

## MEMORANDUM

**Date:** October 29, 2014  
**To:** Water Right File 37-7842  
**From:** Michele Edl  
**Re:** license review

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### **Background**

In July 7, 1986 when John LeMoyne, then chairman of the Lower Snake Aquifer Recharge District (LSARD), submitted a proposal to the USBOR for the High Plains States Groundwater Demonstration Program Act of 1983, he mentioned two sites for aquifer recharge. One location was undeveloped at that time and is now the Shoshone recharge site. The other location was a pre-existing site on the Dietrich Canal near Richfield.

The Beneficial Use Field Reports which have been submitted for the licensing of this permit consider only the Shoshone site. I base my recommendations for this license on the recharge activity which occurred at the other site. See Dietrich Canal site discussion below.

### **Field visit confirmation**

There were two field examiner's reports to review for licensing. Both reports were completed by the same examiner, Gerald Martens. One was signed by Mr. Martens on July 6, 1992 and submitted with a Proof of Beneficial Use statement on July 27, 1992. The second was signed on November 24, 1993 and received by IDWR on November 29, 1993. Neither report was complete enough to be reviewed independently. And although I pooled information from both reports, I found that confirmation of beneficial use remained unclear. It was necessary to revisit some of the relevant locations before I could complete a pre-licensing review.

On July 9, 2014, Shelley Keen and I visited the office of the Big Wood Canal Company (BWCC) and met with Lynn Harmon, the manager of the BWCC. Mr. Harmon provided the as-built engineering plans for the Bifcation and guided us to the site. He also gave us directions to the Dietrich Canal site. I have attached photos of the bifurcation and the Dietrich site which I took that day.

### **Shoshone recharge site**

After reviewing flow records provided by the field examiner in his November 1993 report, I found that he had recommended the Big Wood River as one source of the recharge water. He appeared to have based his source recommendations on readings which were taken at locations on the Milner-Gooding Canal (a canal segment controlled by North Side Canal Company) and the Dietrich Canal (a canal segment controlled by Big Wood Canal Company). The examiner mislabeled two of the column headings in his spreadsheet. The data in the two columns furthest to the right should be swapped. I have confirmed that the data did come from records kept by the watermaster for Basin 37 and 37M. And in discussions with the watermaster, I have also confirmed that, although unlikely, it is possible to bring water from the Big and Little Wood Rivers to the Shoshone site.

The Shoshone recharge site is located between measuring stations #56 and #57 on the Milner-Gooding Canal. It is also downstream from a structure which carries the nameplate label "Byfication". (The correct spelling for this term is bifurcation). This unique structure is a combination siphon and flow control structure. It was constructed circa 1930 and under certain conditions it could be capable of directing water from the Little Wood River into the Milner-Gooding Canal. But typically water flows in the opposite direction, from the Milner-Gooding Canal into the Little Wood River.

There are two lanes that water can take through the bifurcation. Water can remain in the Milner Gooding Canal and continue to flow northeast after dipping under the Little Wood River in the bifurcation siphon. Or water can exit the Milner-Gooding Canal through the bifurcation's turn-out lane to join the Little Wood River and flow southeast. The direction of flow can be reversed only if the water in the Milner-Gooding Canal has less energy than the water in the Little Wood River. For water from Basin 37 to be the source water for the event on which Mr. Martens bases his recommendations, he would have needed to confirm that the flow in the Little Wood River was greater than the flow in the Milner-Gooding Canal. That was not the case.

Although there was excess water in Basin 37 (the Little Wood and Big Wood Rivers) during April and May of 1986, there was also water flowing in the Milner-Gooding Canal which originated from Basin 1 (the Snake River). The quantity of water flowing in the Milner-Gooding Canal at the time excluded a reversal of the flow through the bifurcation. The water arriving at the Shoshone recharge site in April and May of 1986 was from the Snake River.

Based on the engineering plans, the site visit and the flow data provided, I have concluded that the examiner confirmed a recharge event at the Shoshone recharge site but that little if any of the source water for that event could be attributed to the Big or Little Wood Rivers. The water came from the Snake River through the Milner-Gooding Canal.

Companion water right 1-7054 should be used to authorize the Snake River as a source of recharge water, which leaves water right permit 37-7842 to authorize recharge water from the Big Wood and Little Wood Rivers. The Dietrich Canal site uses water from Basin 37 for recharge.

