

TIM MUNNS
HANDOUT
5-17-2014

Tim's

The total runoff in Hansel Valley, therefore, is

Unconsumed springflow	2,400
Overland runoff	2,500
Total	5,000 acre-feet (rounded)

Ground water

The principal source of ground water in Hansel Valley is the reservoir in the sedimentary rocks of Cenozoic age. (See table 1.) This reservoir consists of unconsolidated and semiconsolidated sedimentary rocks, but it may include intercalated basalt flows of Tertiary age.

A ground-water reservoir also exists in the consolidated rocks of Paleozoic age. Several large springs and a few wells derive ground water from those rocks. The relation between this reservoir and the one in Cenozoic rocks was not determined.

Hydro
geologic
study

Recharge

The ground-water system in Hansel Valley and northern Rozel Flat is recharged by precipitation that infiltrates the adjacent mountains and their slopes. Most of the recharge in Hansel Valley is derived from precipitation on the drainage basin; but on the basis of the estimated recharge and discharge, it seems probable that a part of the recharge is derived from outside the drainage basin.

The estimated average annual recharge derived from precipitation on the Hansel Valley drainage basin is 8,000 acre-feet, or about 5 percent of the total volume. The estimate was made using the method described by Hood and Waddell (1968, p. 22-23); the factors and computation are shown in table 2.

Occurrence and movement

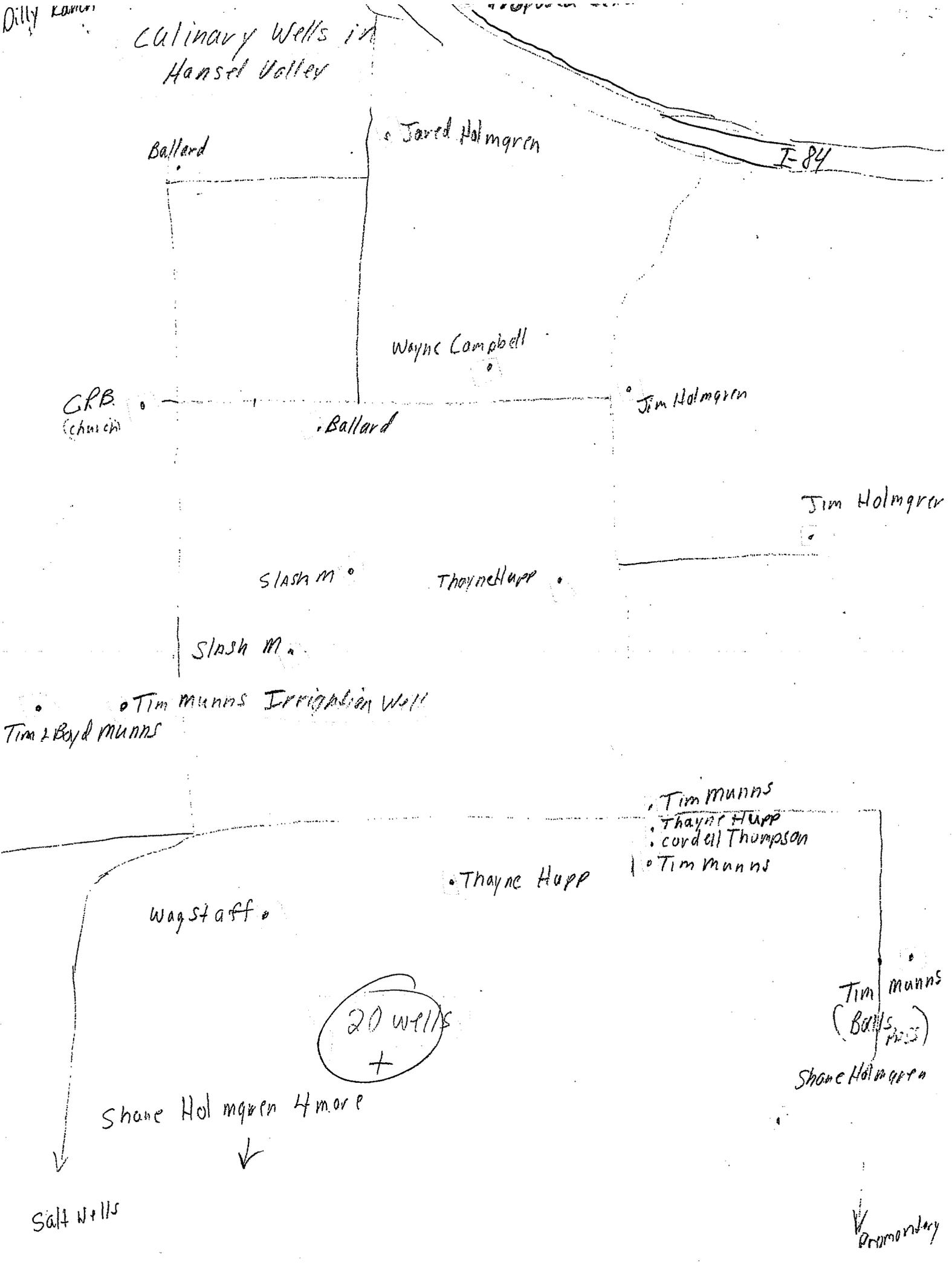
Ground water in Hansel Valley and northern Rozel Flat exists under artesian (confined) and water-table (unconfined) conditions, and it may be perched in part of the area. In general, ground water moves from the Hansel and North Promontory Mountains toward the lower parts of the valley and the flat (pl. 1) and ultimately some water reaches Great Salt Lake.

