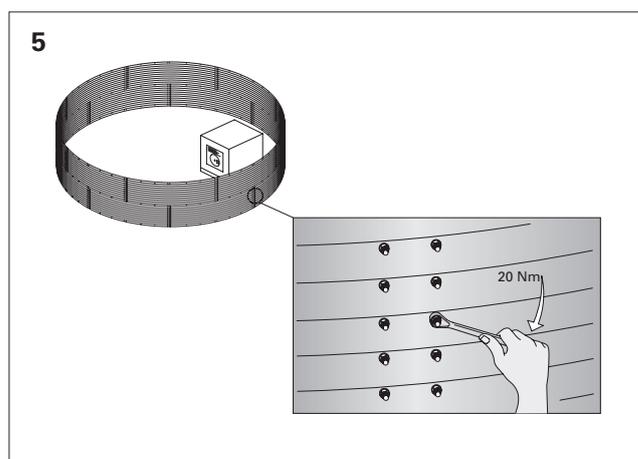
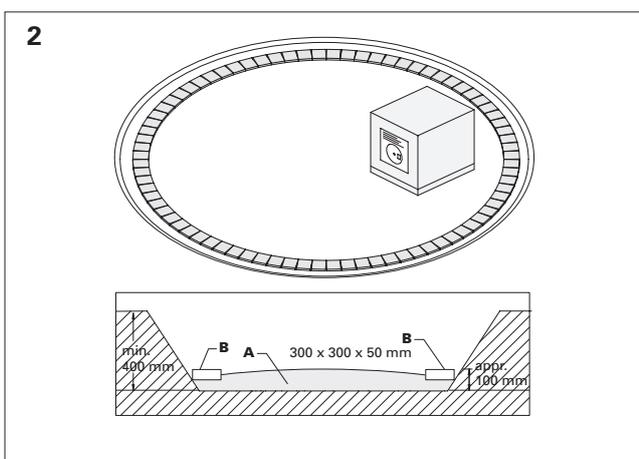
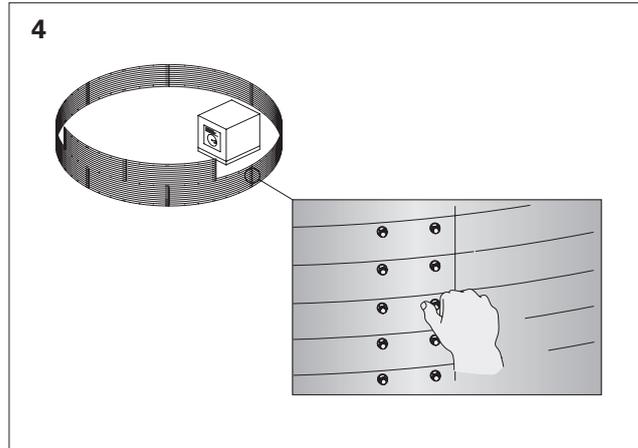
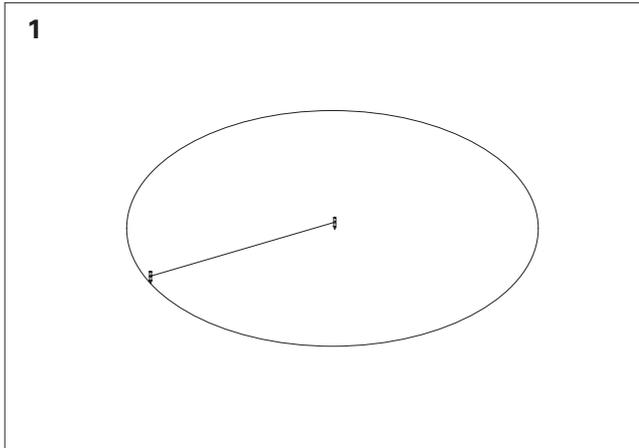
BUWAtank installation instructions on concrete slabs

(NL) Installatie instructies (betontegels)

(D) Montageanleitung (Betonplatten)

(F) Instructions d'installation (plaques de béton)

(E) Instrucciones para instalación (bases de concreto)



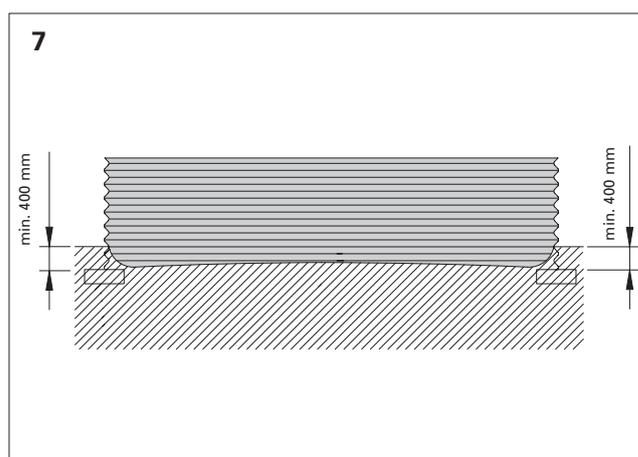
(NL) A Zandbodem
B Betontegels 300 x 300 x 50 mm

(D) A Sandboden
B Betonplatten 300 x 300 x 50 mm

(GB) A Sandbed
B Stone slabs 300 x 300 x 50 mm

(F) A Sol sablé
B Plaques de béton 300 x 300 x 50 mm

(E) A Cama de arena
B Bases de concreto 300 x 300 x 50 mm



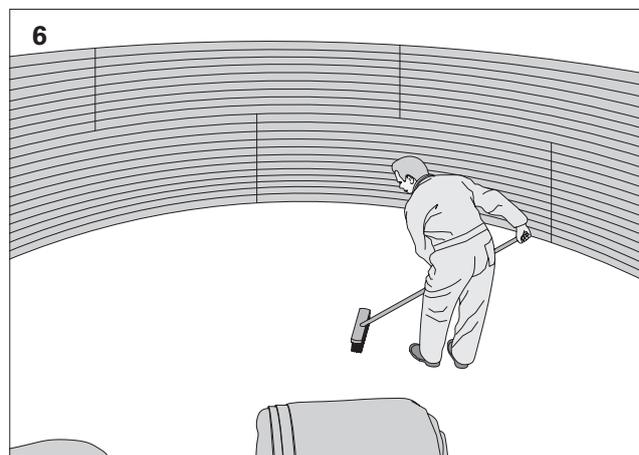
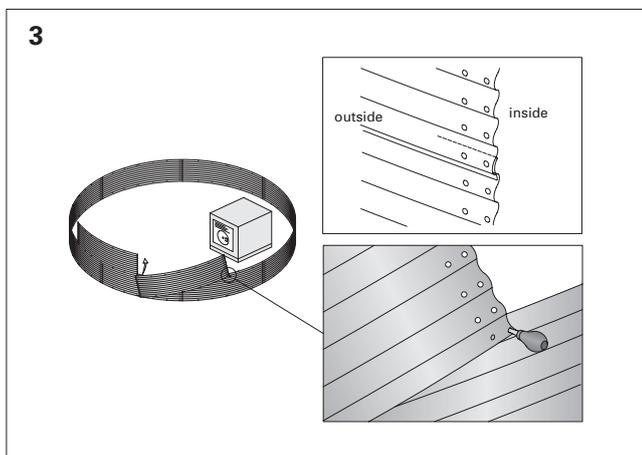
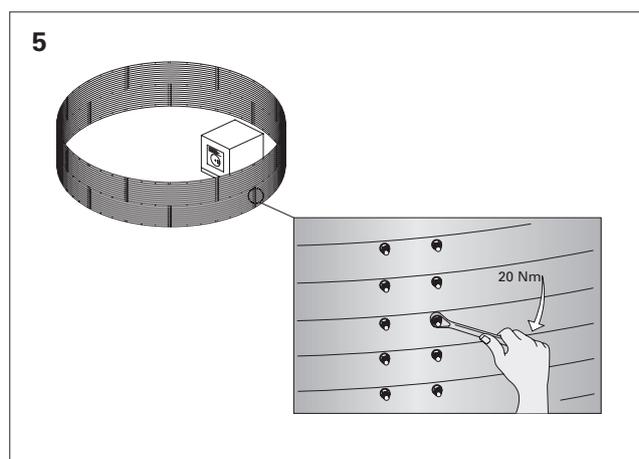
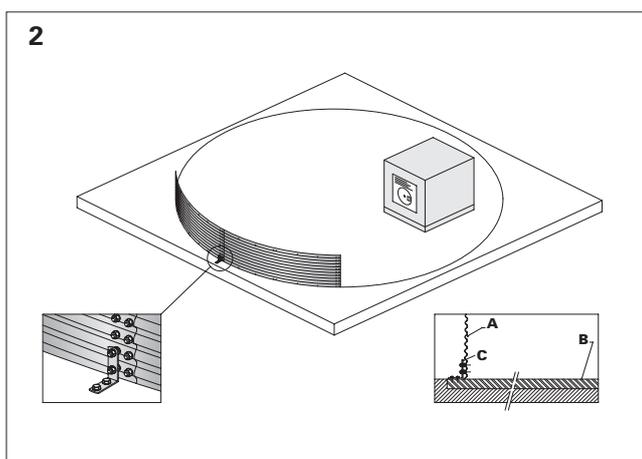
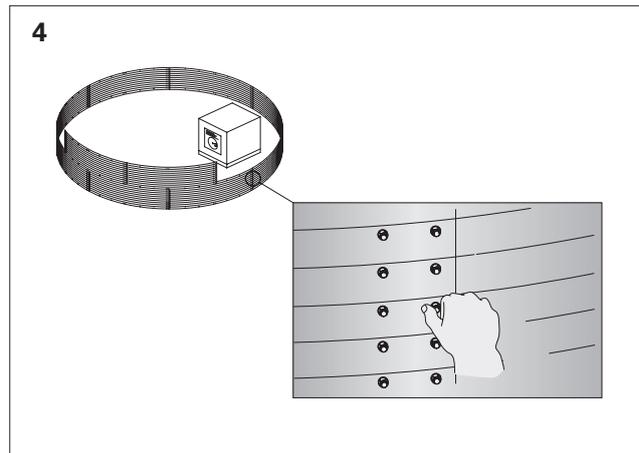
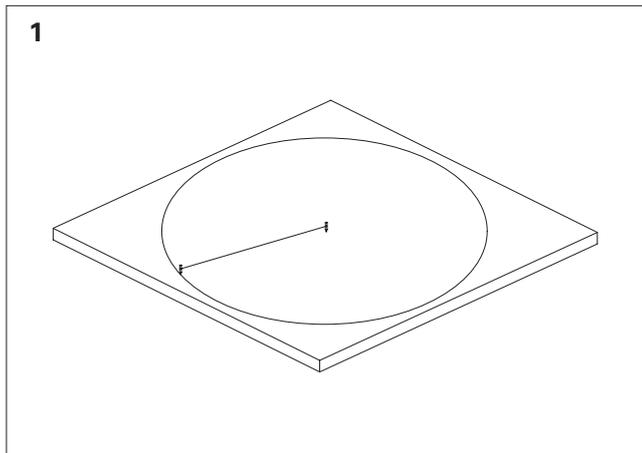
BUWAtank installation instructions on a concrete floor

(NL) Installatie instructies (betonvloer)

(D) Montageanleitung (Betonboden)

(F) Instructions d'installation (béton)

(E) Instrucciones para instalaión (hormigón)



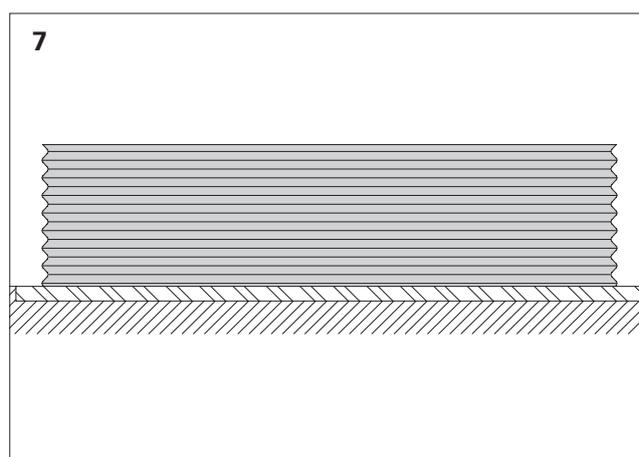
(NL) A Tankwand
B Beton
C Installatiestrip

