



Working Well

Presented by: Jennifer Macpherson
Alberta Environment, April 2009

Water Well Management for Well Owners



**WORKING
WELL**

Clean water.
Well protected.

Drivers

- Coalbed methane information sessions in 2006
- Requests from municipalities for similar workshops
- Linkages to Alberta Environment's core business
 - encouraging stewardship
 - supporting Water for Life



Pilot - Water Well Extension Program

- Project team – 12 people from various organizations
- 3 workshops in Yellowhead & Brazeau Counties
- 3 factsheets developed

[illegible]

Partners

Government of Alberta ■

- Government of Alberta
 - Environment
 - Agriculture & Rural Development
 - Health & Wellness (Alberta Health Services)

Canada

- Government of Canada
 - Agriculture & Agri-Food Canada
- Alberta Water Well Drilling Association
- Municipalities
- Well owners

Vision

Safe and secure groundwater
supplies for rural Albertans



Private
water well
system
owners

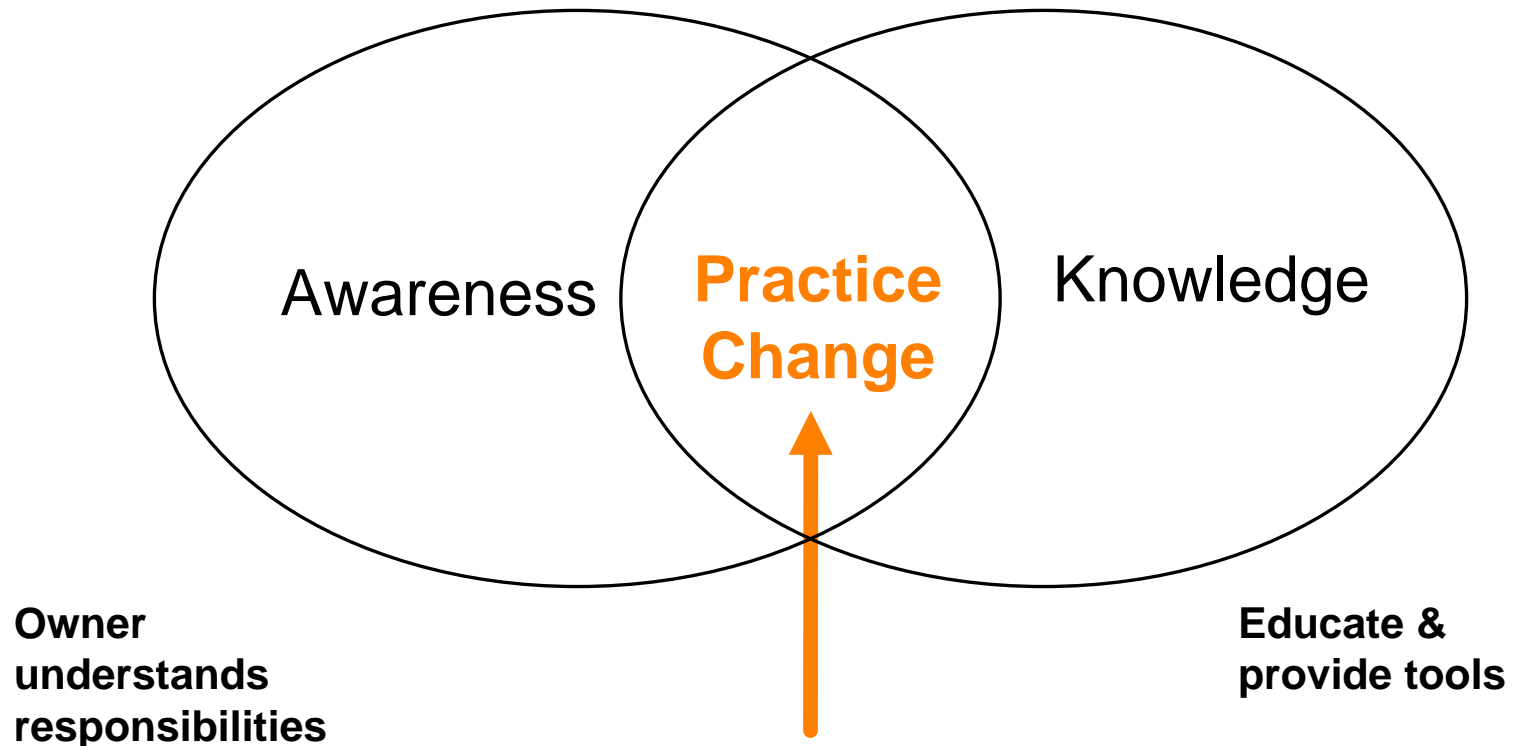


Outcomes

A coordinated, province-wide approach to water well education that would result in a demonstrable increase in stewardship practices by water well owners.