The rocks of Cenozoic age in northern Hansel Valley contain water under both artesian and water-table conditions. In wells such as (B-13-7)2ccc-1 and (B-13-7)10ddc-1, the water level rises considerably above the top of the permeable beds that yield water to the wells. Water-table conditions are indicated at such wells as (B-13-7)27abb-1 and (B-14-7)22dcd-1 where the water level is in the permeable beds. Depths to water in northern Hansel Valley range from 39 to 340 feet below land surface.

Along the east side of Hansel Valley, water-table conditions appear to exist in the sedimentary rocks of Cenozoic age except at well (B-11-7)2ccc-1 where nonflowing artesian conditions were found. Depths to water for the most part range from 200 to 600 feet beneath the upper alluvial slopes.

Dilly

Calyndary Wells in Hansel Valley



Ballard

Jared Holmgren

I-84

Wayne Campbell

GRB
(church)

Ballard

Jim Holmgren

Jim Holmgren

Slash M.

Thayne Hupp

Slash M.

Tim Munns Irrigation Well

Tim & Boyd Munns

- Tim Munns
- Thayne Hupp
- Cordell Thompson
- Tim Munns

Thayne Hupp

Wagstaff

20 wells
+

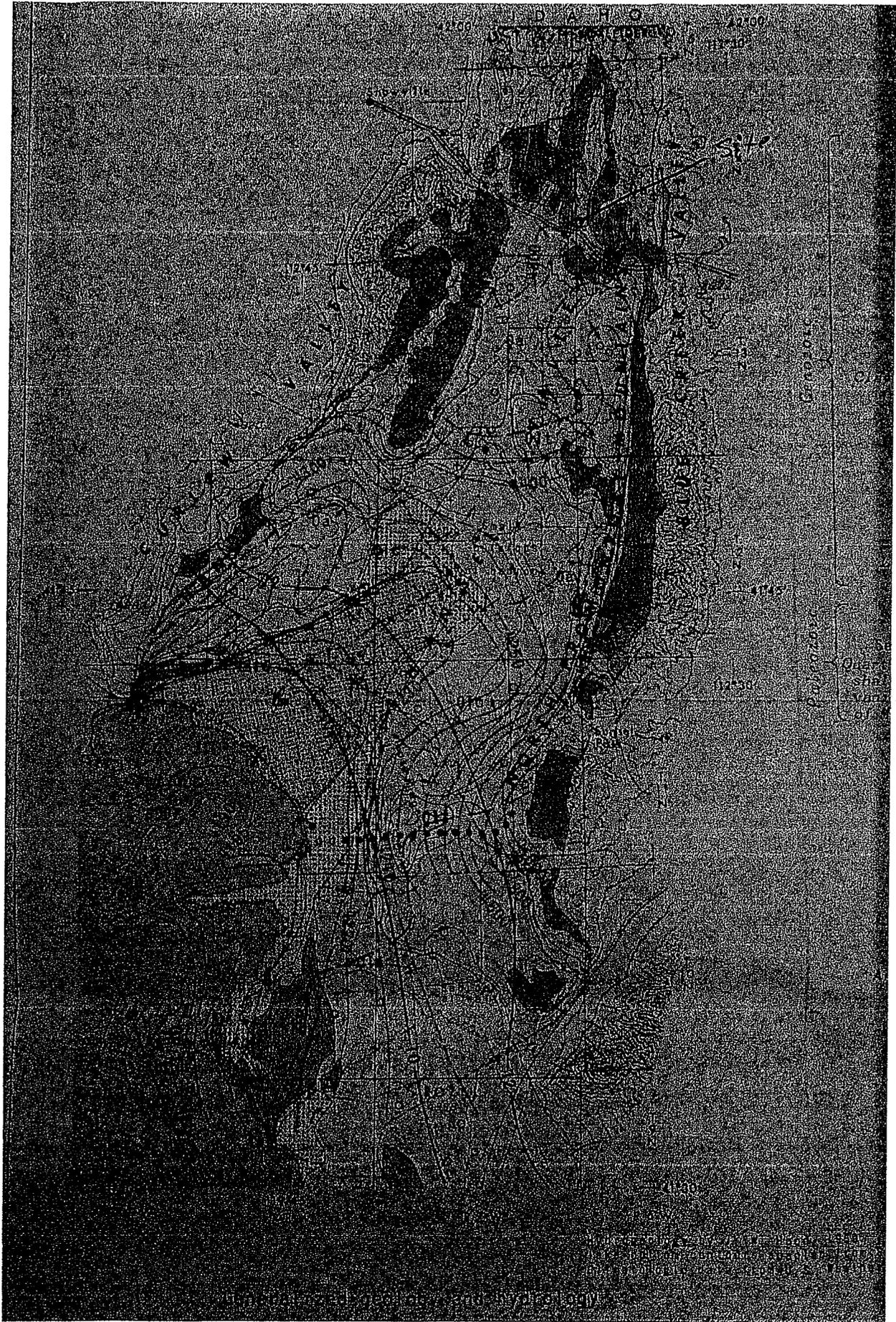
Shane Holmgren 4 more

Tim Munns
(Ballard)