(D) A Silowand
B Beton
C Befestigungsschiene

(GB) A Tankwall
B Concrete
C Installation strip

(F) A Paroi de réservoir
B Béton
C Bandes d'installation

(E) A Pared de tanque
B Hormigón
C Tira de instalación



BUWAliner installation instructions

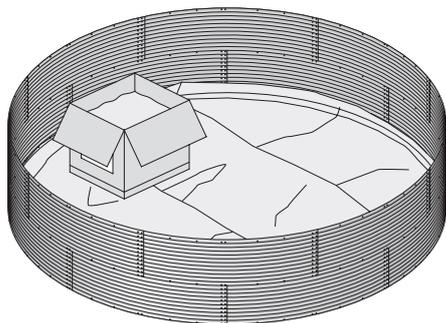
(NL) Installatie instructies

(D) Montageanleitung

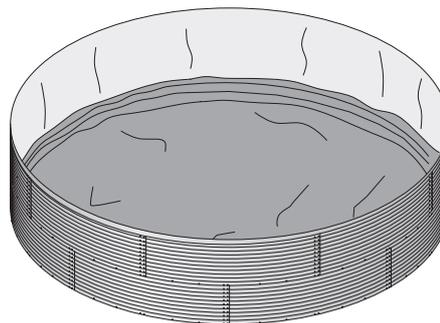
(F) Instructions d'installation

(E) Instrucciones para instalaión

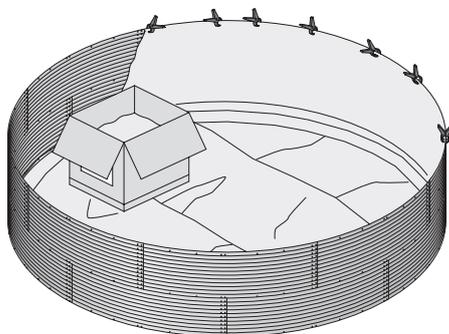
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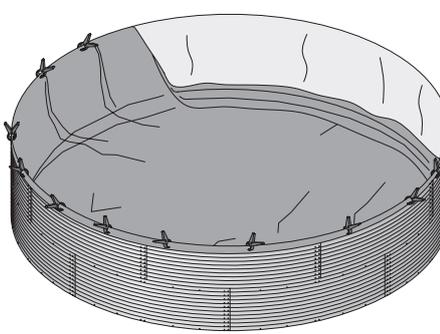
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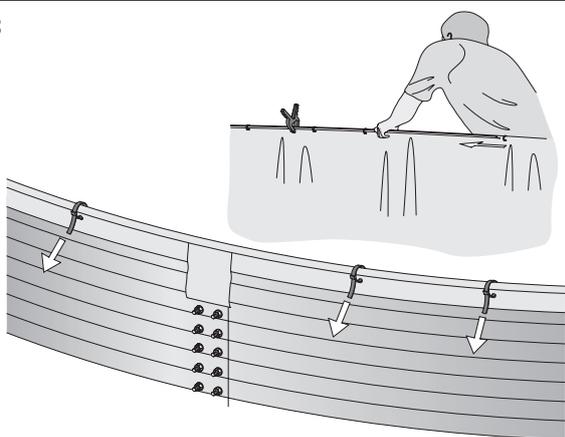
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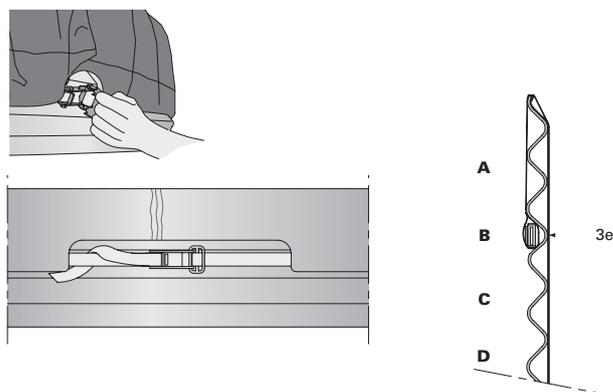
5



3



6



(NL) A Wandvilt
B Ratelspanners
C Tankwand
D Isolatie

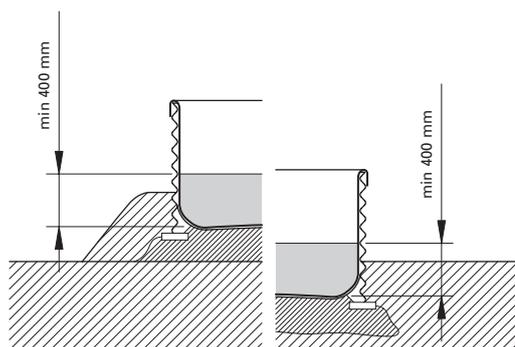
(D) A Wandschutzvlies
B Ratschen
C Silowand
D Isolierung

(GB) A Wall insulation blanket
B Racket buckles
C Tankwall
D Isolation

(F) A Feutre murale
B Tendeurs
C Paroi de réservoir
D Isolation

(E) A Manta de aislamiento de la pared
B Hebillas del trinquete
C Pared de tanque
D Aislamiento

7



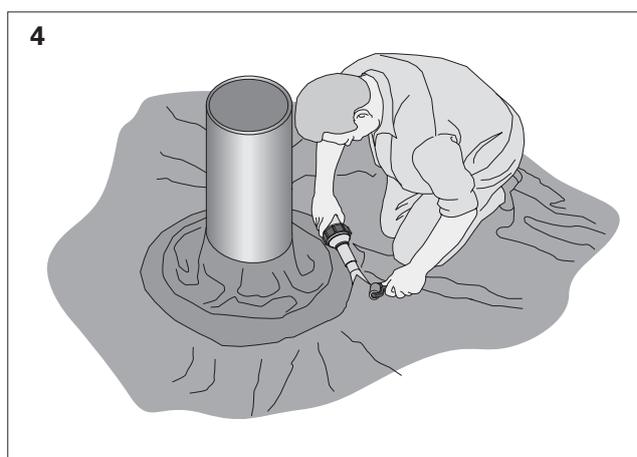
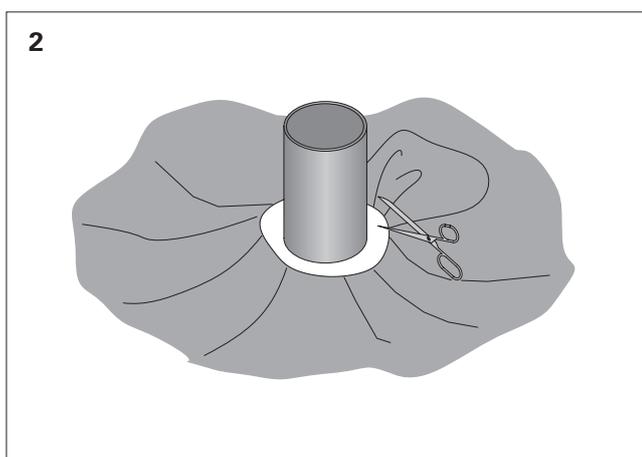
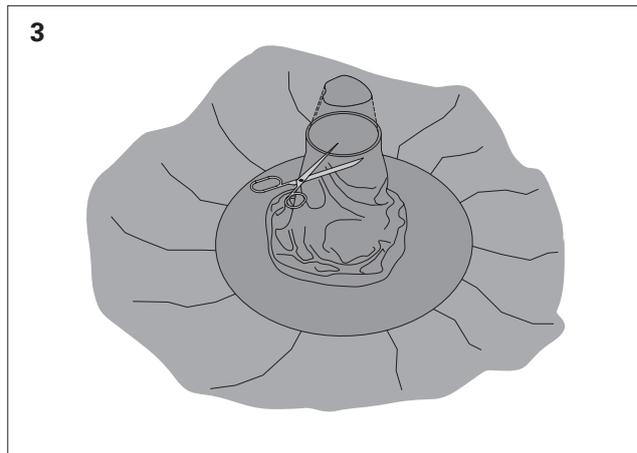
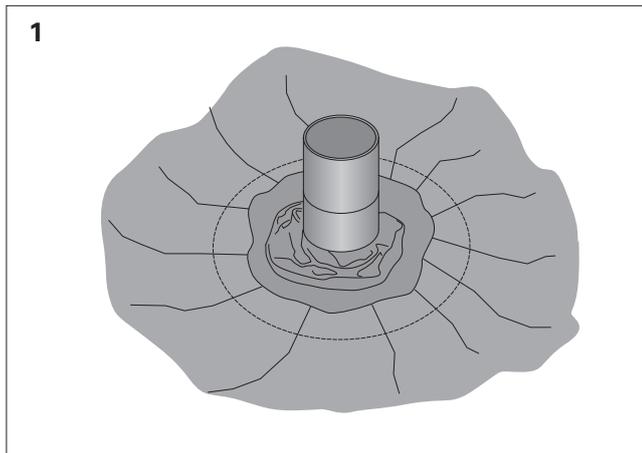
BUWAliner installation instructions

NL Installatie instructies

D Montageanleitung

F Instructions d'installation

E Instrucciones para instalai3n



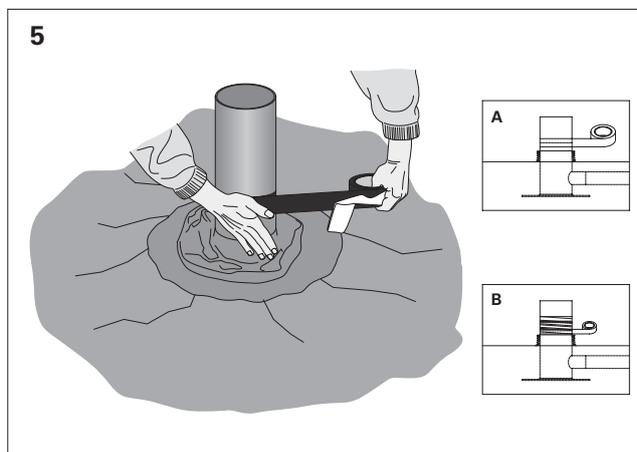
NL A Dikke tape
B Dunne tape

D A Dicke band
B Dünne band

GB A Thick tape
B Thin tape

F A Bande d'épaisseur
B Une mince bande

E A Cinta adhesiva gruesa
B Cinta delgada



WATER TECHNOLOGY

BUWATEC B.V.

Postbus 38
4286 ZG Almkerk
The Netherlands

Tel. +31 183 - 40 39 11

Fax +31 183 - 40 60 38

E-mail water-tank@buwatec.com

Internet www.buwatec.com

STATE OF OREGON

COUNTY OF POLK

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

BOGDAN CACEU
6722 SE REED COLLEGE PLACE
PORTLAND, OR 97202

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-17626

SOURCE OF WATER: SOUTH WELL (POLK 53022/L98386), NORTH WELL (POLK 53096/L104629), AND SUMP WELL IN NORTH FORK ASH CREEK BASIN

PURPOSE OR USE: IRRIGATION OF 30.0 ACRES, POND MAINTENANCE, AND STORAGE OF GROUND WATER FOR IRRIGATION

MAXIMUM RATE/VOLUME: 0.02 CUBIC FOOT PER SECOND (CFS) FOR IRRIGATION OF 30.0 ACRES AND POND MAINTENANCE AND 3.0 ACRE FEET (AF) OF STORED GROUND WATER FOR IRRIGATION OF 30.0 ACRES

PERIOD OF USE:

IRRIGATION - MARCH 1 THROUGH OCTOBER 31
POND MAINTENANCE - YEAR-ROUND
STORAGE OF GROUND WATER FOR IRRIGATION - NOVEMBER 1 THROUGH JUNE 30

DATE OF PRIORITY: FEBRUARY 6, 2013

WELL LOCATIONS:

SOUTH WELL (POLK 53022/L98386) - NWSE, SECTION 6, T8S, R5W, W.M.;
2350 FEET NORTH AND 1640 FEET WEST FROM SE CORNER, SECTION 6

NORTH WELL (POLK 53096/L104629) - NWSE, SECTION 6, T8S, R5W, W.M.;
2600 FEET NORTH AND 1600 FEET WEST FROM SE CORNER, SECTION 6

SUMP WELL - NESE, SECTION 6, T8S, R5W, W.M.; 2160 FEET NORTH AND
1000 FEET WEST FROM SE CORNER, SECTION 6

RESERVOIR LOCATIONS:

ABOVE-GROUND TANKS - NWSE, SECTION 6, T8S, R5W, W.M.: 2600 FEET
NORTH AND 1650 FEET WEST FROM SE CORNER, SECTION 6

RESERVOIR LOCATION - NESE, SECTION 6, T8S, R5W, W.M.: 1900 FEET
NORTH AND 900 FEET WEST FROM SE CORNER, SECTION 6

The amount of water used for irrigation under this right, together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-EIGHTIETH of one cubic foot per second and 2.5 acre-feet for each acre irrigated during the irrigation season of each year.

THE PLACE OF USE IS LOCATED AS FOLLOWS:

NE ¼ SE ¼ 10.0 ACRES AND POND MAINTENANCE
 NW ¼ SE ¼ 12.0 ACRES AND POND MAINTENANCE
 SW ¼ SE ¼ 5.0 ACRES
 SE ¼ SE ¼ 3.0 ACRES

SECTION 6

TOWNSHIP 8 SOUTH, RANGE 5 WEST, W.M.