#### **Dietrich Canal recharge site**

When permit 37-7842 was issued in 1982, several new sites within the LSARD were being considered for aquifer recharge. The Shoshone recharge site was developed through that effort. However, even before the LSARD was created, (on August 27, 1981) a site adjacent to the Dietrich Canal had been developed and used for flood/flow control.

The first week in April of 1981, the Shoshone District Manager of the BLM, Commissioners from Gooding and Lincoln County and the Mayors of Shoshone and Gooding signed a cooperative agreement for the use of 2320 acres of public land for flood control. (See attached copy of Cooperative Agreement I-05-63.)

Construction of the Dietrich site preceded the Cooperative Agreement by more than 10 years. According to Lincoln County and Big Wood Canal Company personnel the redirection structure on the Dietrich Canal had been constructed circa 1970. Lincoln County personnel provided photos (taken July 29, 2014) which show a section of the Dietrich Canal and the wall of the redirection structure which is etched with the year 1970.

The Lower Snake Aquifer Recharge District considered both the Shoshone site and the Dietrich site as aquifer recharge sites in 1986. In a recharge demonstration proposal to the USBOR, the LSARD Ground Water Recharge Demonstration Proposal states,

There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 cfs of discharge up to a week and continued flow of approximately 200 cfs. <sup>1</sup>

I am recommending the Dietrich Canal site as the place-of-use for this water right. But before I detail the elements of the water right, it's important that I clarify what I mean by aquifer recharge and how this facility qualifies.

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<sup>1</sup> Lower Snake Aquifer Recharge District Ground Water Recharge Demonstration Proposal July 7, 1986 for High Plains States Groundwater Demonstration Program Act of 1983, submitted by John LeMoynes,

Activities which enhance aquifer recharge can be put into three categories.<sup>2</sup>

1. Unintentional – the consequences of deliberate activities that have an unrelated purpose. Examples are deep seepage under irrigation areas or leaking water and sewer pipe.
2. Unmanaged – an intentional activity known to increase aquifer recharge, but usually undertaken to dispose of water rather than to recover it. Examples include septic tank leach fields and flood control impoundments. The recharge proponent does not take any responsibility for water recovery.
3. Managed – an intentional activity to increase aquifer recharge and to recover water for economic or environmental purposes. Examples of the mechanisms for managed recharge include injection wells and infiltration basins.

The essential components common to both managed and unmanaged aquifer recharge project are: a source of water, a means to capture that water, sufficient land to harvest the water and an intentional water related activity which can increase the supply of water stored in an aquifer.

### **Conclusion**

Although the agreement with the BLM was for flood control, and the site is not currently approved for managed aquifer recharge, I propose that the Dietrich Canal site qualifies as an unmanaged aquifer recharge site. And that there may be an opportunity to convert the site from unmanaged to managed recharge site by applying conditions on its operation. Therefore, I am recommending the following elements in a license for ground water recharge use.

### **POD**

The permit POD address is incorrect. Glen Saxton recognized the error early on and indicated that the POD should be in section 25, Township 4S, Range 19E. Mr. Saxton's recommended PLSS grid address is the location of the Dietrich Canal's measuring site and/or its diversion from the Little Wood River. And it is the POD address that I identify and recommend for this right.

A licensing amendment will be required.

According to available Lincoln County taxlot information the BLM owns the property at the point-of-diversion.

### **Source**

The permit authorized water diverted from both the Big Wood River and the Little Wood Rivers.

There is a potential path that water from the Big Wood River could take to the POU. But water from the Big Wood River would need to travel a convoluted route involving the Richfield canal and the Jim Byrns Slough before eventually injecting into the Little Wood River near Richfield above the POD. Therefore, the Big Wood River has been eliminated as a source and I am recommending only the Little Wood River as the source for water diverted under this permit.

Cooperative Agreement I-05-63 recognized that the capacity of the Little Wood River and the servant canals could be insufficient to contain all the water periodically available from the Little Wood River drainage.

The Dietrich Canal provides the means to convey the water from the Little Wood River to the recharge site.

### **Water Use**

POU has been used for flood or flow control by the Lincoln and Gooding Counties since the re-diversion

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<sup>2</sup>Waterlines Report Series No. 13, Managed aquifer recharge, February 2009, Australian Government National Water Commission.

structure was constructed.

The redirection structure pre-existed permit 37-7842. Big Wood Canal Company personnel stated that it had been constructed by the Lincoln County in the late 1960's. In response to an information request, the Lincoln County Commissioners office provided the attached photos showing the inscribed date, 1970.