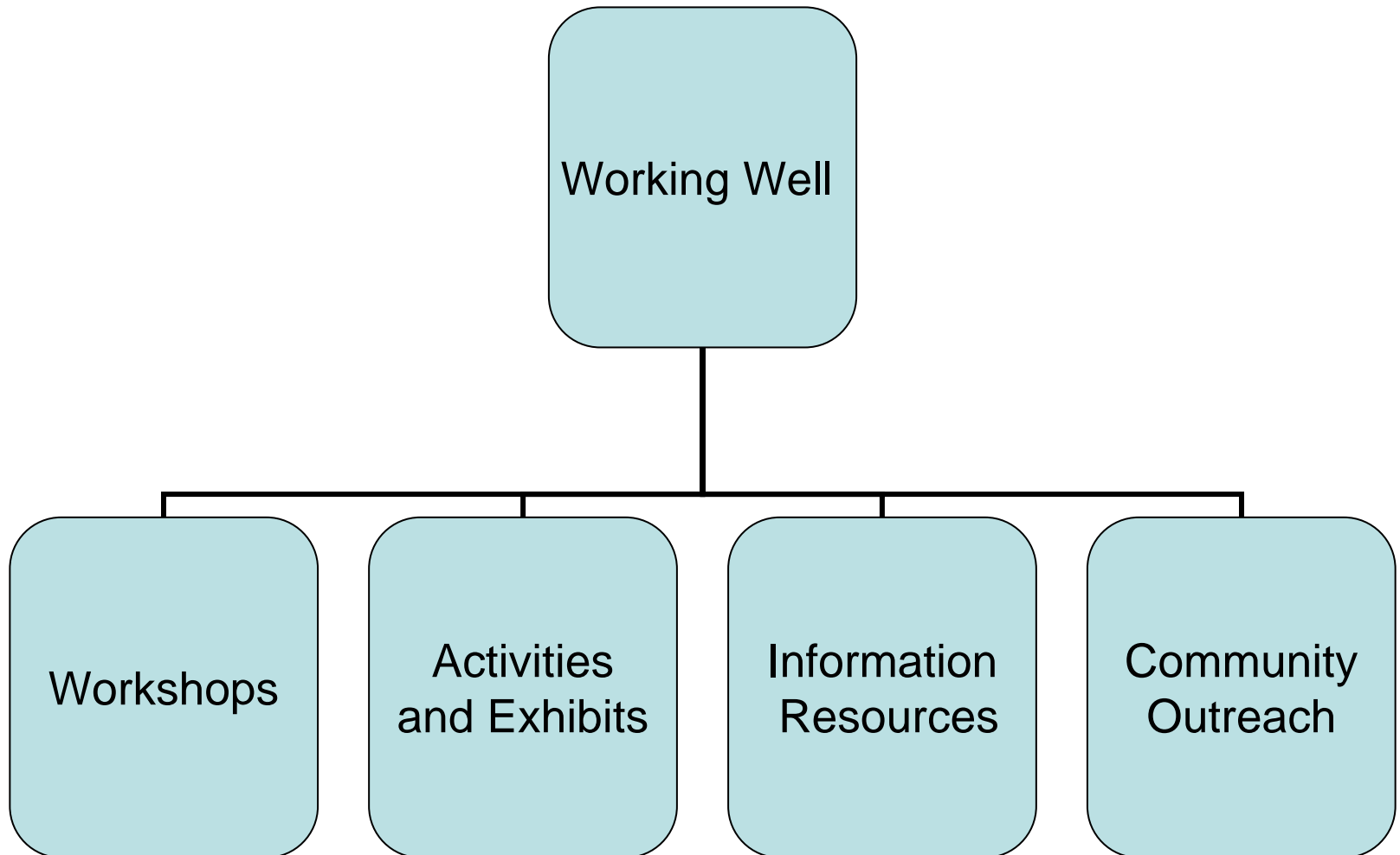


Objectives



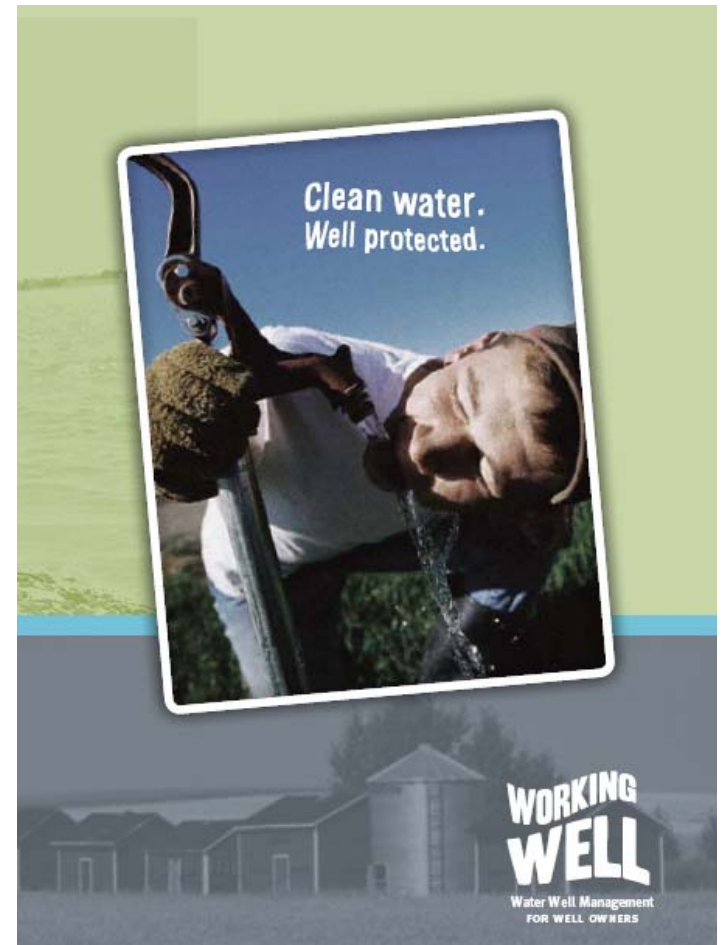
- Owners are motivated & skilled to adopt good well management practices
- Protect water wells & groundwater resources

Approach



Working Well

- Branding
 - logo, “look & feel”
- Templates
 - presentations
 - factsheets/binders
- Swag



Workshops

Presentations:

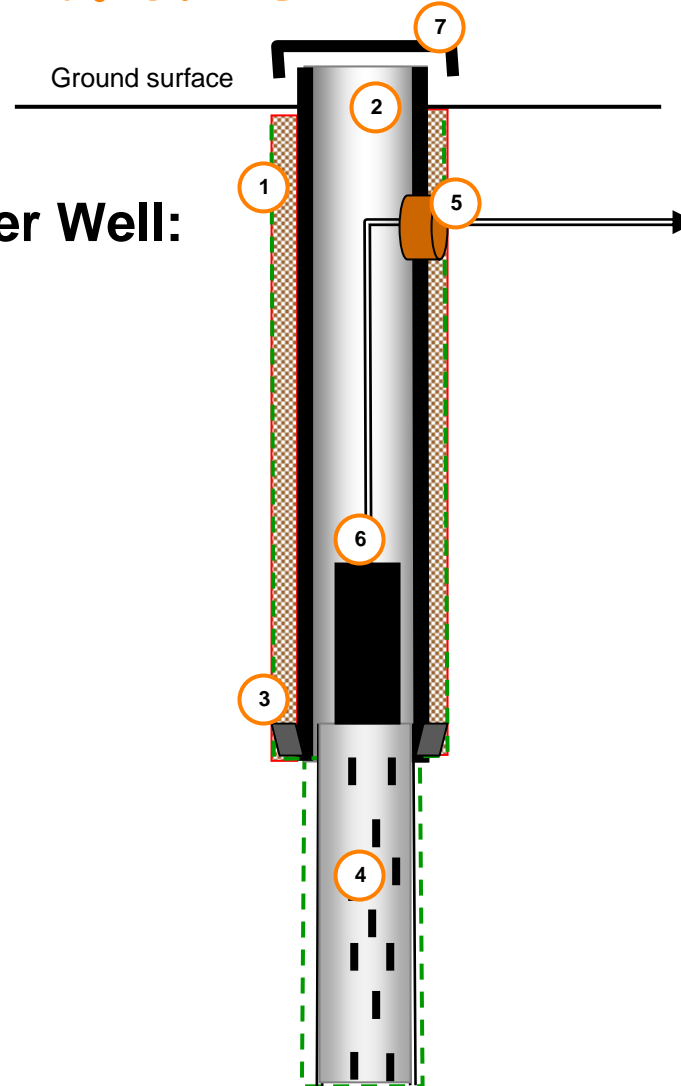
- Understanding groundwater
- How your well works
- “Draw your well” exercise
- Common well problems
- Top 10 well “enemies”
- Shock chlorination
- Water sampling



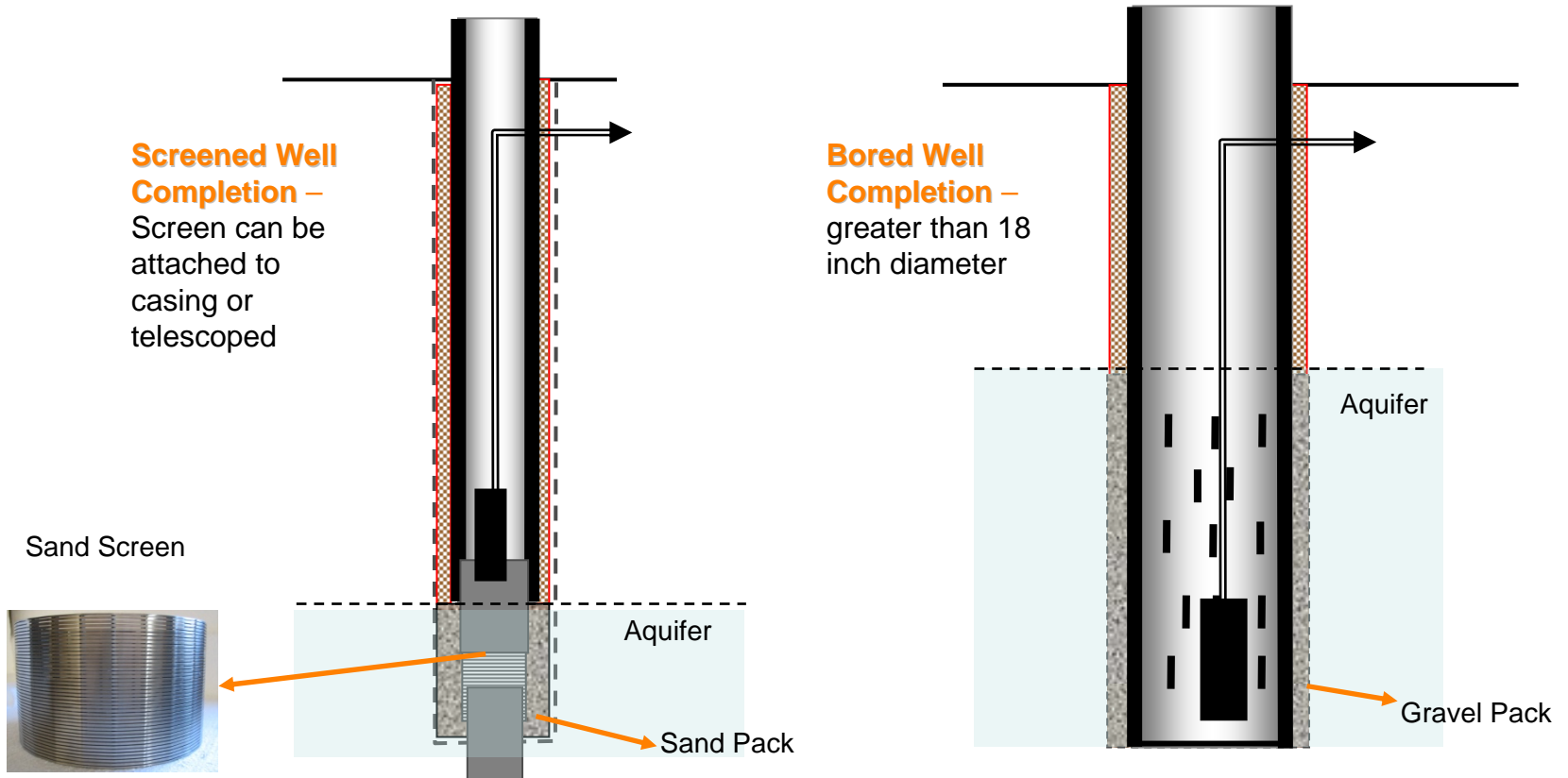
How Your Well Works

Key Components of a Water Well:

1. Borehole
2. Casing/cribbing
3. Annular seal
4. Well intake
5. Pitless adapter
6. Pump
7. Well cap

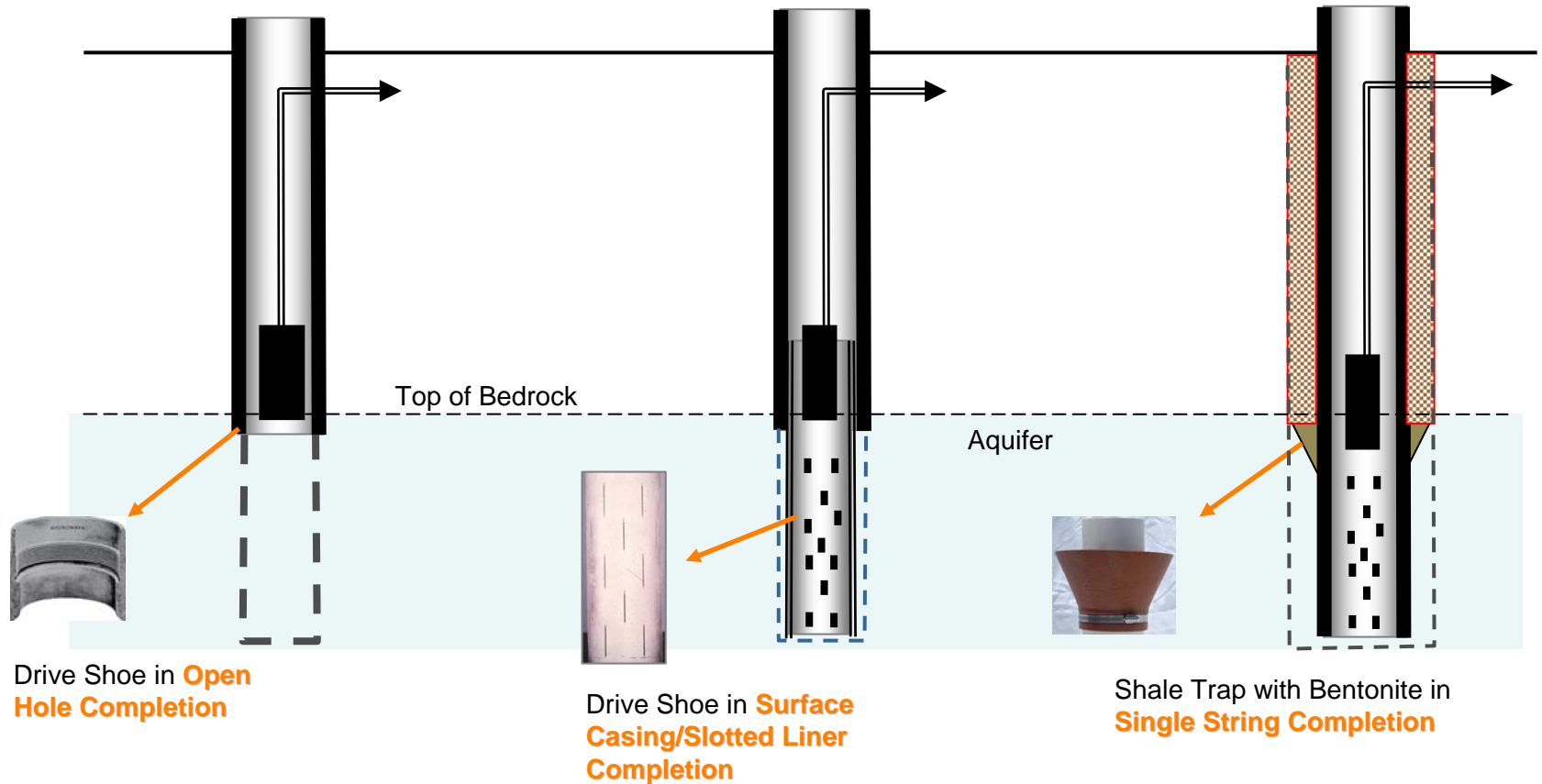


How Your Well Works




Well Completions used in **unconsolidated** surficial materials (sand, gravel)