Measurement devices, and recording/reporting of annual water use and storage conditions:

- A. The Director may require the permittee to install a totalizing flow meter, or other suitable measuring device as approved by the Director, at each point of appropriation and at the reservoir. If the Director notifies the permittee to install a measuring device, the permittee shall install such device within the period stated in the notice. Once installed, the permittee shall maintain the device in good working order, and shall allow the watermaster access to the device.
- B. The Director may require the permittee to keep and maintain a record of the volume of water diverted and stored, and may require the permittee to report water-use and water-storage on a periodic schedule as established by the Director. In addition, the Director may require the permittee to report general water-use information, the periods of water use and the place and nature of use of water under the permit.

To monitor the effect of water use from South Well (POLK 53022/L98386) and North Well (POLK 53096/L104629), authorized under this permit, the Department requires the water user to obtain, from a qualified individual (see below), and report annual static water level measurements. The static water level shall be measured in the month of March. Reports shall be submitted to the Department within 30 days of measurement.

Static Water Level Conditions

To monitor the effect of water use from the well(s) authorized under this permit, the Department requires the water user to obtain, from a qualified individual (see below), and report annual static water-level measurements. The static water level shall be measured in the month of

March. Reports shall be submitted to the Department within 30 days of measurement.

Measurements must be made according to the following schedule:

Before Use of Water Takes Place

Initial and Annual Static Water Level Measurements

The Department requires the permittee to report an initial water-level measurement in the month specified above once well construction is complete, and annually thereafter until use of water begins; and

After Use of Water has Begun

Reference Static Water Level Determination

Following the first year of water use, the user shall report one static water-level measurement in the month specified above which will establish the reference level against which future annual measurements will be compared. The Director may require the user to obtain and report additional static water levels after the reference level has been determined. The additional measurements may be required in a different month. If the measurement requirement is stopped, the Director may restart it at any time.

All measurements shall be made by a certified water rights examiner, registered professional geologist, registered professional engineer, licensed well constructor or pump installer licensed by the Construction Contractors Board and be submitted to the Department on forms provided by the Department. The Department requires the individual performing the measurement to:

- A. Identify each well with its associated measurement;
- B. Measure and report water levels to the nearest tenth of a foot as depth-to-water below ground surface;
- C. Specify the method used to obtain each well measurement; and
- D. Certify the accuracy of all measurements and calculations reported to the Department.

The water user shall discontinue use of, or reduce the rate or volume of withdrawal from, the well(s) if any of the following events occur:

- A. Annual water-level measurements reveal an average water-level decline of three or more feet per year for five consecutive years; or
- B. Annual water-level measurements reveal a water-level decline of 15 or more feet in fewer than five consecutive years; or
- C. Annual water-level measurements reveal a water-level decline of 25 or more feet; or
- D. Hydraulic interference leads to a decline of 25 or more feet in any neighboring well with senior priority.

The period of non-use or restricted use shall continue until the water level rises above the decline level which triggered the action or until the Department determines, based on the permittee's and/or the Department's data and analysis, that no action is necessary because the aquifer in question can sustain the observed declines without adversely impacting the resource or senior water rights. The water user shall in no instance allow excessive decline, as defined in Commission rules, to occur within the aquifer as a result of use under this permit. If more than one well is involved, the water user may submit an alternative measurement and reporting plan for review and approval by the Department.

Prior to using water from any well listed on this permit, the permittee shall ensure that the well has been assigned an OWRD Well Identification Number (Well ID tag), which shall be permanently attached to the well. The Well ID shall be used as a reference in any correspondence regarding the well, including any reports of water use, water level, or pump test data.

The storage of water allowed herein is subject to the installation and maintenance of an outlet pipe, or the provision of other means to evacuate water when determined necessary by the Water Resources Director to satisfy prior downstream rights. The permittee is required to pass all surface water for which a storage right does not exist. The Director may require the user to measure inflow and outflow, above and below the reservoir respectively, to ensure that surface-water flow is not impeded. Measurement devices and their implementation must be acceptable to the Director, and the Director may require that data be recorded on a specified periodic basis and reported to the Department annually or more frequently.

STANDARD CONDITIONS

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

If the number, location, source, or construction of any well deviates from that proposed in the permit application or required by permit conditions, this permit may be subject to cancellation, unless the Department authorizes the change in writing.

If substantial interference with surface water or a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The well(s) shall be constructed and maintained in accordance with the General Standards for the Construction and Maintenance of Water Supply Wells in Oregon. The works shall be equipped with a usable access port adequate to determine water-level elevation in the well at all times. If the riparian area is disturbed in the process of developing a point of appropriation, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with ODFW's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. For purposes of mitigation, the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR 635-415, shall be followed.

The use may be restricted if the quality of downstream waters decreases to the point that those waters no longer meet state or federal water quality standards due to reduced flows.

Where two or more water users agree among themselves as to the manner of rotation in the use of water and such agreement is placed in writing and filed by such water users with the watermaster, and such rotation system does not infringe upon such prior rights of any water user not a party to such rotation plan, the watermaster shall distribute the water according to such agreement.

Prior to receiving a certificate of water right, the permit holder shall submit to the Water Resources Department the results of a pump test meeting the Department's standards for each point of appropriation (well), unless an exemption has been obtained in writing under OAR 690-217. The Director may require water-level or pump-test data every ten years thereafter.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

Completion of construction and application of the water shall be made within five years of the date of permit issuance. If beneficial use of permitted water has not been made before this date, the permittee may submit an application for extension of time, which may be approved based upon the merit of the application.

Within one year after making beneficial use of water, the permittee shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner.

Issued April 17 , 2014

E. Timothy Wallin

E. Timothy Wallin, Water Rights Program Manager
for Phillip C. Ward, Director

Fig. 1. Schematic overview of proposed new water storage at La Creole Orchards in Polk County, tax lot 1800, NE/SE, section 6, T8S, R5W, W.M., Lat, Lon: 44.903, -123.341

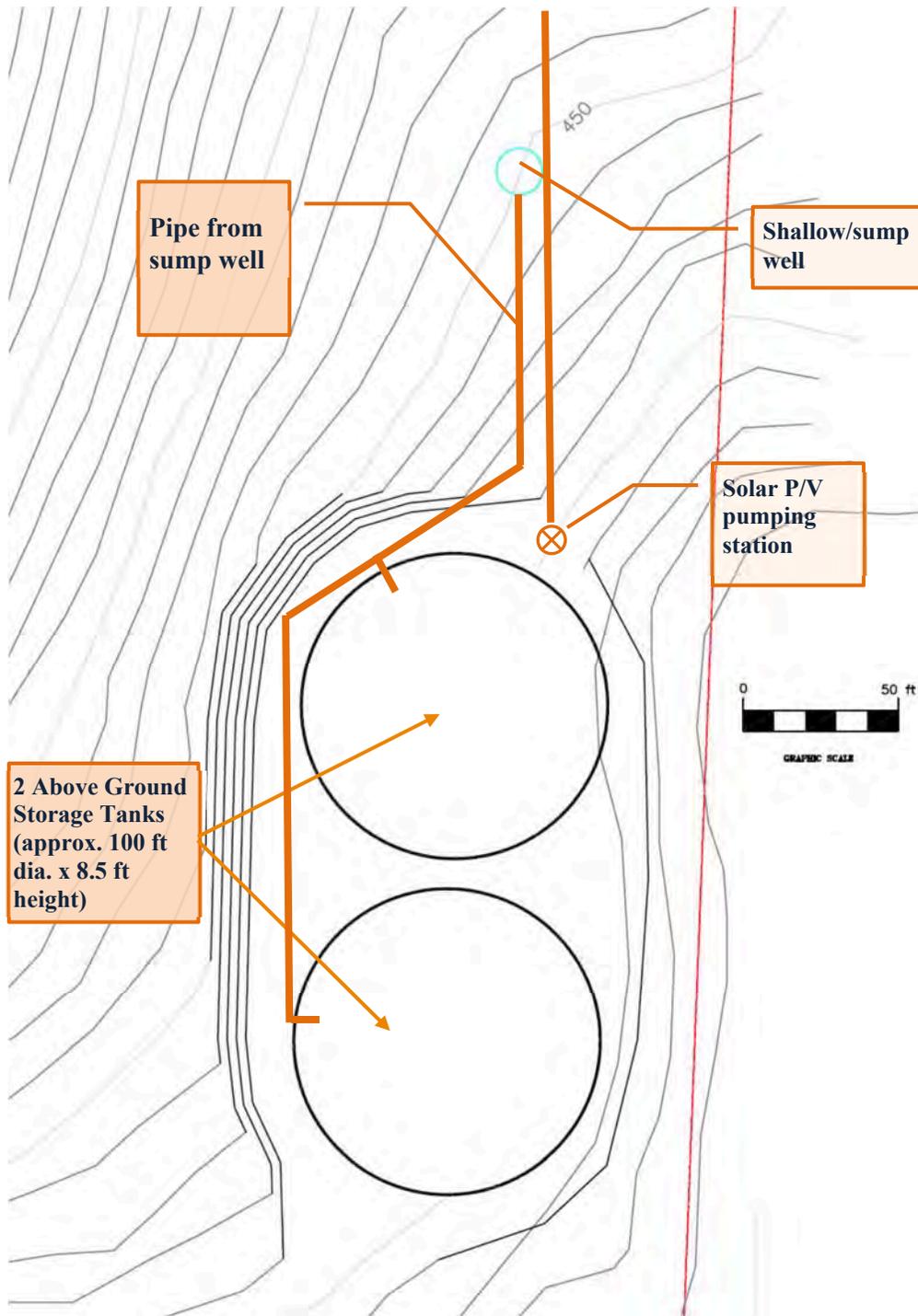
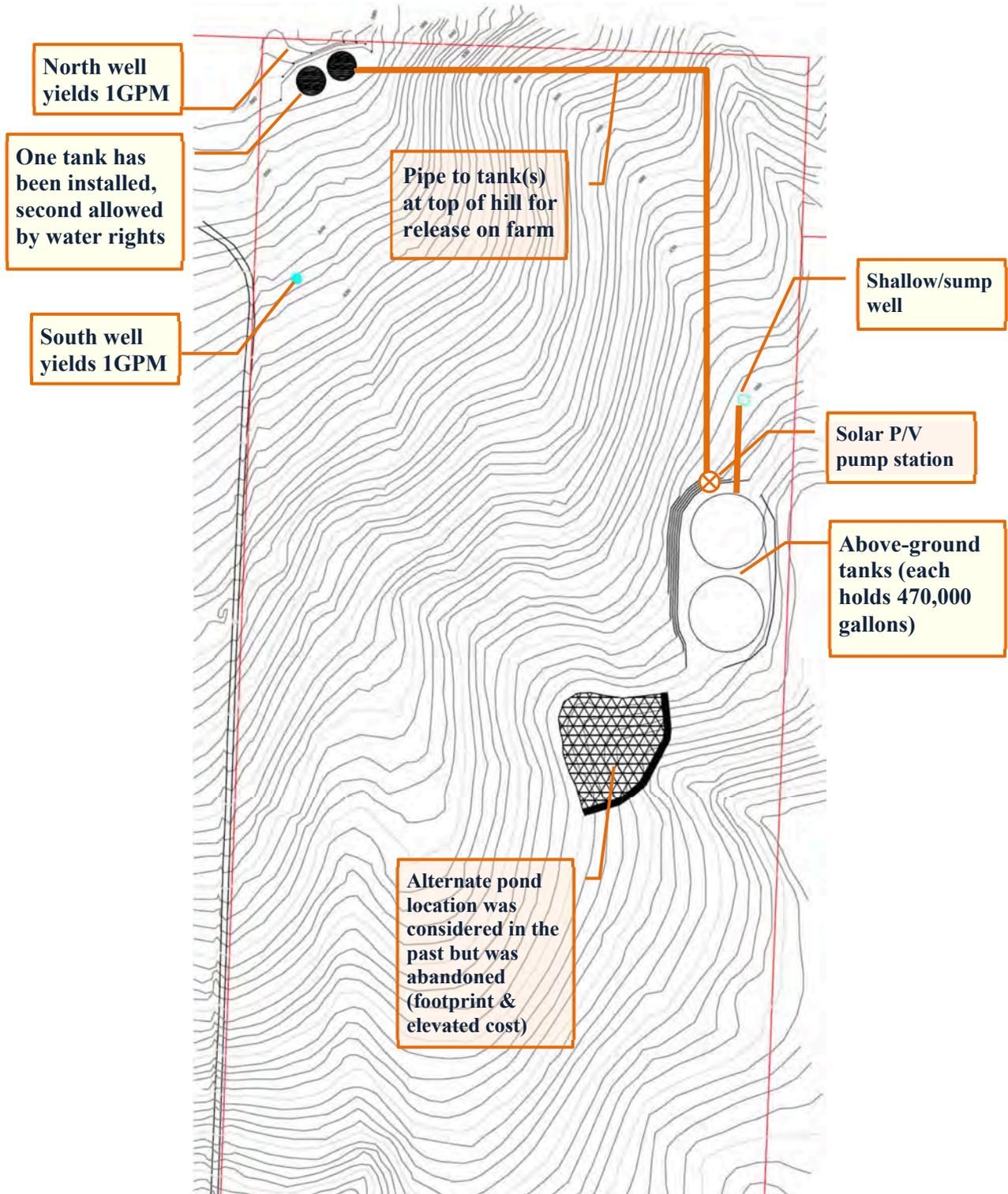