Shane Holmgren

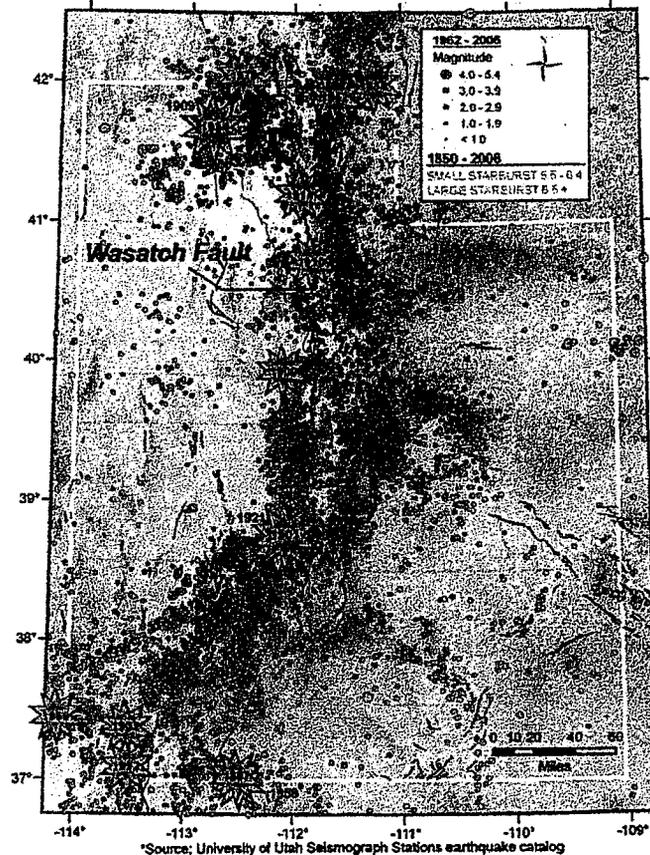
Salt Wells

Arroyo



Most of Utah's Populated Area Lies Within an Active Earthquake Belt

Earthquakes in the Utah region



Historical quakes of about magnitude (M) 5.5 and larger in the Utah region*

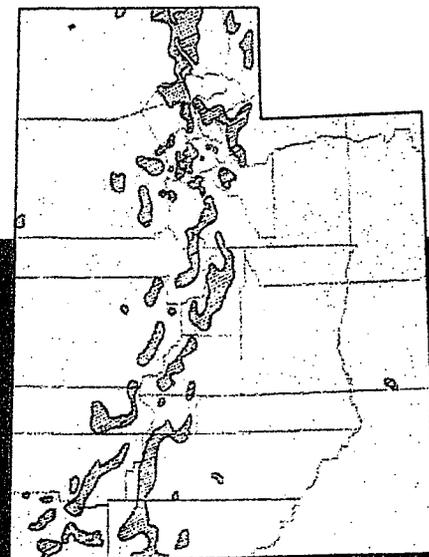
1884	M 6	Bear Lake Valley
1887	M 5.5	Kanab
1900	M 5.5	Eureka
1901	M 6.5	Richfield
1902	M 6	Pine Valley
1909	M 6	Hansel Valley
1910	M 5.5	Salt Lake City