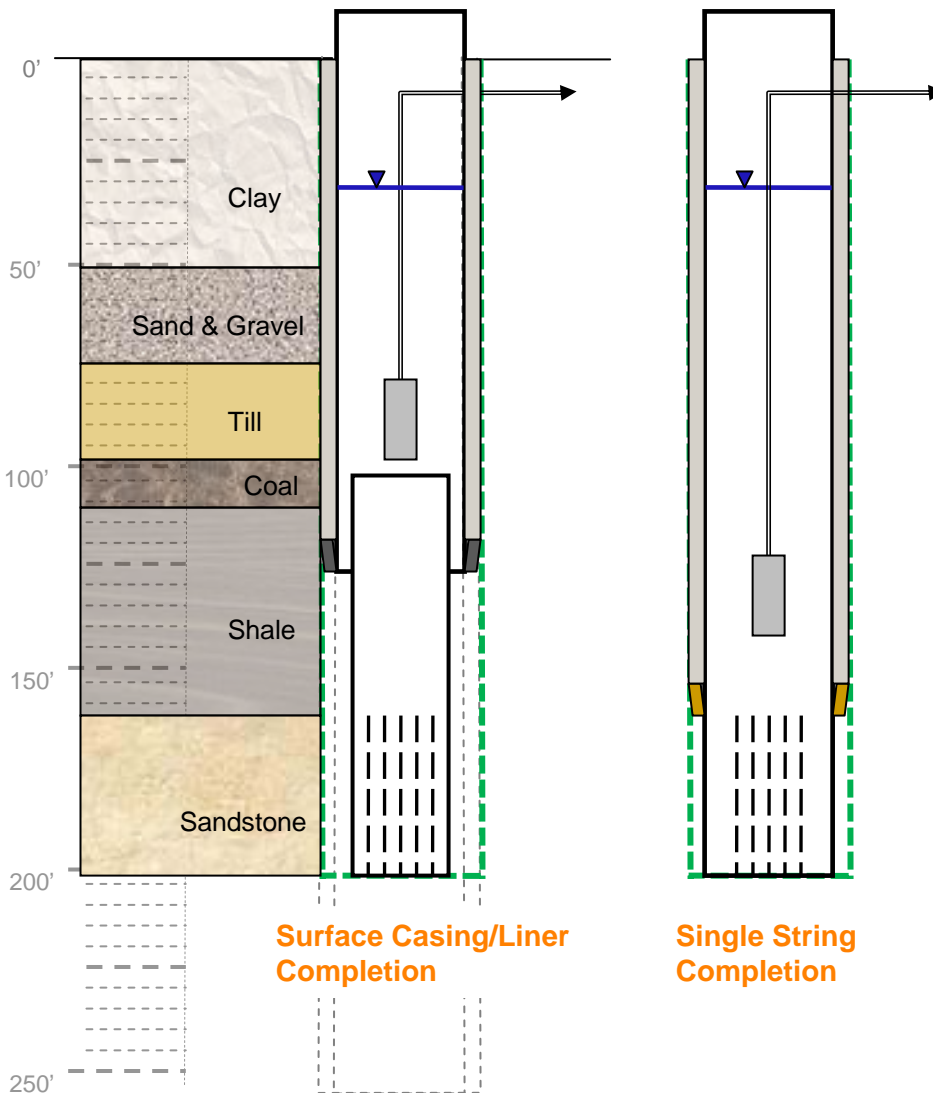
How Your Well Works




Well Completions used in **consolidated** bedrock formations (shale, sandstone)

Drawing Your Own Well – Bedrock completions

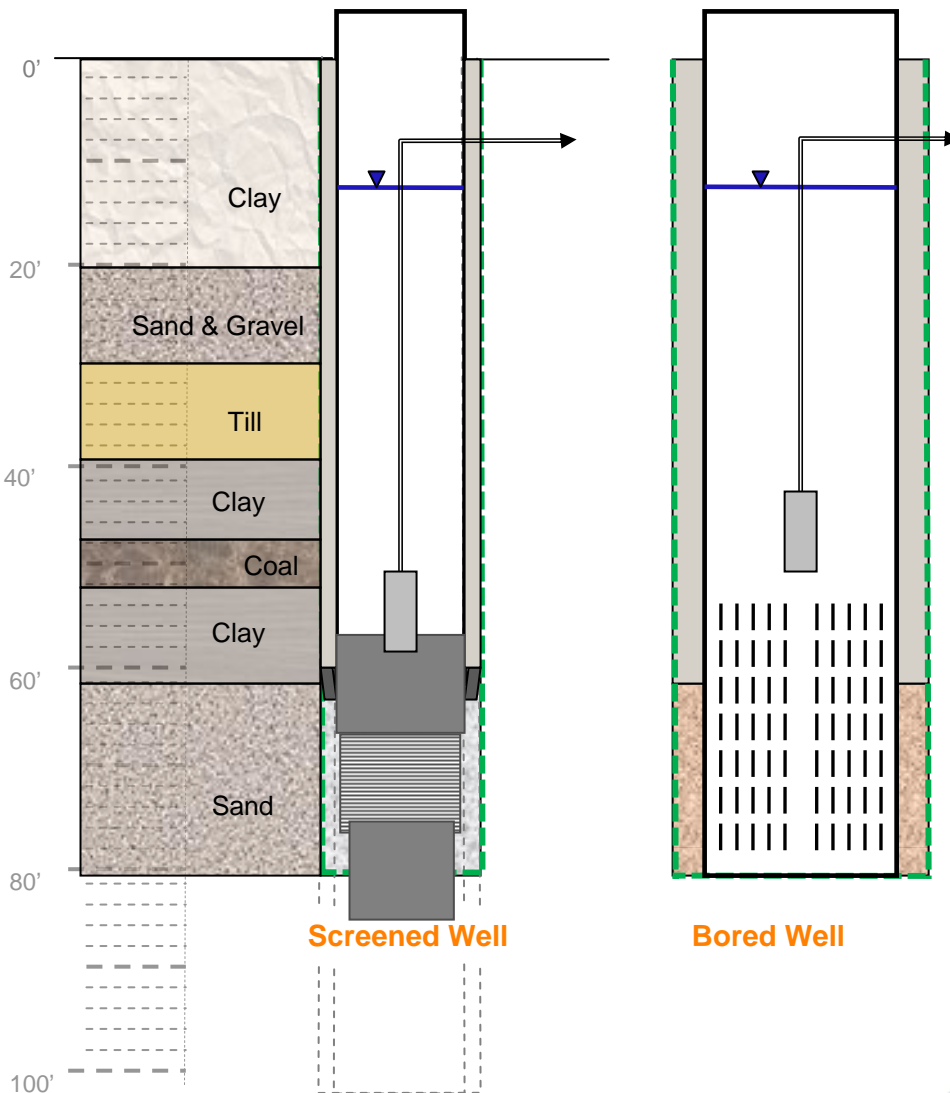
 Water Well Drilling Report The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.																		
1. Contractor & Well Owner Information Company Name: LOSNESS DRILLING (1975) LTD. Mailing Address: BOX 145 Well Owner's Name: B.L.W. STOCK FARMS LTD. P.O. Box Number: RR1, HARDISTY City: _____ Province: _____																		
2. Well Location Drilling Company Approval No. 38405 City or Town: LOUGH-HEED AB CA Postal Code: T0B 2V0 Well Location Identifier: _____ Postal Code: T0B 1B0 Country: _____																		
3. Drilling Information Type of Work: New Well Reclaimed Well: _____ Date Reclaimed (yyyy/mm/dd): _____ Method of Drilling: Rotary Flowing Well: No Gas Present: No Materials Used: _____ Rate: Gallons _____ Oil Present: No Proposed well use: Domestic & Stock Anticipated Water Requirements/day: 1000 Gallons																		
4. Well Log Date Started (yyyy/mm/dd): 2001/12/27 Date Completed (yyyy/mm/dd): 2002/01/02 Well Depth: 156 FT Casing Type: Plastic Size OD: 5 inches Wall Thickness: 0.375 inches Bottom at: 140 FT Borehole Diameter: 0 inches Liner Type: _____ Size OD: 0 inches Wall Thickness: 0 inches Top: 0 FT Bottom: 0 FT Depth to water level (feet): 27 FT Drawdown Minutes/Sec Recovery: 10 0:00 27.86 19.14 1:00 18.87 21.29 2:00 16.16 22.7 3:00 14.75 23.52 4:00 13.9 24.03 5:00 13.34 24.4 6:00 12.97 24.69 7:00 12.64 24.9 8:00 12.4 25.06 9:00 12.12 25.19 10:00 11.82 25.38 12:00 11.57 25.6 14:00 11.28 25.73 16:00 11.05 25.97 20:00 10.58 26.15 25:00 10.24 26.4 30:00 10.07 26.52 35:00 10 26.68 40:00 11 26.89 50:00 10 27.12 60:00 10 27.3 75:00 10 27.53 90:00 10 27.71 105:00 10 27.86 120:00 10 Total Drawdown: 17 FT If water removal was less than 2 hr duration, reason why: _____ Recommended pumping rate: 9 Gallons/Min Recommended pump intake: 100 FT Type Pump Installed: _____ Pump Model: _____ Any further pump test information? _____																		
5. Well Yield Test Date: 2002/01/02 Start Time: 11:00 AM Non pumping static level: 10 FT Rate or water removal: 9 Gallons/Min Depth of pump intake: 100 FT Water level at end of pumping: 27 FT Distance from top of inches casing to ground level: _____																		
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Drawing Your Own Well – Surficial Completions