Fig. 2. Aerial overview of water-related infrastructure, including location of the proposed new water storage:



Fig. 3. Schematic overview of water-related infrastructure, including location of proposed new water storage:



Calculation Water Storage Tank/Silo

Standard calculation norms

Safety factors		Number of bolts per panel thickness			
Safety factor between real and theoretical calculation of stress ??	1,2	0,8 mm	2,0	2,2 mm	2,5
Additional safety factor	1,05	1,0 mm	2,0	2,4 mm	3,0
Ground conditions		1,2 mm	2,0	2,6 mm	3,0
Gravity of the ground	1.600	1,4 mm	2,0	2,8 mm	3,0
Friction angle	20	1,6 mm	2,0		
Elastic modul for Sv ground conditions	12.000	1,8 mm	2,0		
Safety factor for deformation	2,0	2,0 mm	3,0		

Standard Tank/Silo dimensions

Type of Silo (Water oder Manure)	Water	Minimum Panel thickness	1,0	mm
Type of panels	Std	net panel length dimension 2860 x 760mm		
Number of plates per ring	34	Diameter	30,950	m
Number of rings	3	Height	2,360	m
Digging into the soil - meters	0	Capacity	1756	m3
		Art.nr.	WSA3095236	

Calculation

Ground and Water pressure

Ring	Fpassive max	Factive	1,05xGd(a)+FaFp	Panel thickness	Gd.	t.o.v.1,05xGd(a)
	(N)	(N)	(N)	(mm)	(N)	(-)
	0	0	34.215	2	37	1,08

Safety factor for deformation

Volume Ground	m3
Horizontal pressure of the tank/silo	kN/m3
Minimum tension stress of the corrugation of the plate	cm4/m
Minimum Plate thickness	mm

Water pressure

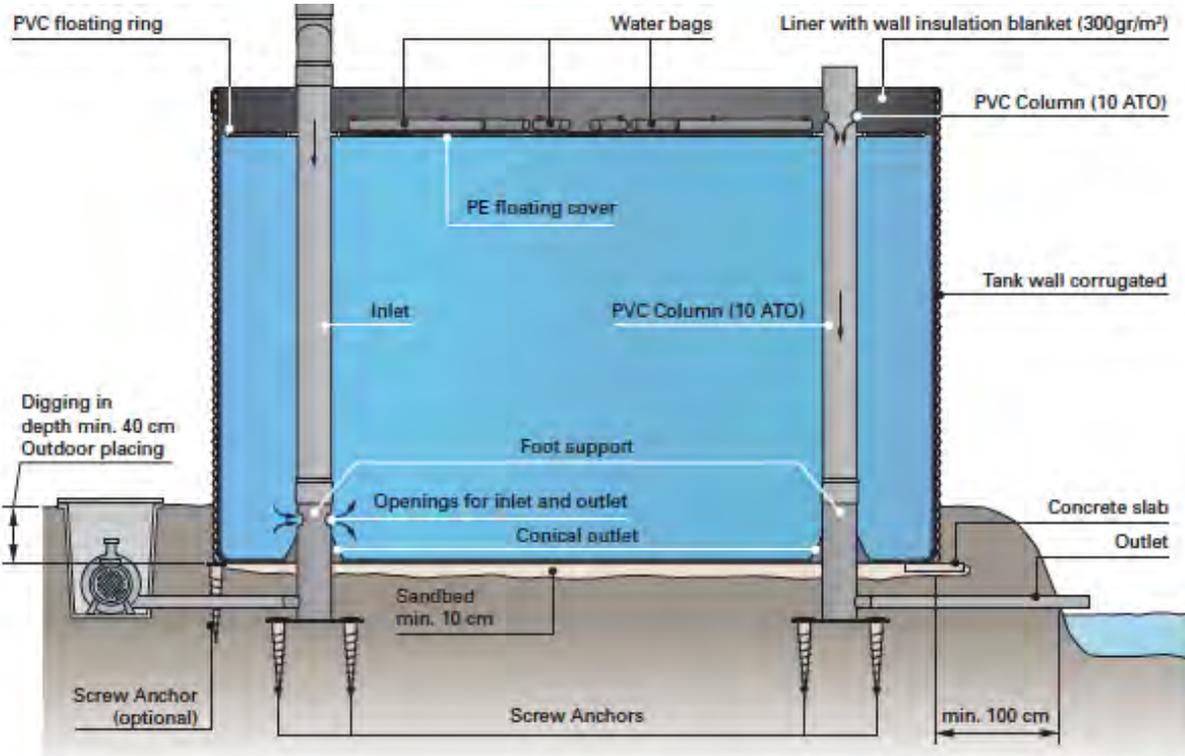
Ring	Water height	F ring	Gd(a)	1,05xGd(a)	Panel	Gd.	t.o.v.1,05xGd(a)	t.o.v. F ring	Ring pressure	Bolt strength
	(m)	(N)	(N)	(N)	(mm)	(N)	(-)	(-)	(N/mm2)	(N/mm2)
Bottom ring	2,334	27.155	32.586	34.215	2,0	36.806	1,08	1,36	335	238
2e.ring	1,574	18.166	21.799	22.889	1,4	24.192	1,06	1,33	320	341
Upper ring	0,814	9.178	11.013	11.564	1,0	17.280	1,49	1,88	226	241

Conclusion

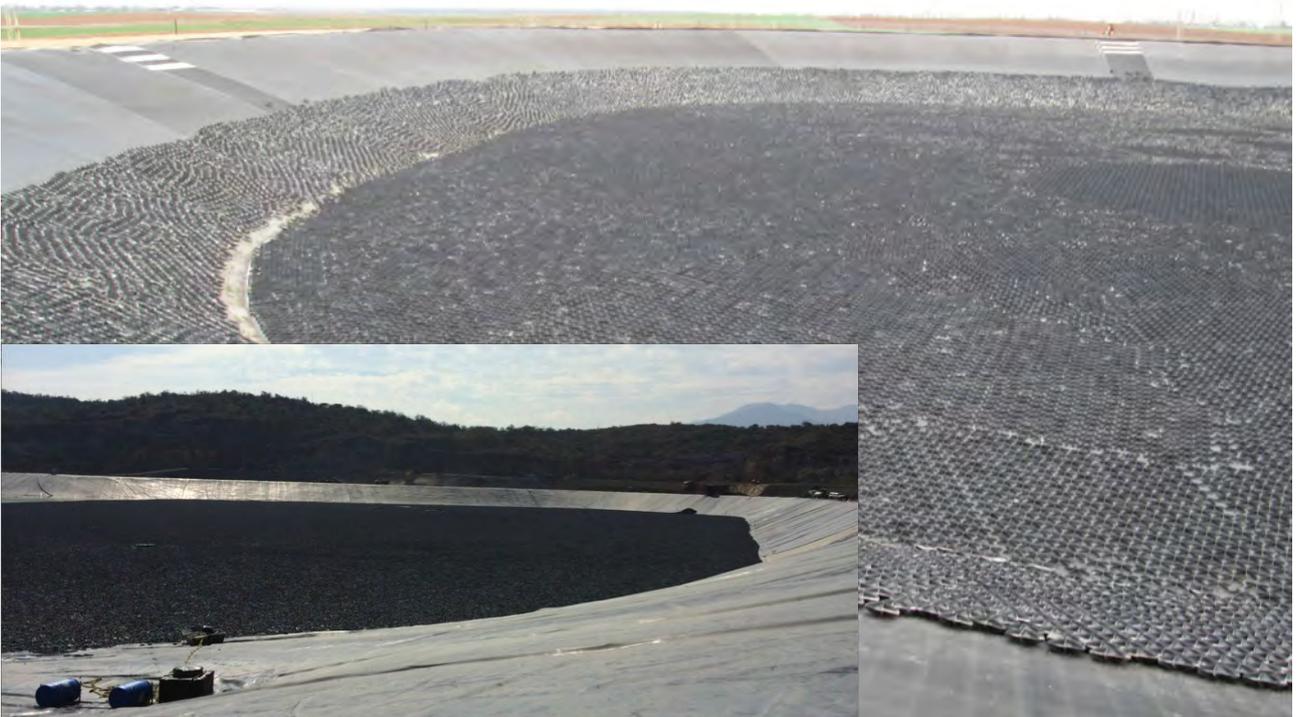
Minimum Panel thickness type WSA watersilo is 1,0 mm

Silo will be delivered with the following specification

Ring	Panel thickness
	(mm)
Bottom ring	2,00
2e.ring	1,40
Upper ring	1,00



HEXA-COVER[®]
COVER YOUR LIQUIDS



Hexa-Cover[®] Floating Cover

for controlling such things as:

Odor

Heat loss

Emission

Evaporation

Organic- / Algae growth

Bird Deterrent



Hexa-Cover[®] Floating Cover R114 is manufactured in North America



Since its launch in 2004, the Hexa-Cover® Floating Cover has grown to be the leading solution for floating covers.

The unique and patented Hexa-Cover® Floating Cover is a brilliant cover on almost any kinds of liquids.

Hexa-Cover® Floating Cover is the ideal solution for **eliminating** such things as:

- **Evaporation**
- **Organic / Algae growth**
- **Emission**
- **Odor**
- **Heat loss**

Today Hexa-Cover® Floating Cover is in use on all forms of basins, lagoons, reservoirs, containers, ponds and tanks and is used in several applications within i.e.:

Water

- Reservoirs for Fire Protection
- Reservoirs for irrigation water
- Reservoirs for collected surface water reuse
- Bird deterrent
- Spill over tanks
- Wastewater tanks and reservoirs
- Cooling / process water reservoirs
- Reserve water reservoirs
- Compensation tanks
- Water Settlement Lagoons

Leachate

Decoction

Chemical tanks

Oil

Agriculture

- Storage facilities
- Biogas plants
- Slurry/Manure tanks (pigs, cows, poultry, mink)
- Drinking trough



Napa Berryessa Resort Improvement, CA 94558

Hexa-Cover® Floating Cover is installed at Lake Berryessa Wastewater Treatment plant, 1465 Steele Canyon Road, Napa. The application is to cover two concrete equalization basins.

Process:

Raw sewage from homes and resort, flow from gravity and lift stations into headwork’s Lakeside Spiral Screen, screened water into two equalization basins with Hexa-Cover® Floating Cover, then to Ovivo MBR, to effluent basin or alternate overflow basin, then pumped to reservoir off site for land application. Plant flow capacity approximately 30,000 GPD now and at build out 60,000 GPD.

“The visit to the plant was a bit amazing. There was no odor from the “Hexa-Covered” EQ Basins. These EQ basins have very high odor potential and algae potential because of the heavy nutrients coming off the screen. There was no algae, the discs as advertised interlocked, they floated up and down with no problem, and could not help but reduce evaporation.

A solid cover presented safety issues, the discs did not. Summit Engineers was going to put aeration in these basins but saw a sample of the Hexa-Cover® product, called references then recommended the Hexa-Cover® installation. It penciled out better than aeration. That was important to this design build project, which Western Water Constructors, Inc. did with Summit.

Adjacent to these equalization basins are the effluent basin and overflow basin – please see attached pictures. These two basins were covered with algae. The point; the Hexa-Cover® Floating Cover eliminates Algae!

As proof, side by side basins, same plant, same time, two “Hexa-Covered” basins without algae and two uncovered basins with heavy algae. Also, no odor from the EQ basins.