1914	M 5.5	Ogden
1921	M 6	Elsinore (two events)
1934	M 6.6	Hansel Valley
1959	M 5.7	Utah-Arizona Border
1962	M 5.7	Richmond
1966	M 6.0	Utah-Nevada Border
1975	M 6.0	Utah-Idaho Border
1992	M 5.9	St. George

*sizes of shocks before 1934 are approximate

Making a home in Utah's earthquake belt...

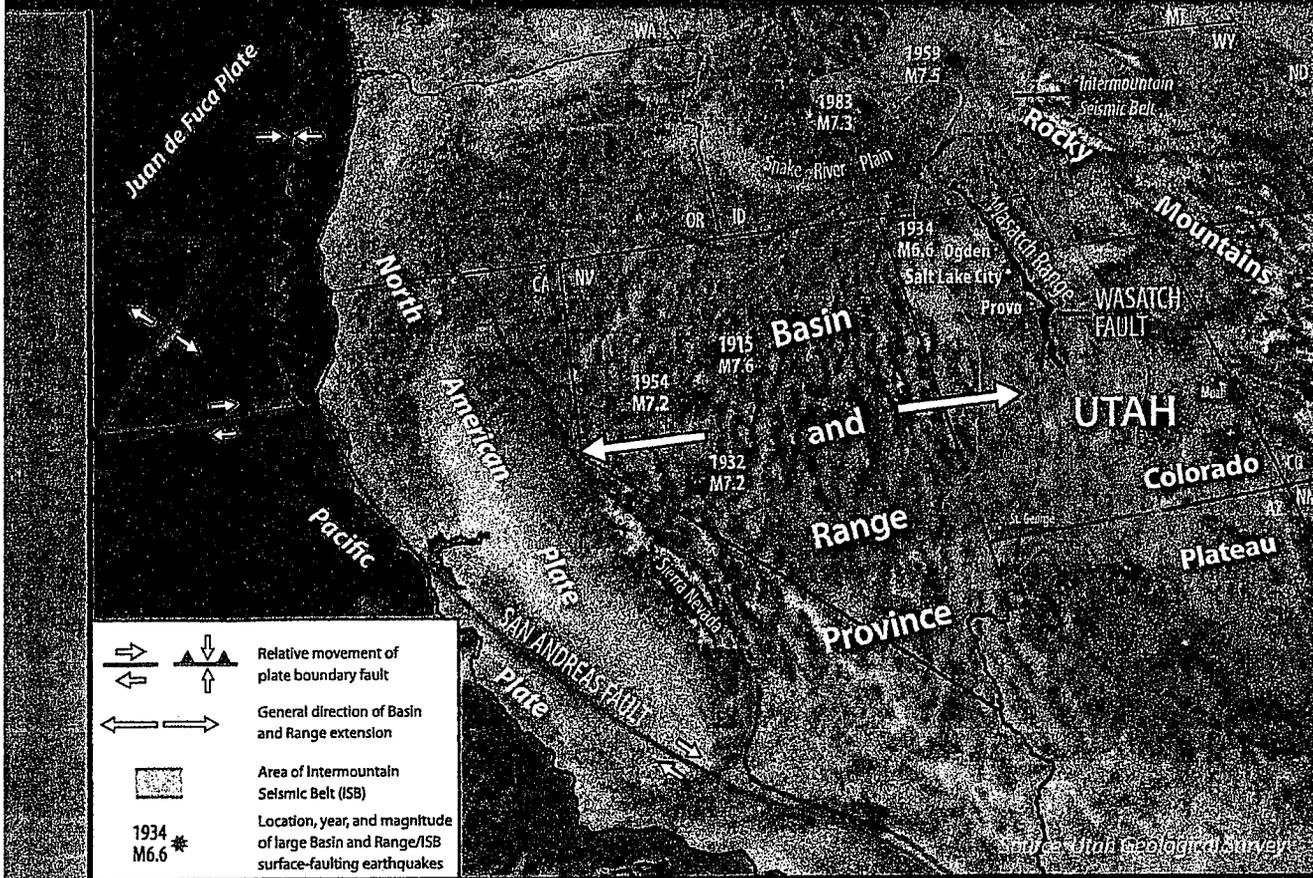
Distribution of
settlements
in Utah in 1877

Source: Atlas of Utah,
Weber State College, 1981



What is UUSS?