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Report 1 Pump Test 1 page1



Common Well Problems

Biofouling



Structural Failure



Mineral Incrustation



Sediment Plugging



Common problems

- Reduced yield
- Water quality changes
- Sediment in water

Causes

- Biofouling
- Mineral incrustation
- Structural failure
- Sediment plugging

What you can do

Well “Enemies”

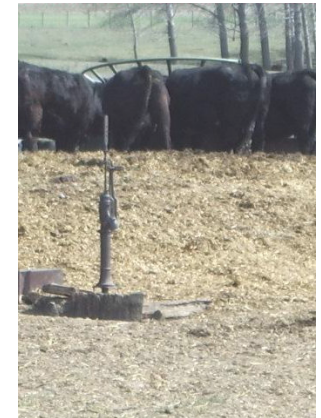
“**Enemies**” that create contamination risk

- Poor well design & construction
- Contamination sources
- Conduits for contamination

What you can do to avoid the “enemies”

Top 10 Well "Enemies"

1. Old, abandoned wells
2. Wells in pits & basements
3. Inadequate annular seal
4. Inadequate well cap
5. Poor siting & landscaping
6. Lack of backflow prevention
7. Poor septic systems
8. Poor manure management
9. Hazardous material storage
10. Poor maintenance practices



Shock Chlorination

- Why it is necessary
- When to chlorinate
- Dosage & types of chlorine
- Proper procedure



Water Sampling

- When to sample
- How often to sample
- What to sample for
- How to correctly take a sample
- How to get the sample to the lab
- What forms to fill out
- Where to get help understanding test results