The discs arrived in large sacks. Installation was simple; they simply dumped the discs into the basins. Installation was less than an hour. Contrast that to an aeration system”



HEXA-COVER®

COVER YOUR LIQUIDS



Hexa-Cover® Floating Cover:

Can be installed in both empty and full (max 5 meter drop)



Hexa-Cover® Floating Cover:

“Sloped walls”: At changes in the level of the liquid, the Hexa-Cover® Floating Cover will automatically be activated and create a coherent cover



Hexa-Cover® Floating Cover:

Effective, easy, maintenance free and long lived

Picture:

104.000 m² / 1.120.000 ft² Tailing Pond (controlling evaporation)



Hexa-Cover® Floating Cover:

Hexa-Cover® Floating Cover come in big-bags, or in containers. The tiles are simply poured onto the surface, where after the Hexa-Cover® Floating Cover automatically distribute and create a coherent cover



Hexa-Cover® Floating Cover:

Very easy and simple installation



The Hexa-Cover® Floating Cover ensure:

- Up to 99,9% coverage of the surface
- Up to 95% reduction of evaporation from water surfaces
- Up to 95% stable and constant reduction of emission (i.e. ammonia)
- Up to 90% stable and constant reduction of odors
- Noticeable reduction in organic growth such as algae, weeds etc.
- Noticeable reduction in heat loss

Features and benefits:

- Storm resistance (R114 tested up to 32 m/s)
- Ease of installation, no need for any special equipment
- Installation on both full and empty "tank"
- Automatic distribution of floating tiles on liquid surface
- Automatic adaption to changes in the level
- Fits to all shapes and geometries
- Easy adaption to bigger/smaller surfaces by adding/removing tiles
- 360° free and unlimited access to the liquid for e.g. measuring, emptying or stirring
- Life expectancy of 25 years
- Favourable price
- No running cost
- No repair cost
- No maintenance cost
- No insurance cost
- Significant reduction of heating cost
- Represent a substantial value if sold secondhand
- Unaffected by rain, snow and frost
- Allows installation of aeration to ensure aerobic conditions are maintained
- "Invisible" - the solution does not disfigure the landscape

The Hexa-Cover® Floating Cover is also the environmental friendly solution as it is manufactured of 100% recycled plastic without any use of Freon or other harmful materials.

The Hexa-Cover® Floating Cover;

- Is the solid, robust and long lasting solution
- Has no weak spots, no blow- /injection holes
- Has no hollow areas that eventually will break
- Consists of 6,8 kg PP/m² (R114)

The Hexa-Cover® Floating Cover come in two versions:

Hexa-Cover® Floating Cover "R90":

Diagonal measure	180 mm	7.09 in
Height	50 mm	1.98 in
Weight	120 g	.265 lb
No. per	m ² : 43	ft ² : 4

Big Bags:

1,3 x 1,3 x 2,5 m	55 m ²	285 kg
4.27 x 4.27 x 8,2 ft	592 ft ²	628 lb

Hexa-Cover® Floating Cover "R114":

Diagonal measure	228 mm	8.98 in
Height	70 mm	2.75 in
Weight	243 g	.535 lb
No. per	m ² : 28	ft ² : 2.6

Big Bags:

1,3 x 1,3 x 2,5 m	42m ²	285 kg
4.27 x 4.27 x 8,2 ft	452 ft ²	628 lb



For further info:

Hexa-Cover, Inc
3630 Peachtree Road NE, Suite 920
Atlanta GA 30326, USA
Tel + 1 (404) 835-9424
info@hexa-cover.com
www.hexa-cover.com

More references / testimonials: www.hexa-cover.com



Since its launch in 2004, Hexa-Cover® Floating Cover has been chosen for a vast number of installations globally, making the Hexa-Cover® Floating Cover the market leading solution.

USA:

American Crystal Sugar, MN 56721:
Wastewater: controlling odor



DeBuque Water Station, CO 81630:
10.500 m2 / 113.000 ft2 reservoir: bird deterrent

Gallatin Public Utilities, Gallatin, TN 37066
Wastewater application: controlling growth of algae

Henderson Water Utility, KY 42420
Water Storage Facility: controlling organic growth



Iron City Pipe, OH 45640
Water Storage Facility: controlling evaporation



MetCon LLC, PA 15061
Acids: controlling odor and emission



Napa Berryessa Resort Improvement, CA 94558
Wastewater application: controlling odor and organic growth

Washington Suburban Sanitary Comm., MD 20708
Wastewater: controlling organic growth



Canada:

City of Nakusp
3700 m2 / 39.825 ft2 WWTP reservoir: controlling evaporation and organic growth

City of Saskatoon
Wastewater application: heat retention



Markham District Energy Utility
Hot Water Storage: heat retention



Brazil:

Polenghi
Effluent: controlling odor



Chile:

Compania Minera Dona Ines de Collahuasi:
15.000 m2 / 161.500 ft2 Tailing Pond:
controlling evaporation



ENAP:
2.700 m2 / 29.050 ft2 Wastewater
Facility: controlling odor and emission



ENAP Rinery Bio-Bio:
2.500 m2 / 26.900 ft2 Wastewater
Facility: controlling odor and emission



Xstrata Copper:
6.400 m2 / 68.900 ft2 Tailing Pond:



Controlling evaporation



Ecuador:

New Quito International Airport:
Water Storage Facility: bird deterrent and for controlling evaporation and organic growth

Mexico:

Compañía Minera Cuzcatlán

104.000 m2/1.120.000 ft2
Tailing Pond:
Controlling evaporation





RE: CREP

Liz Graham <Liz.Graham@polkswcd.com>
To: Bogdan Caceu <bcaceu@gmail.com>

Wed, Jan 6, 2016 at 3:55 PM

Bogdan,

To be quite honest, I am not sure how long it will take. Your CREP plan and the plant sale are the top priorities within the next month; after the plant sale, your CREP and one other CREP plan will be the bulk of my workload until completed. I anticipate the contract being ready by March. The funds are guaranteed to be reimbursed once the contract is signed. The first conservation practice (cost shared practice) is to take place in June of this year, so the plan will be completed well before then. Sorry I can't give you a more definitive timeline, hope that is as clear as mud.

Regards,

LIZ HABLEY GRAHAM

Resource Conservationist

Polk Soil & Water Conservation District

[503-623-9680](tel:503-623-9680) ex. 107

From: Bogdan Caceu [mailto:bcaceu@gmail.com]
Sent: Wednesday, January 06, 2016 2:13 PM
To: Liz Graham
Subject: Re: CREP

What's your expectation in terms of our CREP project:

- when would we sign & submit the application?
- when would we have a decision on whether funds are granted?

Thanks,

Bogdan



Bogdan Caceu <bcaceu@gmail.com>

RE: water storage project in Polk County

Jordan Mercier <Jordan.Mercier@grandronde.org>
To: Bogdan Caceu <bcaceu@gmail.com>

Thu, Dec 3, 2015 at 10:02 AM

Good Morning,

Thank you for reaching out to the Tribe and notifying us of your project proposal. We appreciate the opportunity to express concerns and provide comments regarding potential impacts to cultural resources. The project area of potential effect does not appear to have any documented cultural resources within. There are cultural resources in the vicinity, but they are far enough removed that they will not be impacted by the proposed project. Because the project area has never been formally surveyed for cultural resources, there is potential for the project to impact cultural resources not previously documented. Therefore, I recommend having an inadvertent discovery plan in place that outlines protocols and procedures to follow if cultural resources are encountered during project activities. If an inadvertent discovery of cultural resources occurs please halt project operations, contact our office as well as the State Historic Preservation office, and follow all applicable laws. If human remains are encountered please contact the Oregon State Police Department and notify our office.

Again, the Tribe thanks you for soliciting information regarding your proposed project. If you have any further questions please do not hesitate to contact me.

Respectfully,

Jordan

Jordan Mercier

Cultural Protection Coordinator

Tribal Historic Preservation Department

Confederated Tribes of the Grand Ronde Community of Oregon

Jordan.Mercier@grandronde.org

503-879-2185

From: Bogdan Caceu [mailto:bcaceu@gmail.com]

Sent: Wednesday, December 02, 2015 10:21 AM

To: THPO

Subject: water storage project in Polk County

Hello,

Per my discussion with Jordan, please find attached a description of my proposed project, including a map of its location. I also know that should excavation during site prep uncover any tribal cultural resources, work would be immediately stopped until state and tribal archeologists determine any further course of action.

Best regards,

Bogdan Caceu

La Creole Orchards

Dallas, Oregon

[503-929-3460](tel:503-929-3460)



October 19, 2015

Mr. Bogdan Caceu
LaCreole Orchards
Liberty Road
Dallas, OR 97338

RE: APPLICATION FOR WATER STORAGE PROJECT

Dear Mr. Caceu,

Ash Creek Water Control District is a special district organized in 1951 under ORS 553 that exists for the purpose of drainage to improve the agricultural and other uses of low lying lands adjacent to the stream that were historically flooded. While your project is outside of the District boundaries, your land is within the Ash Creek Watershed and therefore we appreciate the opportunity to review and comment on projects that potentially could impact wet weather flood levels.

Our District Engineer has reviewed the site plan and narrative for your proposed project and has discussed his findings with the District Board of Directors. Based on his comments and a consensus of the Board of Directors, Ash Creek Water Control District has no objections to your project.

Again, we thank you for recognizing that the District has a vested interest in projects that could impact stream flow.

A handwritten signature in black ink, appearing to read 'Dan Farnworth'. The signature is fluid and cursive.

Sincerely,

Dan Farnworth, Chair
Ash Creek Water Control District



July 27, 2015



Bogdan Caceu
La Creole Orchards
Polk County, Oregon

RE: Water Supply Development Grant Proposal

To Whom It May Concern:

I am writing to provide support for the La Creole Orchards grant proposal for increased water storage. The proposed project is well researched, inexpensive, and efficient. This project responsibly secures and applies water for irrigation while providing an excellent example of resource conservation to the agricultural community as we adapt to the effects of drought and climate change.

The Oregon Department of Agriculture's Water Quality Program supports this proposal because it greatly increases the effectiveness and efficiency of water delivery and storage, reduces the threat of pollutants entering waters of the state, and is good for the local agricultural community. This project will responsibly enhance the orchards capabilities while also providing a good example of best management practices in agriculture and water conservation.

Sincerely,

Ryan Beyer, Water Quality Specialist
Natural Resources Program Area
Oregon Department of Agriculture
PH (503) 986-4696
Email: rbeyer@oda.state.or.us



POLK COUNTY

BOARD OF COMMISSIONERS

POLK COUNTY COURTHOUSE * DALLAS, OREGON 97338-3174

Commissioners
(503) 623-8173 * FAX (503) 623-0896
CRAIG A. POPE

MIKE
AINSWORTH
JENNIFER L.
WHEELER

GREGORY P.
HANSEN
Administrative Officer

Bogdan Caceu

September 23, 2015

Dear Mr. Caceu,

I am submitting this letter to support your proposed irrigation water storage Project application being submitted to the Oregon Water Resources Water Supply Development Account (WSDA). Many farmers in our area face water shortage issues and this project attempts to alleviate some of this problem for your lands. It works to promote economic viability and crop diversity by increasing water storage capacity efficiency and can be modeled at other farms throughout Polk County.

After touring your farm, and witnessing your success with the above ground storage that you have accomplished on a smaller scale, I am very impressed. I can see the value of public investment on your farm through the varieties of orchard crops that are able to be grown on land that has not seen productivity in many years.

As you know, I have been a strong proponent of SB839 and preceding bills that encourage public investment in creative and results driven water projects in both public and private ventures. I encourage agency officials to give this application strong consideration and hope to be of any help that is needed to get this project across the finish line.

Sincerely,

Commissioner Craig Pope



**GREATER
YAMHILL
WATERSHED
COUNCIL**

237 NE Ford Street, Suite 9
P.O. Box 1517
McMinnville, OR 97128
Phone: 503.474.1047

Board of Directors

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Chair, Watershed Resident

Erik Grimstad
City of McMinnville

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Watershed Resident

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McMinnville Water & Light

Leonard A. Rydell
Yamhill Co. Small Woodlands Assoc.

Staff

Luke Westphal
Executive Director

August 11, 2015

Bogdan Caceu
La Creole Orchards

SUBJECT: La Creole Orchards' Letter of Support for Water Project Proposal

Dear Bogdan,

The Greater Yamhill Watershed Council would like to express our support for La Creole Orchards' irrigation water storage project proposal through the Oregon Water Resources Department's Water Supply Development Account.

Limited water availability and storage is a priority natural resource concern that impacts communities across Oregon, particularly smaller growers. Water limitations require innovative solutions and we appreciate the investments that La Creole Orchards has made to study the feasibility of and options available to improve agricultural productivity on this project site.

La Creole Orchards' proposal will provide increased productivity, additional resilience to droughts and climate change, as well serve as a demonstration water project for growers in this region.

The GYWC encourages the ORWD's support for this irrigation water storage project and we look forward to working with La Creole Orchards. Please feel welcome to contact us regarding this letter of support.

Sincerely,

Luke Westphal

Executive Director
Greater Yamhill Watershed Council



Oregon

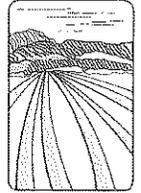
Kate Brown, Governor

Department of Agriculture

635 Capitol St NE
Salem, OR 97301-2532

July 24, 2015

La Creole Orchards
6722 SE Reed College Place
Portland, OR 97202
ATTN: Mr. Bogdan Caceu



Dear Mr. Caceau:

I am writing this letter in support of the application from La Creole Orchards (LCO) for a grant from the Water Supply Development Account managed by the Oregon Water Resources Department (OWRD).