The University of Utah Seismograph Stations (UUSS) is a research, educational, and public-service entity that operates a monitoring network of more than 200 regional and urban seismic stations in Utah and neighboring areas, including the Yellowstone National Park region. For more information about UUSS, recent earthquakes, and other earthquake information, see <http://quake.utah.edu>.



Fault scarp formation

In a large normal-faulting earthquake the amount of vertical movement on the fault deep in Earth's crust is sufficient to rupture and offset the ground surface, producing a steep break or scarp. Geologic evidence shows that individual prehistoric earthquakes on the Wasatch fault produced scarps 6 to 12 feet high. Similar-sized scarps have formed during historical surface-faulting earthquakes in the region, such as the scarp shown below, which formed during the 1983 magnitude 7.3 Borah Peak earthquake in Idaho (surface faulting has broken and offset the concrete-lined ditch in which the people are standing). Over time, repeated movement on a normal fault eventually produces a mountain range on the uplifted crustal block (for example, the Wasatch Range) and a valley or basin on the down-dropped block (for example, Salt Lake Valley). (Photo courtesy of Walter Arabasz)



Surface faulting in Utah

In historical time, Utah has had only one earthquake large enough to form a fault scarp. The 1934 magnitude 6.6 Hansel Valley earthquake was near the threshold magnitude for earthquakes that cause surface rupture, and produced a small scarp in an unpopulated area north of Great Salt Lake. In Salt Lake City, 80 miles away, ground shaking from this earthquake was strong enough to cause adjacent 6- and 10-story buildings to sway and batter against each other and clock equipment to shake loose from the City and County Building's 12-story clock tower and crash down through the building. (Photo courtesy of the F.J. Pack Collection, Special Collections Department, University of Utah Libraries)

Box Elder County Land Use Management & Development
Code
Construction & Municipal Waste Zones

 B. Prior to any conditional use permit being issued, the applicant shall show a demonstrated need for the facility within Box Elder County.

C. All conditional use permits issued within an MSW zoning district shall be reviewed by the Planning Commission who shall impose such requirements and conditions as are necessary for protection of adjacent properties and the public welfare. As a minimum all conditional use permits shall have the following conditions:

1. The municipal solid waste facility is permitted for ancillary and support facilities necessary to conduct its business such as offices, maintenance facilities, laboratories, records storage facilities, process stations and equipment, fuel and chemical storage, and support services to maintain a workforce.
2. The operator of the municipal solid waste facility shall maintain all facilities and activities in such fashion to assure conformity to all Box Elder County land use, health, building, plumbing, mechanical and electrical codes, National Fire Protection Association Standards (NFPA), and other County ordinances, rules and regulations.
3. Copies of the licenses and permits issued by the State of Utah, Department of Environmental Quality, Division of Solid and Hazardous Waste shall be filed with the County Department of Engineering. The facility shall not operate without the proper permits being in force.
4. The operator of the municipal solid waste facility shall maintain a contingency plan and shall report to Box Elder County any conditions that may endanger human health or the environment outside the facility. Any such information shall be reported orally as soon as practicable once the operator of the municipal solid waste facility becomes aware of the circumstances of such incident.
5. The operator of the municipal solid waste facility shall take all reasonable steps to minimize and correct any adverse impacts on the public health and environment. At a minimum, the operator may be required to address on-site monitoring; which may be required for assessment of impacts to air, water, soil, vegetation and public health exposures on all property under the control of the municipal solid waste facility. Any air, soil or groundwater monitoring assessments shall be provided to the Box Elder County Community Development Department. Box Elder County reserves the right to monitor and assess all subject properties that may be impacted at its discretion and expense.