Presentation is delivered by a local Public Health Inspector



Workshops Delivered

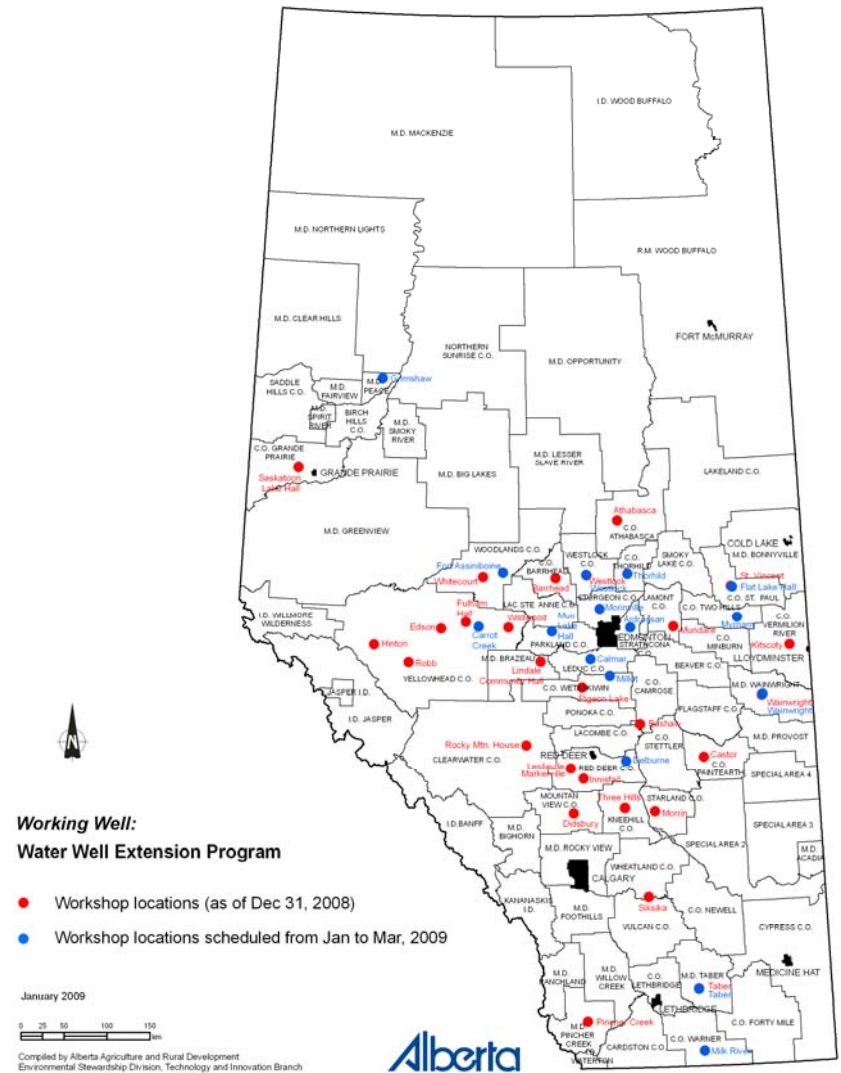
41 workshops

> 700 well owners reached

27 MDs and Counties

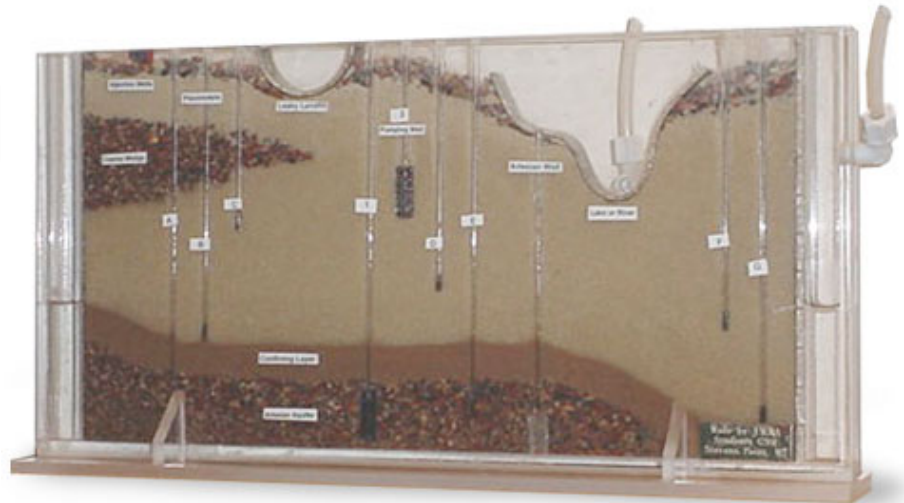
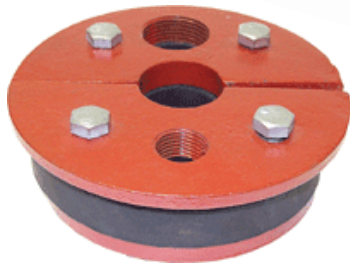
1 Summer Village

1 First Nation



Interactive Activities & Exhibits

- 8-foot high water well models
- Demonstration kits include: pitless adaptor, sanitary well seal, vacuum breakers etc.
- Groundwater model



Information Resources

- Fact sheets
- Brochures
- Posters
- Website

<http://environment.alberta.ca/3081.html>



Shock Chlorinating Your Well

Disinfect your well and plumbing system by flushing a high dose of chlorine through your entire system.

When should I shock chlorinate?	Preparation checklist	Materials checklist
<ul style="list-style-type: none">• Immediately after installing a new well.• Whenever you repair your well, pump or plumbing system.• Following contamination by flood water.• When lab tests show coliform bacteria in your well water.• Every year, if you have symptoms of ill health.	<ul style="list-style-type: none">□ Repair cracks and leaks in pump, plumbing and well system.□ Find out the diameter of your well.□ Store enough water for 12-24 hours of firm and family use.□ Drain water from plumbing system, including hot water tank.□ Ask your supplier if your water treatment needs to be disconnected or bypassed before you chlorinate.□ Prepare chlorine outside in a well-ventilated space, wear goggles and gloves to protect yourself. Chlorine is corrosive and can be deadly. Never mix chlorine and acids, including ammonia.	<ul style="list-style-type: none">□ A tank for clean water (minimum 500 gallons or 1,900 litres). Clean plastic, not sheeting (lining the base of a pickup truck works). Do not use a tank that has contained chemicals or non-potable water.□ Clean garden hose.□ Water (note the volume of water in your well).□ Chlorine bleach (untarmed) (no additives)

Coliform Bacteria

Unlike iron or sulphate-reducing bacteria, coliform bacteria can harm you. It is important to test your well for coliform bacteria every year. Your regional health authority can do the test. They will provide sampling bottles and information on how to collect water samples.

Shockling

If you notice a build up of slime inside your toilet tank, staining of fixtures and laundry, bad taste and a rotten egg smell, or if your well is producing less water, you may have a condition called biofouling. This happens when iron or sulphate-reducing bacteria build up in your well. These bacteria are harmless to humans, but they can plug up your well and cause permanent damage to well equipment.

Wells can produce dangerous vapours that can accumulate in well pits, cell houses and crawl spaces. Make sure there is proper ventilation. Use a drilling contractor with the right equipment to do the job safely. Only chlorinate a well located in a pit if it is on a trained in confined-space entry.

Shock chlorination may not be effective on older wells or wells that have not had regular preventative maintenance. These wells may need to be inspected and cleaned by a licensed driller.



Community Outreach

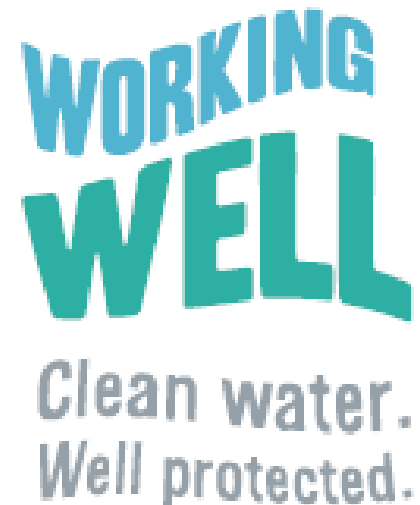
Communicate **Working Well** messages via:

- Open houses, agricultural fairs and farmer's markets
- Posters: Health units, post offices, storefronts
- Media: Local newspaper articles and radio interviews



Milestones Achieved

- Steering & Technical Committees (inter-agency)
- Program “branding” developed
- 41 workshops delivered
- 4 factsheets developed
- 7 PowerPoint modules developed
- Communications strategy
- Evaluation tools developed
- Website



**NORTH WEST ALLIANCE
nwaci CONSERVATION
INITIATIVE**

9613 - 100 Street
Morinville, Alberta
T8R 1L9

Phone: (780) 939-0602
Fax: (780) 939-0523
Email: mhittiger@sturgeoncounty.ab.ca

May 28, 2008

Krista Tremblett
Education Program Coordinator
Education and Outreach Section

Environment
Main fl Oxbridge Place
9820 - 106 Street
Edmonton, AB
T5K 2J6

Dear: Krista,

Having been involved with the "Working Well" Water Well Extension Program, letter of support and endorsement for the program. We held our event th Westlock, to a packed room. The expertise offered by the extension prog helpful, and the people in attendance got a lot of valuable information.