The application for permit states that the applicant expected to use the Dietrich Canal and/or Richfield Canal by contract. The Dietrich Canal is used to convey the water to the site. According to the data in the watermaster's records, the Dietrich Canal has a capacity of nearly 400 cfs. (See May 17, 1984 record). I believe that those records are based on a stage-discharge relationship. The raw, hand-written records show that the relationship was appropriately adjusted throughout that irrigation season.

Based on personal conversations with the current watermaster, Kevin Lakey, and the current manager of the Big Wood Canal Company, Lynn Harmon, the customers served by the Dietrich Canal have an early irrigation season demand of approximately 150 cfs. The water data indicates that almost 400 cfs was flowing in the Dietrich Canal. Given that the daily spot readings may have an error of +/- 10%, there would have been 210 to 250 cfs available through the canal for other uses at this location. (400 cfs - 40 cfs error = 360 cfs. Approximately 150 of the 360 would be dedicated to irrigation use, leaving at least 210 cfs for aquifer recharge.)

According to the current manager of the BWCC, the site can absorb the entire flow that the Dietrich Canal is capable of delivering. (from 7/9/2014 conversation). The quote from the LSARD proposal above indicates that the LSARD believed that the site could absorb more water. However, I do not have data to support either rate statement.

Watermaster records for 1984 indicate that water diverted into and from the Dietrich Canal for flood control (which is unmanaged aquifer recharge), within the development period of the permit (1982-1992). See the attached page from the WM book and my spreadsheet.

My flow rate and volume recommendations are based on watermaster records for the 1984 irrigation season.<sup>3</sup> Although the Little Wood River may have had higher flows in other years, the records from the spring of 1984 show that excess Little Wood River water was channeled into the Dietrich Canal and likely discharged at the Dietrich Canal recharge site. There is no record that the water was subsequently recovered and used.

#### **POU**

The POU is located in section 2, Township 5S, Range 19E, which is within the boundary of the LSARD. This specific place-of-use was not advertised but could be included in published "possible sites for recharge" which were in T 5S R 19E. (See the advertisement.)

According to available Lincoln County taxlot information, the BLM owns the place of use. In 1981, before this permit was approved, the BLM, Lincoln and Gooding County Commissions, and the mayors of Shoshone and Gooding signed a cooperative agreement which allowed the public's land to be used for flood control.

The flood control site is a natural basin which has been utilized to capture and hold the water for a short time until it enters the subsurface. I created the POU shape using elevations from the available ArcMap DRG layer. The site is a broad, flat, land surface bounded by the Dietrich Canal bank and low berms to create an infiltration basin.

IDWR knows very little about the soils or subsurface geology at the site. (See Neal Farmer's email.) However, the height of water delivered to site would be limited by the height of the canal bank, which would in turn limit the pressure head available to drive water into the subsurface. The volume of the infiltration basin likely exceeds the volume I recommend for this license.

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<sup>3</sup> Formally titled Water Distribution and Hydrometric Work, Districts Nos. 37 and 37M, Big and Little Wood Rivers, 1984.

**Status/combined use**

No other water rights overlap the POU.

Several water rights share the POD. Most of those rights are held by the Big Wood Canal Company and when totaled, they exceed what I understood to be the carrying capacity of the Dietrich Canal. (See the water use section above.) I confirmed with the watermaster that the following rights can be diverted into the Dietrich Canal from the Little Wood River: 37-13043, 37-13112 through 37-13114, and 37-21401 through 37-21405 (held by Big Wood Canal Company) and right 37-14264, (held by the BLM). The license will contain a combined limit on the rate.

The licensed right will be subordinated. The following subset of permit condition d will be maintained on the license. This water right shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

**Priority date**

When the permit was reinstated on December 1, 1993 the priority was advanced.

**Other Conditions**

The recharge site off the Dietrich Canal was developed before this permit was issued. Although IDWR has issued permits to existing facilities in the past, it's not clear that the Department was aware of the Dietrich Canal site. Permit 37-7842 is conditioned looking forward to new facilities rather than backward at a facility that already been developed.

The permit was issued with two conditions which will require additional discussion at the management level. Those conditions are the last two conditions listed under permit condition d. Other. They are:

Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.

Plans for recharge facilities and any conveyance works needed shall be submitted to the department for approval prior to construction.