Oregon Department of Agriculture (ODA) supports LCO's proposal to construct a lined reservoir to store water harvested from a shallow (sump) well on the property, and the new stored water will be used to:

- (a) Meet increasing water requirements as the orchard trees mature;
- (b) Supplement water supplies to meet late season water demands;
- (c) Expand orchard production to additional acreage; and
- (d) Promote adaptability and operational resilience to effects of climate variability and change, including drought conditions.

Funding for the proposed project would support a Beginning Farmer who has demonstrated exemplary efforts in conscientious, sustainable, water efficient agricultural operations. LCO has worked closely with state and federal partners (e.g., OWEB and USDA NRCS) to turn acreage overrun with invasive plants to productive orchards managed according to organic and sustainable principles.

The proposed project will contribute to more robust local and regional economies with associated cultural benefits; water quality protection and environmental conservation. ODA fully supports goals and objectives of the proposal by La Creole Orchards.

Sincerely,

Margaret A. Matter
Water Resources Specialist
Oregon Department of Agriculture
635 Capitol Street NE
Salem, Oregon 97301





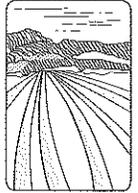
Oregon

Kate Brown, Governor

Department of Agriculture

635 Capitol St NE

Salem, OR 97301-2532



July 23, 2015

Bogdan Caceu
La Creole Orchards
Dallas, OR 97338

Dear Bogdan Caceu,

The purpose of this letter is to express support for the La Creole Orchards' application for a grant for a new irrigation water storage project through the Water Supply Development Account managed by the Oregon Water Resources Department. These grants offer an important means to mitigate drought impacts to farmers.

This project would build upon an above ground reservoir that stores 35,000 gallons, which was funded through the US Department of Agriculture, Natural Resource Conservation Service's Environmental Quality Incentives Program (EQIP). You have taken steps to conserve water by installing solar-powered pumps, which slowly pump water into the reservoir allowing water to be distributed into a micro-irrigation system in the orchard.

The new water storage project would increase La Creole Orchard's capacity with the potential for adding three-acre-feet of water as well as implement additional measures to conserve water use. Your project could serve to inform others of adjustments that maintain the orchard's economic viability by accessing stored water and employing innovative conservative measures.

The Oregon Department of Agriculture supports projects that wisely conserve water resources used for irrigation while helping to mitigate water resource challenges for farmers.

Sincerely,

Jo Morgan

Regional Water Resource Specialist

Agricultural Water Quality Management Program



College of Agricultural Sciences
Oregon State University, 126 Strand Agriculture Hall, Corvallis, Oregon 97331-2212
T 541-737-2331 | F 541-737-4574 | <http://agsci.oregonstate.edu>

October 8, 2015

Dear Mr. Caceu:

I am writing on behalf of the OSU Extension Small Farms Program to offer support for La Creole Orchards' grant proposal for increased water storage. This project is well thought out and provides a great example for many small farmers in the Willamette Valley that are facing water shortages this year and seeking drought mitigation strategies for the sustainability of their farms.

OSU Extension Small Farms Program supports this project to help expand the capability of this orchard and provide a model for other farmers to learn from.

Please do not hesitate to contact me with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Amy Garrett". The signature is fluid and cursive, with a long horizontal line extending to the right.

Amy Garrett
Small Farms Program
OSU Extension Service
Benton, Linn, and Polk Counties
Amy.Garrett@oregonstate.edu
Phone: 541-766-3551 | Cell: 503-739-5985 | Fax: 541-766-3549



580 Main St. Suite A Dallas, OR 97338 ☒ 503-623-9680 ☒ www.polkswcd.org

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District Manager

Marc Bell
Resource
Conservationist

Liz Graham
Resource
Conservationist

Lucas Hunt
Stewardship
Forester

Sawyer Finegan
Youth Outreach
Coordinator

Tom Wilson
Office Admin

July 15, 2015

Dear Mr. Caceu,

The purpose of this letter is to document the support of the Polk Soil and Water Conservation District (PSWCD) for your proposed irrigation water storage project being submitted to the Oregon Water Resources Department's Water Supply Development Account (WSDA). Your project works to find a solution to continual seasons of drought and ever increasing water shortage in the Ash Creek watershed and the Willamette Valley at large. Many farmers in our area desire to continue to have productive lands, but face water shortage issues and this project attempts to help solve this problem. It works to promote economic viability, while increasing water storage capacity efficiency and can be modeled at other farms throughout the county.

By collecting and storing water during seasons of higher flow, utilizing gravity and solar power to assist in collection and irrigation delivery, and storing water in a sealed container; the project can achieve greater efficiency in total water quantity without using a conventional means of electricity or potentially creating a ground water recharge issue or becoming subject to traditional geological leakage issues faced by using an unlined pond.

The District encourages full support of this proposal by the WSDA team. The SWCD supports projects that actively conserve water resources used for irrigation and that affect positive, measurable improvement by a private land manager to meet and/or exceed public resource conservation needs.

Please contact me if you have any questions @ 503-623-9680 x110.

Sincerely,

Karin Stutzman, District Manager
Polk SWCD



Providing Natural Resource Leadership

2200 SW 2nd Street
McMinnville, OR 97128
www.yamhillswcd.org
503-472-6403

July 7, 2015

Dear Bogdan Caceu,

The purpose of this letter is to document support from the Yamhill Soil and Water Conservation District (YSWCD) for La Creole Orchards' irrigation water storage project. We also support your proposal to be considered for funding through the Water Supply Development Account offered by the Oregon Water Resources Department.

This project offers an innovative solution to common problems that many small landowners face throughout the state of Oregon: lack of water quantity and limited water storage. Over the years, the YSWCD has actively worked with private landowners to address these problems on their lands. We support projects, like this that:

- Increases productivity on working lands
- Increases plant and/or animal health
- Stores water when it is abundant so that it can be used during the dry season.

The YSWCD looks forward to seeing how La Creole Orchards is enhanced by this water storage development over time. A project like this could be a very good showcase for other landowners to be inspired by. If you have any questions, our staff contact for this project is, Michael Crabtree, Senior Conservation Technician. He can be reached at 503-472-1474 x 118.

Sincerely,

Larry Ojua
Executive Director
Yamhill Soil and Water Conservation District

economic production of olive oil. The Central Valley and Sierra Nevada foothills have a great potential to produce both high-quality and high-volume olive oil at a much lower cost.

The two potential advantages for the North Coast counties is the association with fine wines for symbi-

otic marketing relationships and the real or perceived difference in oil quality that is generally produced in cooler growing regions. It is likely, however, that the warmer Central Valley will have an agricultural advantage over the cooler coastal valleys when it comes to olive yields.

Table 2.1. Orchard conditions affecting fruit yields in oil olives

Fruit yield	Conditions affecting yield
1 ton per acre (2.24 T/ha)	<ul style="list-style-type: none"> widely spaced orchard in the 5th to 6th year; or older orchard with close spacing that is shading out in the lower portions of the trees poor irrigation, weed control, pruning, and nutrient management excessively vigorous or weak growing conditions poor pollination from rain, cold, drought stress, hot and dry wind during bloom, or inadequate pollinizer trees alternate "off" year of production super-high-density orchard in the 2nd year
2 tons per acre (4.48 T/ha)	<ul style="list-style-type: none"> widely spaced orchard in the 6th to 8th year with excessive shading poor irrigation, weed control, pruning, and nutrient management excessively vigorous or weak growing conditions poor pollination from rain, cold, drought stress, hot and dry wind during bloom, or inadequate pollinizer trees alternate "off" year of production from very heavy production previous year super-high-density orchard in the 3rd year
3 tons per acre (6.72 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 9th to 10th year with some shading good irrigation, weed control, pruning, and nutrient management. acceptable vigor and growing conditions some lack of pollination due to poor weather during bloom or a lack of pollinizer trees probable maximum yield from a coastal hillside orchard super-high-density orchard in the 3rd year
4 tons per acre (8.96 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 10th+ year with little or no shading very good irrigation, weed control, pruning, and nutrient management correct vigor and growing conditions very good pollination and weather conditions sustainable yield under very good management well-managed super-high-density orchard in the 4th+ year
5 tons per acre (11.2 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 10th+ year with no shading excellent irrigation, weed control, pruning, and nutrient management ideal vigor and growing conditions excellent pollination and weather conditions alternate "on" year of production from a low yield previous year very well-managed super-high-density orchard in the 4th+ year
> 6 tons per acre* (> 13.44 T/ha)	<ul style="list-style-type: none"> properly spaced orchard in the 10th+ year with no shading superior irrigation, weed control, pruning, and nutrient management ideal vigor and growing conditions ideal pollination and weather conditions unsustainable yield from alternate "on" year of production from a very low yield previous year superior management in a super-high-density orchard in the 4th+ year

Note: * Yields have been recorded in table olives in California at 12 tons per acre (26.9 T/ha). This is usually preceded by a light crop and followed by a very light crop.

















BUWAtank The best system for water storage

The special characteristics of the steel tank are quality, firmness of shape and mechanical strength. The steel panels of the tank are coated with zinc layer on both sides. They have a high tensile-strength (S 280 GD) according to DIN – EN 10147.

These special properties have been affirmed by the German Ministry of Construction when certifying the BUWAtank in the so-called "Prufbescheid B6-543-246".

Great variety of applications

The BUWAtank storagesystem is a flexible system with a great versatility of applications. Since many years the tanks have been used as:

- Storage of irrigation, rain and clear water.
- Storage of industrial liquids.
- Buffer-storage for mopping-up projects of polluted water or soil.
- Buffer-storage for manure.
- Biological sand-, lava- or compostfilter.
- Nurse-pond at fish-hatcheries.

Special projects with the BUWAtank

The Dutch "Calland Tunnel" project has made use of the properties of the BUWAtank in a very remarkable application. In the six tunneltubes a number of tanks were installed, filled with water as ballast when sinking the tunnelsegments. The BUWAtank had been chosen because the tanks had to overcome a gradient of 6 degrees. From calculation and simulationprogramme the BUWAtank appeared to have a great stiffness and mechanical strength.

Also in industry the BUWAtank is frequently used for the temporary storage of chemicals, oil or polluted water.

Special reinforced BUWAtank can be supplied for various roofconstructions.



Special characteristics:

Longer lifetime

Double protection layer through Plastisol coating on both sides of the panels. Expected lifetime 20 to 25 years.

High tensile strength

Use of high quality steel (S 280 GD) according DIN-norms.

Wide capacity range

Deliverable in many diameters, heights and panel thicknesses.

Fast installation

Larger bolt dimension M12, less bolt sets per panel, bolt sets treated with Zincrolyte for fast and easy installation.

Corrosion resistant through Zincrolyte

All bolts, nuts and washers are treated with a special high quality alloy, called Zincrolyte. Better fitting of the bolts and nuts.

Export packing

The panels are sealed to prevent water getting between the panels.

Technical information

All technical information and installation instructions are in pictorials available.

Strength calculation program

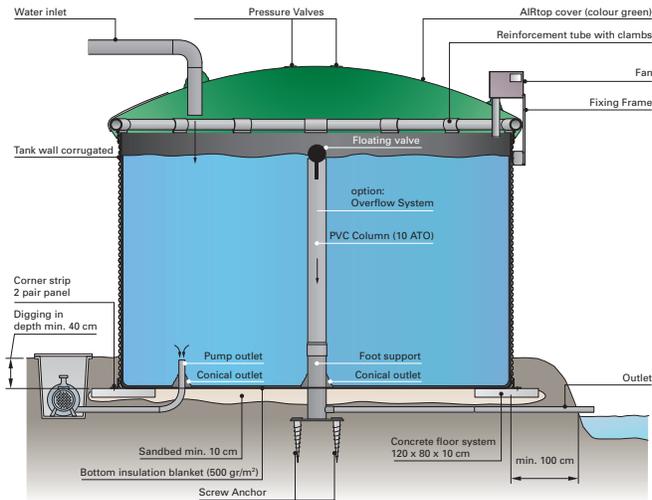
Program in Excel is based on the German calculation method Norm ENV-1993.

Available in Dutch, German and English.