Box Elder County Land Use Management & Development Code

Construction & Municipal Waste Zones

1. "Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities,
2. Construction debris landfill means a landfill that receives nonhazardous construction and demolition waste and inert waste. *Homes?*
3. "Construction/demolition waste" means solid waste from building materials, packaging, and rubble resulting from construction, remodeling, repair, abatement, rehabilitation, renovation, and demolition operations on pavements, houses, commercial building, and other structures. Such waste may include: concrete, bricks, and other masonry materials; soil and rock; waste asphalt; rebar contained in concrete and untreated wood, and tree stumps. Construction/demolition waste **does not** include: friable asbestos; treated wood; or contaminated soils or tanks resulting from remediation or clean-up at any release or spill.
4. "Contaminate" means to make impure by exposure to or addition of a polluting substance.
5. "Household waste" means any solid waste, including garbage, trash, and sanitary waste in septic tanks, derived from households including single and multiple residences, and bunkhouses.
6. "Inert waste" means noncombustible, municipal solid wastes that retain their physical and chemical structure under expected conditions of disposal, including resistance to biological or chemical attack.
7. "Municipal solid waste" means household waste, yard waste, nonhazardous commercial solid waste, and non-hazardous sludge.
8. "Municipal solid waste facility" means a facility that receives municipal solid waste for treatment, storage or disposal.
9. "Yard waste" means vegetative matter resulting from landscaping, land maintenance, and land clearing operations including grass clippings, pruning and other discarded material generated from yards, gardens, parks, and similar areas. Yard waste **does not** include garbage, paper, plastic, processed wood, sludge, seepage, or manure.

3-8-010-4 Conditional use permits application.

Each conditional use permit application shall be submitted and receive approval by the Planning Commission before any operation is commenced. A copy of the application submitted to the State of Utah shall accompany the conditional use permit application to the county. Submission of an application does not constitute an assurance or presumption that such use will be approved. Each proposed landfill shall be evaluated on an individual basis in relation to its compliance with the standards and conditions set forth in this chapter and with the standards for the zoning district in which it is located to determine whether the use is appropriate at the particular location.

3-8-010.5 Reporting



Northern Utah Conservation District
85 South 100 East
Tremonton, UT 84337
(435) 257-5403

Jared Hawes, P.E.
IGES, Inc.
4153 South 300 West
Salt Lake City, Utah 84107

April 21, 2014

Dear Jared,

Thank you for contacting the Northern Utah Conservation District; regarding the soils given the "Prime if Irrigated and Farmland of Statewide Importance" designations at the proposed Moulding landfill site east of Snowville, Utah. These designations are given to recognize soils with characteristics conducive to growing quality crops or that are otherwise key to the local agricultural operations. We feel these designations are an important part of agricultural sustainability and should be protected.

In our review of your request we did find some characteristics of the soils on the proposed site that could pose challenges to landfill suitability. Enclosed you will find a soils report from the Natural Resources Conservation Service Web Soil Survey. The report was generated with the request for landfill suitability of the soils on the proposed site. We note in the report that it lists these soils as having limitations due mainly to slope and "too clayey" soils, other severe limitations surround the farmland with its shallow depth to bedrock. We are also concerned that the proposed site sits close to porous lava rock outcrops and a historical earthquake fault both of which facilitates water movement into the underground aquifer, which flows south towards nearby Hansel Valley residents who have numerous culinary water wells. If leakage from sanitary facilities were to occur water quality as well as human health could be detrimentally impacted.

The proposed site is also located in priority 3 Greater Sage Grouse habitat. The Greater Sage Grouse is a candidate species to be listed as threatened and endangered. A landfill would increase many threats to the candidate species; including increased habitat fragmentation, increased disturbance, increased weeds and cheat grass prone to fire, as well as increased avian predators. Avian predators, such as ravens, would have an increased food source and artificial perches attracting them to the area and greatly increasing the threat to Sage Grouse populations. The disturbance will increase the threat of habitat loss through weed invasion and increased risk of fire. The conservation district is also concerned that there is a general lack of water at this site to fight such fires, as well as control the dust of everyday production that could cause visual impairments to travelers on I-84.

As stewards of the natural resources in the eastern half of Box Elder County, we encourage you to consider these limitations carefully. We recognize the need for sanitary landfill facilities, yet we issue an additional recommendation of caution and careful consideration to long-term consequences of landfill placement. Therefore, we request a complete site study be conducted to determine what steps would be needed to ensure integrity of the site against future leakage and to maintain our natural resources, including adequate Sage Grouse habitat.