It may be possible to acquire plans for the diversion and redirection structures and therefore satisfy the second of the two conditions above. My preliminary requests for that information have not been successful.

That leaves the first of these two conditions unmet. A plan and procedure for protecting the water quality of the recovered water indicates that IDWR expected that any new facility would be a managed recharge facility. It did not expect that an existing, unmanaged recharge facility would be found to have beneficially used water for recharge.

If the nature-of-use for the Dietrich site is to be changed from an unmanaged recharge site to a managed recharge site through a transfer, then these last two conditions should be reevaluated.

**Recommendations**

I recommend 250 cfs as the rate for this license. The recommendation is based on a rate derived from the watermaster records for April and May 1984. (See excel spreadsheet)

I recommend 13,900 AF as the volume for this license. This recommendation is again based April and May 1984 watermaster records which indicate that a flow rate exceeding the irrigation requirements was available 28 days of those months. ( $28 \text{ days} \times 250 \text{ cfs} \times 1.9835 = 13884.5 \text{ AF}$ . When rounded to three significant figures = 13,900 AF)

|                           |  |  |  |  |  |
|---------------------------|--|--|--|--|--|
| Water District # 37 & 37M |  |  |  |  |  |
|---------------------------|--|--|--|--|--|

**Daily Discharge in second feet of Dietrich Canal #11 for the year ending Sept 30, 1984**

| Day       | April    | May      | June     | July     | August   | September |
|-----------|----------|----------|----------|----------|----------|-----------|
| 1         | 14       | 291      | 238      | 230      | 213      | 197       |
| 2         | 16       | 309      | 235      | 228      | 214      | 198       |
| 3         | 16       | 321      | 228      | 233      | 202      | 200       |
| 4         | 25       | 321      | 227      | 233      | 196      | 200       |
| 5         | 27       | 319      | 233      | 216      | 197      | 197       |
| 6         | 27       | 309      | 238      | 217      | 198      | 193       |
| 7         | 28       | 306      | 226      | 219      | 198      | 193       |
| 8         | 28       | 300      | 226      | 220      | 196      | 196       |
| 9         | 29       | 251      | 226      | 223      | 196      | 196       |
| 10        | 30       | 183      | 227      | 228      | 196      | 196       |
| 11        | 30       | 184      | 227      | 224      | 196      | 194       |
| 12        | 30       | 204      | 216      | 223      | 197      | 201       |
| 13        | 30       | 213      | 213      | 223      | 206      | 185       |
| 14        | 30       | 219      | 213      | 224      | 214      | 179       |
| 15        | 30       | 294      | 209      | 230      | 201      | 180       |
| 16        | 30       | 390      | 206      | 231      | 203      | 179       |
| 17        | 30       | 396      | 206      | 231      | 204      | 177       |
| 18        | 30       | 387      | 204      | 230      | 204      | 181       |
| 19        | 325      | 390      | 207      | 223      | 206      | 168       |
| 20        | 302      | 387      | 213      | 226      | 206      | 186       |
| 21        | 259      | 375      | 214      | 237      | 207      | 192       |
| 22        | 259      | 247      | 213      | 235      | 206      | 196       |
| 23        | 259      | 209      | 209      | 240      | 207      | 198       |
| 24        | 259      | 210      | 207      | 240      | 206      | 198       |
| 25        | 261      | 207      | 204      | 240      | 210      | 188       |
| 26        | 261      | 207      | 207      | 228      | 213      | 183       |
| 27        | 259      | 206      | 221      | 217      | 213      | 168       |
| 28        | 258      | 219      | 228      | 214      | 210      | 159       |
| 29        | 256      | 226      | 230      | 209      | 213      | 135       |
| 30        | 256      | 227      | 228      | 213      | 214      | 155       |
| 31        |          | 221      |          | 213      | 217      |           |
| 24 HR CFS | 3694     | 8528     | 6579     | 6998     | 6359     | 5568      |
| Mean      | 123.1    | 275.1    | 219.3    | 225.7    | 205.1    | 185.6     |
| Acre Feet | 7327.049 | 16915.29 | 13049.45 | 13880.53 | 12613.08 | 11044.13  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| excel calculation |  |  |  |  |  |
|-------------------|--|--|--|--|--|

|             |                                             |
|-------------|---------------------------------------------|
| WR# 37-7842 | table of differences created by Michele Edl |
|-------------|---------------------------------------------|