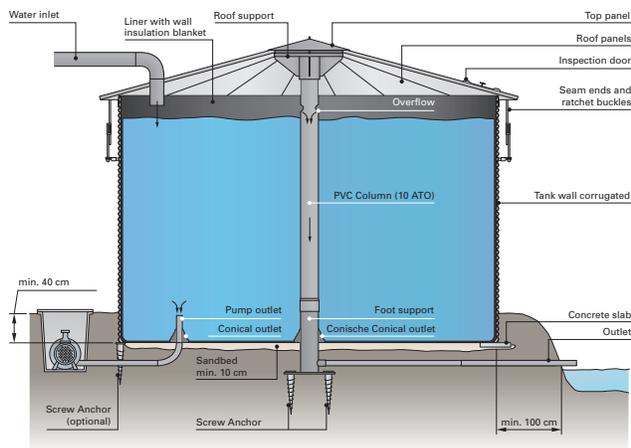


BUWAtank Exploded views

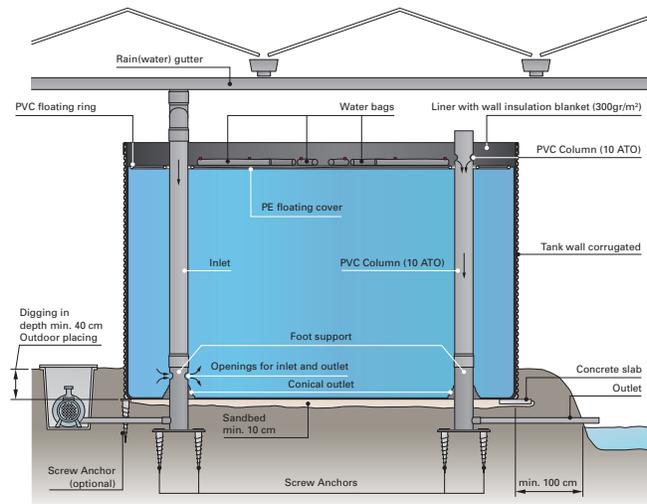
BUWA-airtop



BUWA-top



Buwa-cover



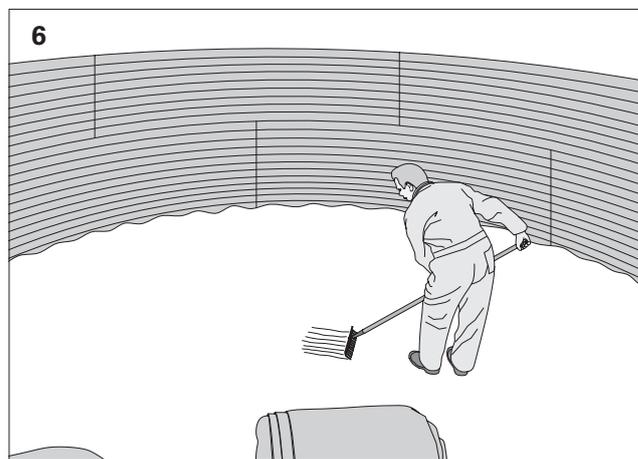
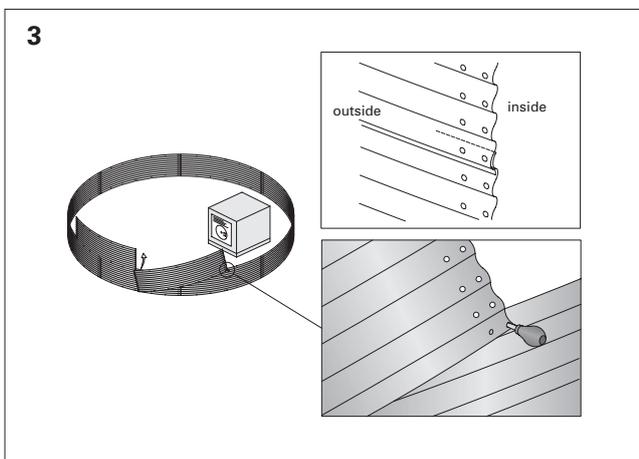
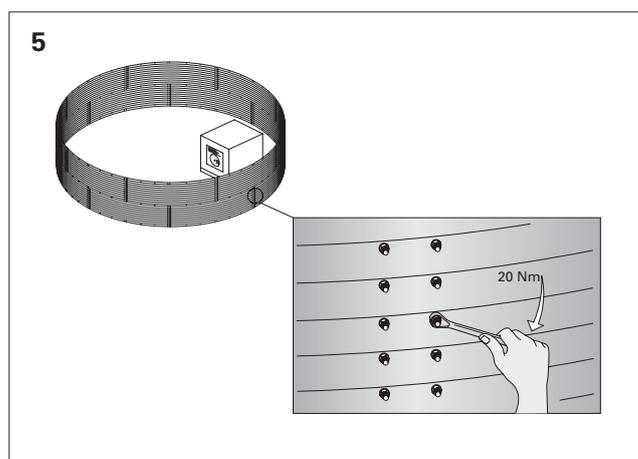
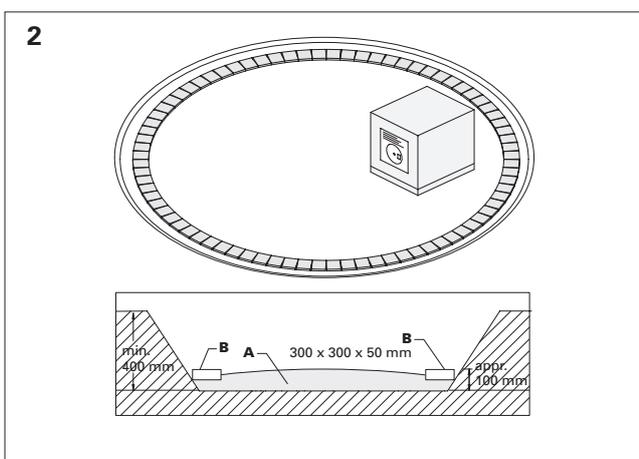
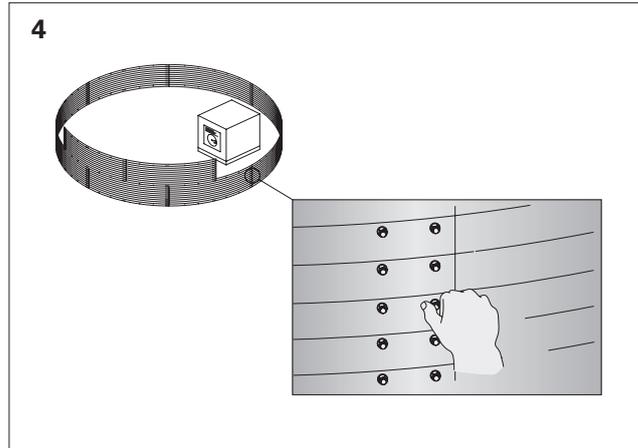
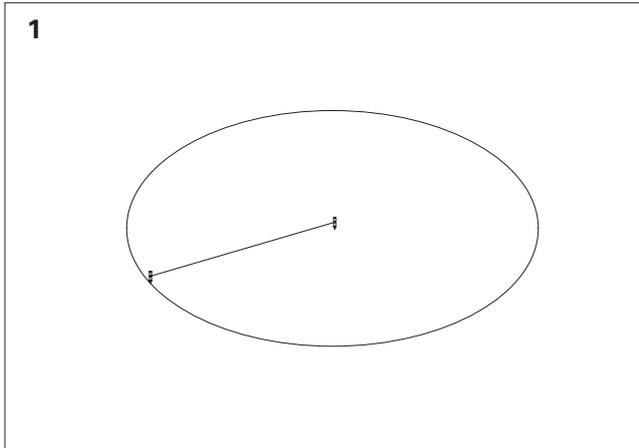
BUWAtank installation instructions on concrete slabs

(NL) Installatie instructies (betontegels)

(D) Montageanleitung (Betonplatten)

(F) Instructions d'installation (plaques de béton)

(E) Instrucciones para instalación (bases de concreto)



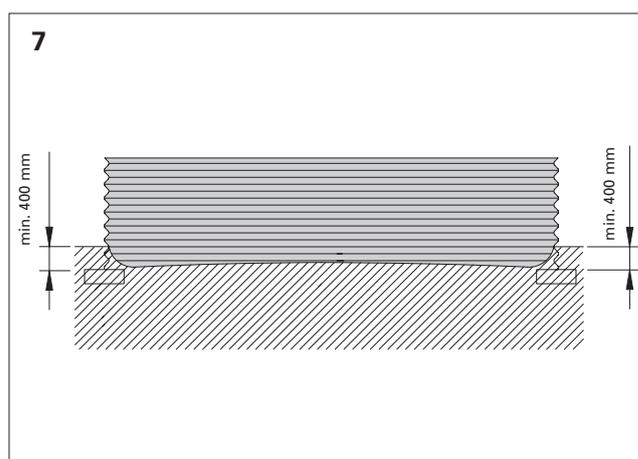
(NL) A Zandbodem
B Betontegels 300 x 300 x 50 mm

(D) A Sandboden
B Betonplatten 300 x 300 x 50 mm

(GB) A Sandbed
B Stone slabs 300 x 300 x 50 mm

(F) A Sol sablé
B Plaques de béton 300 x 300 x 50 mm

(E) A Cama de arena
B Bases de concreto 300 x 300 x 50 mm



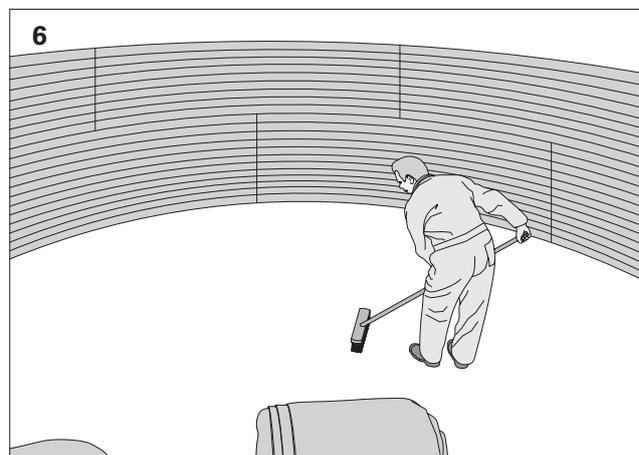
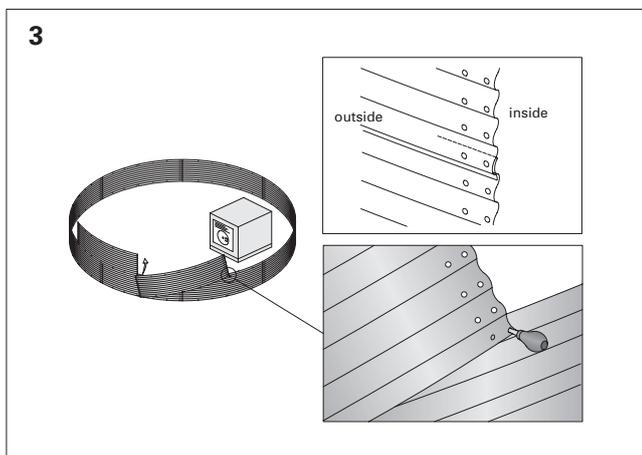
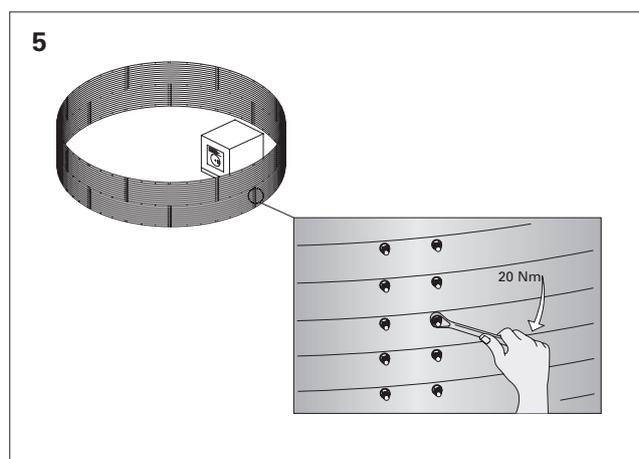
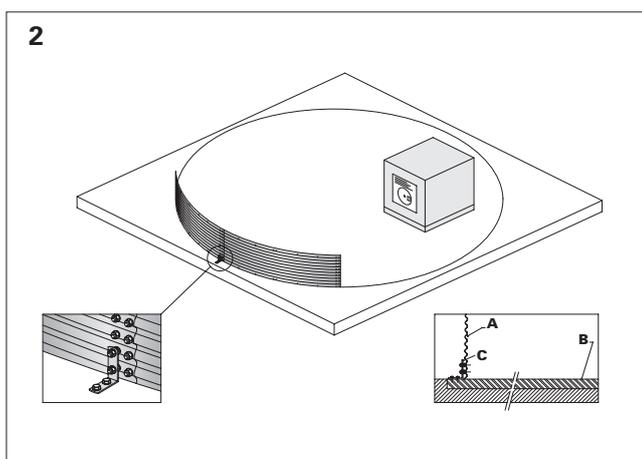
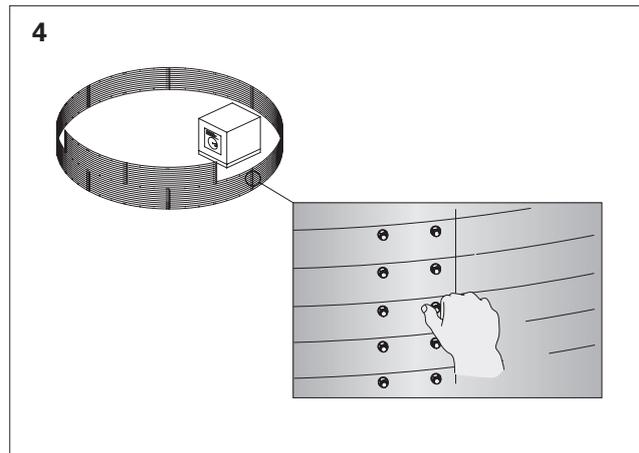
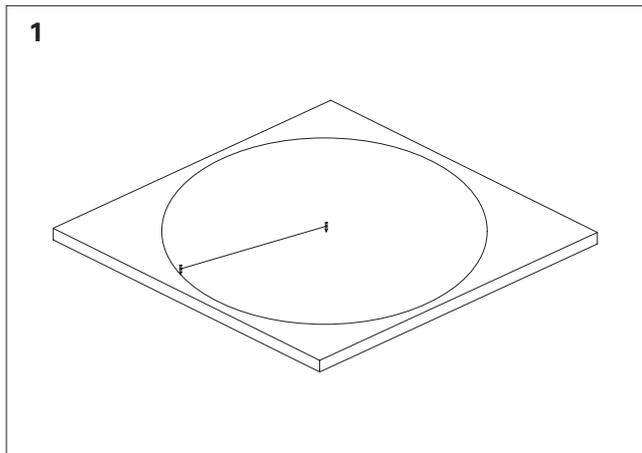
BUWAtank installation instructions on a concrete floor