Rural water wells are a growing concern as properties change hands and when the wells were constructed move on. As this happens, the new ow often have no information on the well details. It is in these situations that most helpful, as it gives landowners the tools to find out about their well and

Red Deer County



AGRICULTURE

May 29, 2008

Krista Tremblett
Education Program Coordinator
Alberta Environment
Conservation and Education Branch
Main Floor, Oxbridge Place, 9820 - 106 Street
Edmonton, Alberta T5K 2J6

Dear Ms. Tremblett:

This letter is to express Red Deer County's support for the "Working program that has been developed by Alberta Environment and partne

Red Deer County's Agricultural Services Board has hosted two Work extension workshops this spring, and are planning on hosting more this fall/winter. We filled our March workshop, plus we had a waiting list of 72 people. We filled our recent May workshop with the March session's waiting list. Our Mayor, and some of our councilors, and Agricultural Services Board members attended. This demonstrates the strong interest in this topic and need for these workshops.

We have had universally positive feedback from workshop participants that these workshops are informative and valuable. Participants have also commented on the knowledge of the presenters, and their ability to get the important information to the audience. We feel that these workshops are also an important sustainability linkage for agricultural producers and their "rurban" (acreage owner) neighbours: water wells, and groundwater, are a resource they all have in common and share in the care of.

We look forward to continued partnering with the Working Well partners, to continue providing this important information to our landowners in Red Deer County. In addition, Red Deer County is very interested in a similar workshop for septic system management, and would welcome an opportunity to support such an initiative.

Sincerely,

Lewis
ervation Coordinator,
Red Deer County

David McKenna; George Murphy



Yellowhead County

May 23, 2008

Krista Tremblett
Education Program Coordinator
Education and Outreach Section
Alberta Environment
Main Floor, Oxbridge Place
9820 - 106 Street
Edmonton, AB T5K 2J6

On behalf of the Yellowhead County Agricultural Service Board and Administration, I would like to express our sincere appreciation and, furthermore, our endorsement of the **Working Well Program**.

At our May 15th, 2008 Agricultural Service Board meeting, the Board unanimously moved that, "the Agricultural Service Board sends a letter to the Working Well Program Coordinator supporting the further development of this project."

Yellowhead County's Agricultural Services Department has been involved with this initiative since the summer of 2006. The original intent of the program was to raise awareness and bring information to rural landowners on proper water well management. While partnering with Alberta Agriculture and Rural Development, Alberta Environment, PFRA, the Water Well Driller's Association, and Brazeau County, the department provided quality information to 174 Yellowhead County residents. The program is requests for

All partner
recognition
committing
commitment

Sincerely,

Garett Br
Agriculture

c.c.: Di
G



COUNTY OF BARRHEAD NO. 11

5306 - 49 STREET

BARRHEAD, ALBERTA T7N 1N5

Phone: (780)674-3331; Fax: (780)674-2777

Working Well Program
c/o Krista Tremblett
Education Program Coordinator
Conservation and Education Branch
Alberta Environment
Main Floor, Oxbridge Place, 9820-106 Street
Edmonton, Alberta T5K 2J6

Dear Krista:

I would appreciate it if you could pass this on to those that are involved in the Working Well Program.

The County of Barrhead had a workshop at the end of November. The speakers were excellent and I received nothing but good comments from my ratepayers as well as all three of my council that attended. They all said they came away with valuable information.

Water is the most vital part of any operation and households. We had both farmers and acreage owners as well as Camp Encounter join us. This program can affect many people, as we all know that one of the issues we face time and time again is the safety of our water and the health of our people.

We cannot express the importance of the continuation of these workshops. There are many more people that we need to reach out there and feel that this is one of the more important issues to address and will give results for the dollars that are spent.

Thank you for allowing us to participate in this program and we are in hopes that we will be able to run another workshop in the future as the need is there.

Yours truly,

Marvin Brade
Agricultural Service Board Chairman



**Mountain View
COUNTY**

June 6th, 2008

Krista Tremblett
Education Program Coordinator
Conservation and Education Branch
Alberta Environment
Main Floor, Oxbridge Place, 9820-106 Street
Edmonton, Alberta T5K 2J6
T: (780) 644-8341
F: (780) 422-4086
e-mail: krista.tremblett@gov.ab.ca

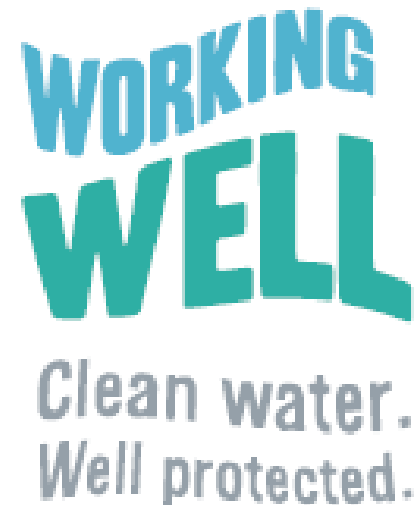
Dear Krista Tremblett, The "Work Well" workshop was very well received in Mountain View County and we are in full support of seeing this program continue. We are very interested in seeing this program offered again in Mountain View County. We look forward to working with all of you and presenting this workshop to our rate payers here in Mountain View County.

Sincerely,

Jeff Holmes
Manager of Agricultural and Parks Services

Moving Forward ...

- Increase the number of well owners reached
- Expand our audience
- Expand our partnership
- Evaluation strategy

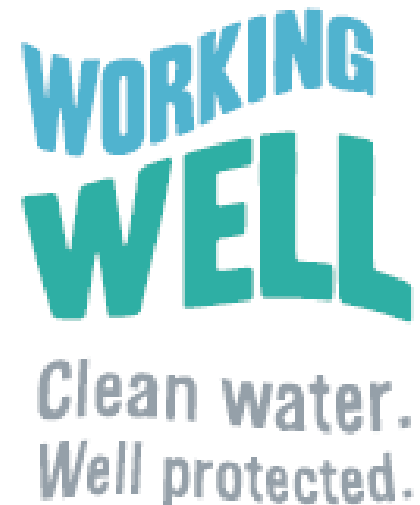


For More Information

Krista Tremblett
Working Well Program Coordinator

Tel: 780-644-8341

krista.tremblett@gov.ab.ca



Questions ...



**WORKING
WELL**

Clean water.
Well protected.