Sincerely,



Fred Selman
Chairman, Northern Utah Conservation District

Summary on Hansel Valley Proposed Landfill
(after informational meetings)

5-14-14

I realize that a well designed landfill is a reasonable method of waste disposal (though I wish we didn't generate so much).

From a financial perspective it is easy to see why Hansel Valley would be a target. Proximity to the free-way, plenty of topsoil to cover the landfill, low rainfall. So, if anything, what makes the proposed site a bad choice?

It is over the recharge area of Hansel Valley's culinary grade aquifer. But, one might still provide a reasonable engineering solution for handling level 1 waste over an aquifer. More than the issue of just being over the aquifer is the issue that it is over lava fields that have a likely connection with the aquifer.

There are a couple of things about this particular site that you have to think about.

Tim Munns has shown us a significant air flow going into Jim Holmgreen's well. The airflow changes with barometric pressure. This is evidence of a large underground space that is largely capped off from above. The likely scenario is that the lava field has large underground fissures and caverns that, over time, were capped off by surface soil or mud. At one time, the fissures were probably full of water. Those fissures and caverns likely extend a considerable distance through the lava fields, and Jim's well just happened to tap into one of them.

One of the potential dangers of the landfill to the aquifer would be simply moving the basalt and soil cap. Whether it was leachate from the landfill or just any surface water poring down into the fissures, pollution of the aquifer would be a significant risk.

Another question is whether leachate or surface water might accumulate in the area as a consequence of ordinary landfill operation coupled with a precipitation event. Given the proximity of the lava fields, an earthquake could easily open up a fissure allowing such a pond to drain into the underground cavities.

Not only does Hansel Valley in general have a strong record of seismic activity, but the particular location of the proposed landfill has even more specific issues with earthquake potential. There are fault lines running through the adjacent lava fields to either side of the site. The presence of volcanic activity can also indicate a potential of higher seismic activity. I've heard that the Hansel Valley lava fields are not associated with the Yellowstone hot spot. So why are they there? Do they represent a weak spot in the earth's crust?

In the interest of preserving water quality, I would submit that the acts of digging into the basalt mountain or forming any kind of surface water or leachate pond incident to normal operation of a landfill would subject the aquifer to an unnecessary and unacceptable level of risk.

I know I am making assumptions, but they can be checked out. I will be interested to see how these risks are quantified.

Thank you for your time,
Wayne Campbell

30 Landowners
100,000 Acres

April 14, 2014

To Whom It May Concern:

and others

We the undersigned land owners and residences of Hansel Valley, Box Elder County, Utah do adamantly oppose any land fill in the Hansel Valley area. Including but not limited to the following reasons; see attachment A.

Name	Signature	Acres
Tim T. Munns	<i>Tim T. Munns</i>	4500+
Jim Holmgren	<i>Jim Holmgren</i>	20,000
H. Thayne Hupp	<i>H. Thayne Hupp</i>	4,000
Debra SARIN	<i>Debra Sarin</i>	8,000
Melanie C. Holmgren	<i>Melanie C. Holmgren</i>	1500
Jared N. Holmgren	<i>Jared N. Holmgren</i>	"
Steven Shane Holmgren	<i>Steven Shane Holmgren</i>	20,000
Wayne L. Campbell	<i>Wayne L. Campbell</i>	750
Boyd Munns	<i>Boyd Munns</i>	1500
Lance D. Munns	<i>Lance D. Munns</i>	"
J. Golden Ward	<i>J. Golden Ward</i>	500 acres
Robert H. Stewart Estate	<i>Robert H. Stewart</i>	1600 acres
Lloyd Felix		200
Khia Son Holding	<i>David Gleason</i>	5400
Beth H. Ballard for Trust	<i>Beth Ballard</i>	670
Ross D. Ballard	<i>Ross D. Ballard</i>	370
Sue Ballard for Deziel Trust	<i>Sue Ballard</i>	460
Rich Stewart		2,000
DRUE J. ANN CLUTE		100
* Richard Crover	<i>Richard Crover</i>	11,000
Cordell Thompson	<i>Cordell Thompson</i>	
* Paul Baxter (ATK)	<i>Paul Baxter</i>	420
Delwin Mills	<i>Delwin Mills</i>	5,000
Deloris Stokes	<i>3000 Deloris Stokes</i>	3,000
Paul Stine	<i>Paul Stine</i>	3,000
Rattle Snake LLC = sec attached		8,000

103,000 acres

April 18, 2014

To whom it may concern:

We the undersigned concerned citizens of Box Elder County Utah do not feel there is a need nor do we want another landfill in Box Elder County.