|                                             |
|---------------------------------------------|
| table of differences created by Michele Edl |
|---------------------------------------------|

| Day | April | May  | June | July | August | September |
|-----|-------|------|------|------|--------|-----------|
| 1   |       | 141  | 88   | 80   | 63     | 47        |
| 2   |       | 159  | 85   | 78   | 64     | 48        |
| 3   |       | 171  | 78   | 83   | 52     | 50        |
| 4   |       | 171  | 77   | 83   | 46     | 50        |
| 5   |       | 169  | 83   | 66   | 47     | 47        |
| 6   |       | 159  | 88   | 67   | 48     | 43        |
| 7   |       | 156  | 76   | 69   | 48     | 43        |
| 8   |       | 150  | 76   | 70   | 46     | 46        |
| 9   |       | 101  | 76   | 73   | 46     | 46        |
| 10  |       | 33   | 77   | 78   | 46     | 46        |
| 11  |       | 34   | 77   | 74   | 46     | 44        |
| 12  |       | 54   | 66   | 73   | 47     | 51        |
| 13  |       | 63   | 63   | 73   | 56     | 35        |
| 14  |       | 69   | 63   | 74   | 64     | 29        |
| 15  |       | 144  | 59   | 80   | 51     | 30        |
| 16  |       | 240  | 56   | 81   | 53     | 29        |
| 17  |       | 246  | 56   | 81   | 54     | 27        |
| 18  |       | 237  | 54   | 80   | 54     | 31        |
| 19  | 175   | 240  | 57   | 73   | 56     | 18        |
| 20  | 152   | 237  | 63   | 76   | 56     | 36        |
| 21  | 109   | 225  | 64   | 87   | 57     | 42        |
| 22  | 109   | 97   | 63   | 85   | 56     | 46        |
| 23  | 109   | 59   | 59   | 90   | 57     | 48        |
| 24  | 109   | 60   | 57   | 90   | 56     | 48        |
| 25  | 111   | 57   | 54   | 90   | 60     | 38        |
| 26  | 111   | 57   | 57   | 78   | 63     | 33        |
| 27  | 109   | 56   | 71   | 67   | 63     | 18        |
| 28  | 108   | 69   | 78   | 64   | 60     | 9         |
| 29  | 106   | 76   | 80   | 59   | 63     | -15       |
| 30  | 106   | 77   | 78   | 63   | 64     | 5         |
| 31  |       | 71   |      | 63   | 67     |           |
| sum | 1414  | 2946 | 6429 | 6848 | 6209   | 5418      |

|               |  |  |  |  |
|---------------|--|--|--|--|
| excess of 150 |  |  |  |  |
|---------------|--|--|--|--|

|               |  |  |  |
|---------------|--|--|--|
| daycount = 28 |  |  |  |
|---------------|--|--|--|

|                                          |         |
|------------------------------------------|---------|
| volume = $28 \times 250 \times 1.9835 =$ | 13884.5 |
|------------------------------------------|---------|