NL Installatie instructies (betonvloer)

D Montageanleitung (Betonboden)

F Instructions d'installation (béton)

E Instrucciones para instalaión (hormigón)



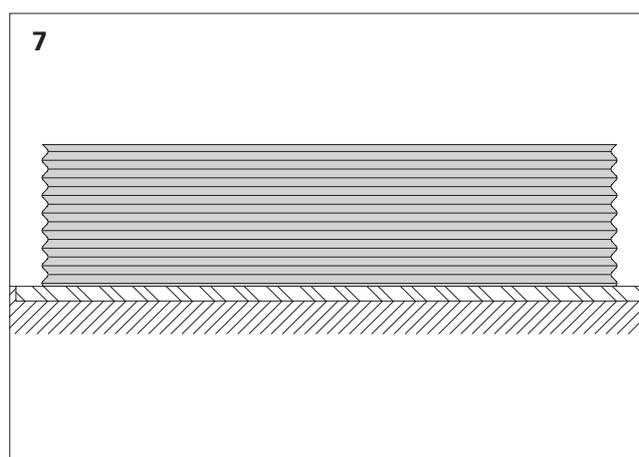
NL A Tankwand
B Beton
C Installatiestrip

D A Silowand
B Beton
C Befestigungsschiene

GB A Tankwall
B Concrete
C Installation strip

F A Paroi de réservoir
B Béton
C Bandes d'installation

E A Pared de tanque
B Hormigón
C Tira de instalación



BUWAliner installation instructions

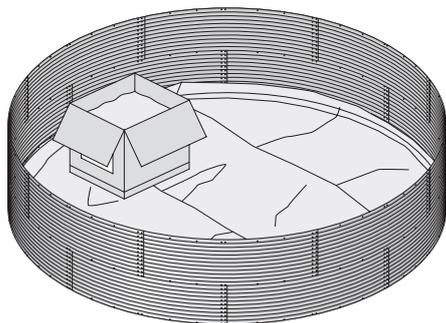
(NL) Installatie instructies

(D) Montageanleitung

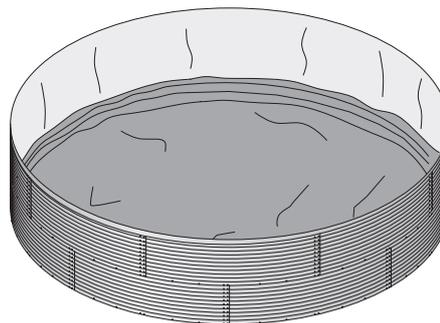
(F) Instructions d'installation

(E) Instrucciones para instalaión

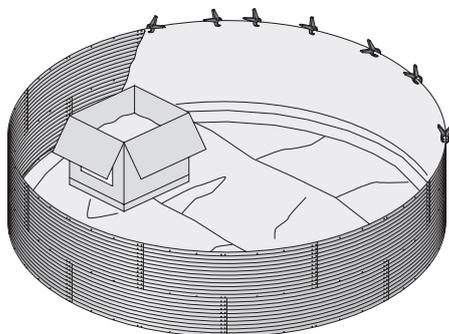
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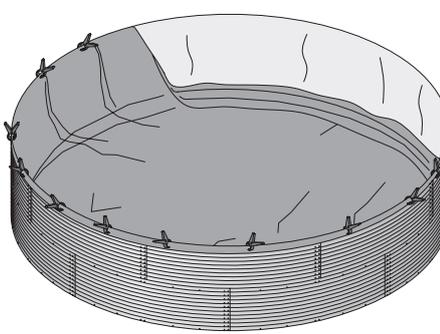
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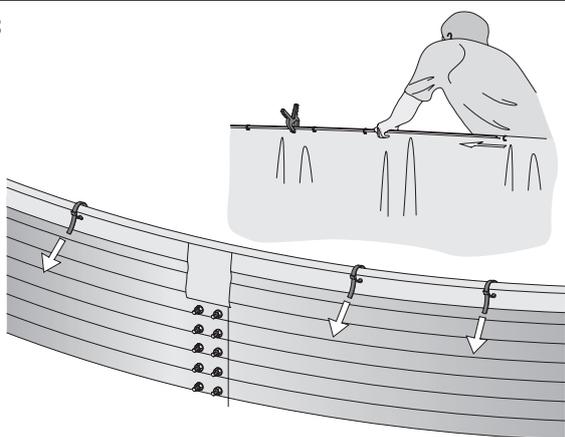
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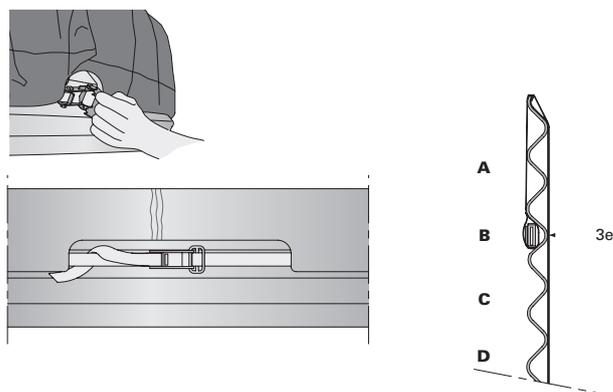
5



3



6



(NL) A Wandvilt
B Ratelspanners
C Tankwand
D Isolatie

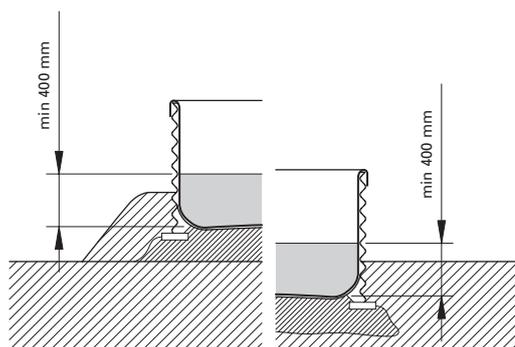
(D) A Wandschutzvlies
B Ratschen
C Silowand
D Isolierung

(GB) A Wall insulation blanket
B Racket buckles
C Tankwall
D Isolation

(F) A Feutre murale
B Tendeurs
C Paroi de réservoir
D Isolation

(E) A Manta de aislamiento de la pared
B Hebillas del trinquete
C Pared de tanque
D Aislamiento

7



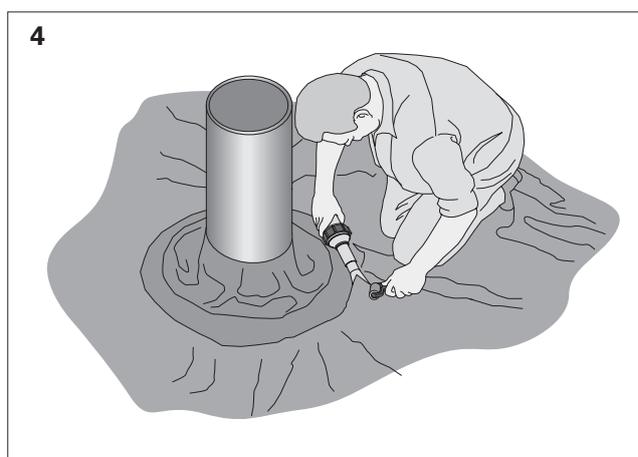
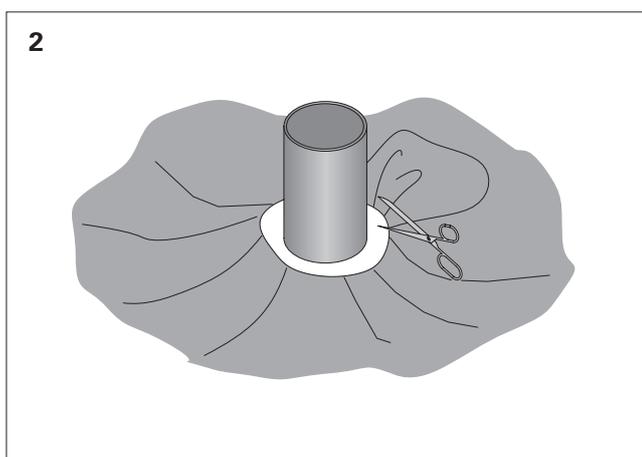
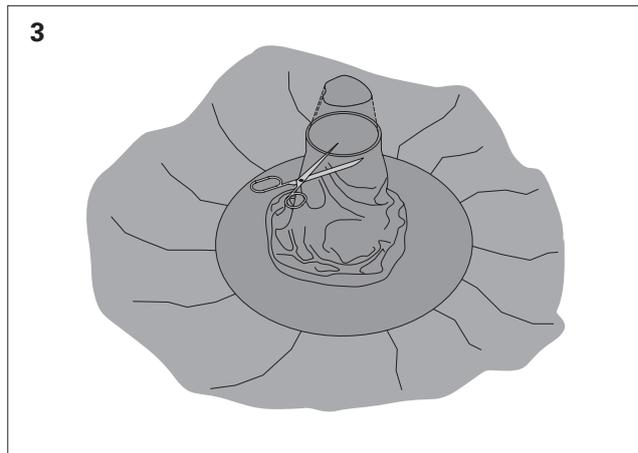
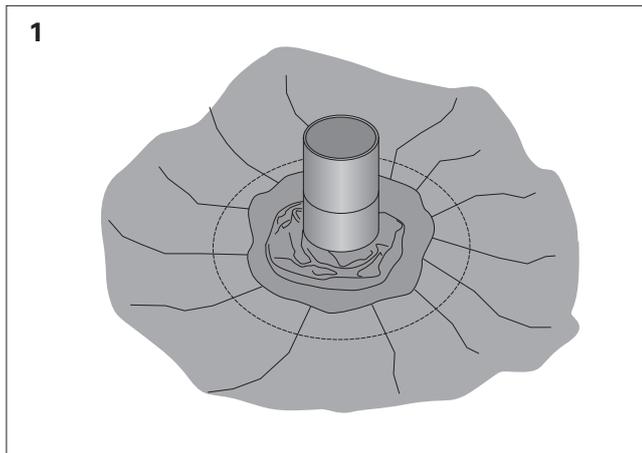
BUWAliner installation instructions

NL Installatie instructies

D Montageanleitung

F Instructions d'installation

E Instrucciones para instalai3n



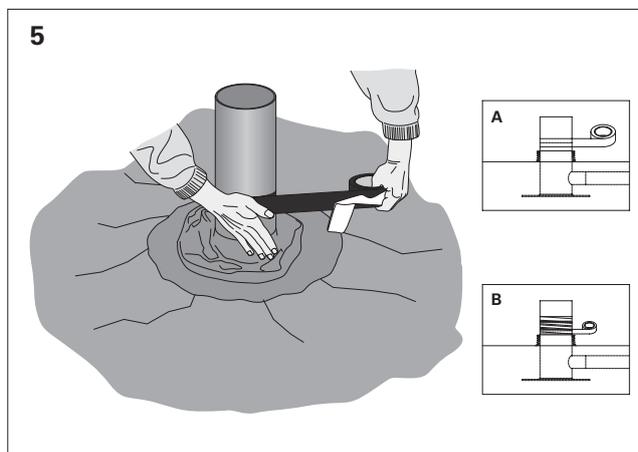
NL A Dikke tape
B Dunne tape

D A Dicke band
B Dünne band

GB A Thick tape
B Thin tape

F A Bande d'épaisseur
B Une mince bande

E A Cinta adhesiva gruesa
B Cinta delgada



WATER TECHNOLOGY

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