NAME	SIGNATURE	ADDRESS
RAY LISH	Ray Lish	3227 E Abene - Tremonton
Luke Anderson	Luke Anderson	10960 N 8400 W Tremonton
James Munns	James Munns	700 N 2006 Tremonton
Dorlyn W. Ramsdell	Dorlyn W. Ramsdell	187 W. Factory Garland St.
Sindy Munns	Sindy Munns	465 N. Main Garland
Josh Munns	Josh Munns	697 N. Main Garland
Sharece Munns	Sharece Munns	1097 W. Main Garland
Jay Munns	Jay Munns	335 N 700 E TREMONTON
DEEKE OYLER	DEEKE OYLER	15345 N 4400 W GARLAND
Holly Sue Oiler	Holly Sue Oiler	15345 N 4400 W. Garland UT
Richard Kent	Richard Kent	16010 N 4000 W Fielding UT
Hal V. Peeser	Hal V. Peeser	730 N. 4200 W. BRADLEE, UT
Bryon L. Nelson	Bryon L. Nelson	11980 N 10000 W Bothwell
Brett Nelson	Brett Nelson	2704 W. Valley View Dr. Tremonton
Jeri C. Reeder	Jeri C. Reeder	1430 N 6800 W Corinne UT 84307
Kato Norman	Kato Norman	820 N 6000 W Corinne UT
V. KARAN	V. KARAN	128 N 400 W BC. UT
Mary Belnap	Mary Belnap	11700 W. 2000 N. FERRISE LIT.
Amy Nock	Amy Nock	1055 HAVANA BC Utah
Ken Firth	Ken Firth	3569 W 1000 N Tremonton
Shawn Nichols	Shawn Nichols	506 N 2300 W Tremonton
Wade Stark	Wade Stark	9455 W 11200 N Tremonton
Tyrel Stark	Tyrel Stark	9405 W. 11200 N. Tremonton
Sonny Munns	Sonny Munns	P.O. Box 670 SNOWVILLE, UT 84936
Kathie Munns	Kathie Munns	P.O. Box 670 SNOWVILLE, UT 84936
Bret Reeder	Bret Reeder	1430 N 6800 W Corinne, Utah 84307

April 18, 2014

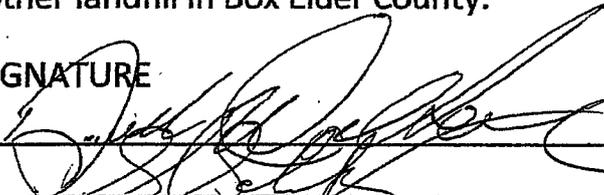
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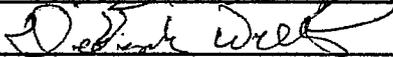
NAME

SIGNATURE

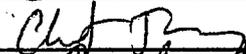
Shon Schultk



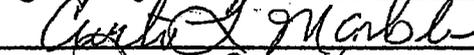
Deirdre Wells



Chet Tracy



Curtis L Marble



DANIEL L. HANSON



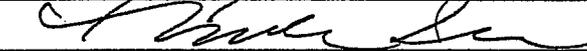
Val Ketter



James Jensen



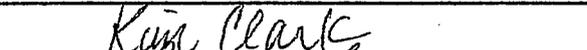
MIKE ISOM



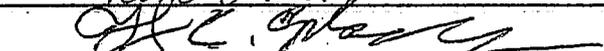
Kim Clark



THOMAS C. THOMPSON



Shonda Whitcomb



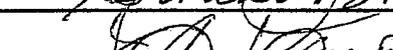
Art Danielson



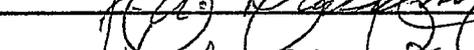
DOUG ADAMS



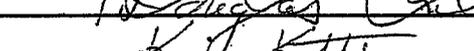
Kevin Ketter



Alex Ross



Corey Ross



Newell Norman



Matt Norman



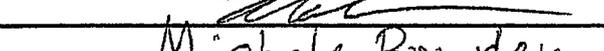
Michele Bowden



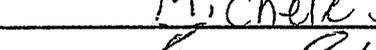
BRAD A. WILLIAMSON



Becky Stahl



Amy Bond



Carol Harlow