WATER DISTRICT #37 & 37M  
DAILY DISCHARGE IN SECOND FEET OF DIETRICH CANAL #11 FOR THE YEAR ENDING SEPT. 30, 1984

| DAY                               | APRIL | MAY   | JUNE  | JULY             | AUGUST          | SEPTEMBER |
|-----------------------------------|-------|-------|-------|------------------|-----------------|-----------|
| 1                                 | 14    | 291   | 238   | 230              | 213             | 197       |
| 2                                 | 16    | 309   | 235   | 228              | 214             | 198       |
| 3                                 | 16    | 321   | 228   | 233              | 202             | 200       |
| 4                                 | 25    | 321   | 227   | 233              | 196             | 200       |
| 5                                 | 27    | 319   | 233   | 216              | 197             | 197       |
| 6                                 | 27    | 309   | 238   | 217              | 198             | 193       |
| 7                                 | 28    | 306   | 226   | 219              | 198             | 193       |
| 8                                 | 28    | 300   | 226   | 220              | 196             | 196       |
| 9                                 | 29    | 251   | 226   | 223              | 196             | 196       |
| 10                                | 30    | 183   | 227   | 228              | 196             | 196       |
| 11                                | 30    | 184   | 227   | 224              | 196             | 194       |
| 12                                | 30    | 204   | 216   | 223              | 197             | 201       |
| 13                                | 30    | 213   | 213   | 223              | 206             | 185       |
| 14                                | 30    | 219   | 213   | 224              | 214             | 179       |
| 15                                | 30    | 294   | 209   | 230              | 201             | 180       |
| 16                                | 30    | 390   | 206   | 231              | 203             | 179       |
| 17                                | 30    | 396   | 206   | 231              | 204             | 177       |
| 18                                | 30    | 387   | 204   | 230              | 204             | 181       |
| 19                                | 325   | 390   | 207   | 223              | 206             | 168       |
| 20                                | 302   | 387   | 213   | 226              | 206             | 186       |
| 21                                | 259   | 375   | 214   | 237              | 207             | 192       |
| 22                                | 259   | 247   | 213   | 235              | 206             | 196       |
| 23                                | 259   | 209   | 209   | 240              | 207             | 198       |
| 24                                | 259   | 210   | 207   | 240              | 206             | 198       |
| 25                                | 261   | 207   | 204   | 240              | 210             | 188       |
| 26                                | 261   | 207   | 207   | 228              | 213             | 183       |
| 27                                | 259   | 206   | 221   | 217              | 213             | 168       |
| 28                                | 258   | 219   | 228   | 214              | 210             | 159       |
| 29                                | 256   | 226   | 230   | 209              | 213             | 135       |
| 30                                | 256   | 227   | 228   | 213              | 214             | 155       |
| 31                                |       | 221   |       | 213              | 217             |           |
| 24 HR CFS                         | 3694  | 8528  | 6579  | 6998             | 6359            | 5568      |
| MEAN                              | 123   | 275   | 219.3 | 226              | 205             | 186       |
| ACRE FEET                         | 7388  | 17056 | 13158 | 13880            | 12613           | 11044     |
| TOTAL 24 Hr. C.F.S. <u>37,726</u> |       |       |       |                  |                 |           |
|                                   |       |       |       | YEARLY MEAN      | <u>206.</u>     |           |
|                                   |       |       |       | YEARLY ACRE FEET | <u>74,828.0</u> |           |

**Edl, Michele**

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**From:** Lynn Harmon [lynnharmon@cableone.net]  
**Sent:** Tuesday, August 19, 2014 3:14 PM  
**To:** Edl, Michele  
**Subject:** Floodway recharge at Dietrich canal WR#37-7842

Michele, I visited with Curley Sorensen and he stated that the Canal Company installed the structure and the plans were provided by the Corp of Engineers. He said that the plans got destroyed during construction. Perhaps the Corp might have a copy of the Dietrich Floodway plans in their archives. Thanks Lynn Harmon

## Edl, Michele

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**From:** Mary Davidson [mdavidson@lincolncountyid.us]  
**Sent:** Thursday, August 07, 2014 5:15 PM  
**To:** Edl, Michele  
**Subject:** RE: Information  
**Attachments:** 003.JPG; 008.JPG; 007.JPG WR# 37-7842

Here are a few more,  
I sure hope this helped, I will let you know if I get any additional information. Did you get a hold of Curly Sorenson?

Mary Davidson  
Planning and Zoning Administrator  
208-886-9808  
208-886-2798 Fax

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**From:** Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]  
**Sent:** Thursday, August 07, 2014 5:04 PM  
**To:** Mary Davidson  
**Subject:** RE: Information

Mary,  
It came through just fine. Sorry so long getting back to you. It's been a busy day.

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**From:** Mary Davidson [mailto:mdavidson@lincolncountyid.us]  
**Sent:** Thursday, August 07, 2014 1:09 PM  
**To:** Edl, Michele  
**Subject:** RE: Information

Let me know how this comes thru

Mary Davidson  
Planning and Zoning Administrator  
208-886-9808  
208-886-2798 Fax

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**From:** Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]  
**Sent:** Thursday, August 07, 2014 9:54 AM  
**To:** Mary Davidson  
**Subject:** RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.  
Idaho Department of Water Resources  
322 E Front St  
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.

Michele Edl  
208-287-4946

**Edl, Michele**

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**From:** Mary Davidson [mdavidson@lincolncountyid.us]  
**Sent:** Monday, August 18, 2014 5:01 PM  
**To:** Edl, Michele  
**Subject:** Pictures      WR# 37-7842

*Michele,  
These picture were taken on July 29<sup>th</sup> 2014.*

*Hope this helps!*

photo taken July 29, 2014

WR# 37-7842



photo taken July 29, 2014

WR# 37-7842



photo taken July 29, 2014

WR# 37-7842



**Edl, Michele**

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**From:** Mary Davidson [mdavidson@lincolncountyid.us]  
**Sent:** Thursday, August 07, 2014 1:09 PM  
**To:** Edl, Michele  
**Subject:** RE: Information  
**Attachments:** 010.JPG

Let me know how this comes thru

Mary Davidson  
Planning and Zoning Administrator  
208-886-9808  
208-886-2798 Fax

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**From:** Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]  
**Sent:** Thursday, August 07, 2014 9:54 AM  
**To:** Mary Davidson  
**Subject:** RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.  
Idaho Department of Water Resources  
322 E Front St  
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.

Michele Edl  
208-287-4946

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**From:** Mary Davidson [mailto:mdavidson@lincolncountyid.us]  
**Sent:** Thursday, August 07, 2014 9:41 AM  
**To:** Edl, Michele  
**Subject:** Information

*Michele,*

*I have been out of the office since Monday just returning. I have not be able to download the pictures off the camera as yet. I am waiting for the Clerk to come in today to see if she can download onto her machine and get over to me.*

*I will let you know if there is a problem and I have to have printed off.*

*Have a wonderful and productive day☺*

Mary Davidson  
Planning and Zoning Administrator

208-886-9808  
208-886-2798 Fax

photo taken July 29, 2014

WR# 37-7842



LOWER SNAKE AQUIFER RECHARGE DISTRICT  
GROUND WATER RECHARGE DEMONSTRATION PROPOSAL

for

High Plains States Groundwater Demonstration  
Program Act of 1983

submitted by

John LeMoyne, Chairman  
Route 1, Box 148  
Hagerman, Idaho 83332  
837-4887

July 7, 1986

springs show the changes in amount of water discharged.

|                    | 1902        | 1910   | 1914   | 1917          | 1918   | 1924   |
|--------------------|-------------|--------|--------|---------------|--------|--------|
| Blue Lakes Springs | 80(A)       | 118(A) | 199(A) | 215(O)        | 216(S) | 194(S) |
| Crystal Springs    | 304(A)      | -      | -      | 536(O)        | -      | 486(S) |
| Niagara Springs    | 107(A)      | -      | -      | 242(O)        | 322(S) | 215(S) |
| Briggs Springs     | 77(A)       | -      | -      | 128(S)        | 130(S) | 125(O) |
| (A) August         | (O) October |        |        | (S) September |        |        |

1] Geology and Ground Water, Snake River Plain, ID.

Geological Supply Paper #774. Washington 1938.

In addition to this long term effect, there is an annual one demonstrated by the springs from the irrigation season. Approximately 30 days after irrigation starts on the plain above the springs, their flows begin to increase reaching a peak in September and October shortly after the irrigation is turned off. The lowest flows are experienced during April and May which is about the time irrigation water is turned into the canal system. See attachment III - Box Canyon flows.

2] Artificial Recharge to the Snake Plain Aquifer in Idaho, R.F. Norvitch, C.A. Thomas, and R.J. Madison; Aug., 1969.

There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln

ATTACHMENT TO LICENSE REVIEW WR# 37-7842

and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 CFS of discharge up to a week and a continued flow of approximately 200 CFS. The other site was installed by the Recharge District at a cost of \$79,746.00. It is north of Shoshone on the Milner-Gooding Canal and at present can handle about 300 CFS. In 1985, there were 7,800 acre feet discharged at this site over a 16 day period. Monitoring at this site, attachment IV shows the water in the adjacent well increased during the recharge period and was highest just after the recharge period ceased.

#### E. Hydrologic Conditions

Attachment VA and VB indicate the direction of flow of the Snake River aquifer. It has been a concern among the water users of the aquifer, that the aquifer level has been continually decreasing. We have enclosed information on 8 different wells located on attachment IIC and measurements documented on attachment IIB. Attachment IIB shows that the lowest water level is always a later date than the highest water level. All the lowest levels are in the 1980's with one exception; Well no.4 in 1979. The only data available to us was up through 1982. If we had access to recent data, it would be interesting to see if depth had continued to decline. This drop in water table is also demonstrated from the spring flow as substantiated by attachments IIA and III. The following events have occurred over the past years which have led up to the reduced spring flows and a drop in the

ATTACHMENT TO LICENSE REVIEW WR# 37-7842

SWSE 7

35

SESE 8 04S19E

NWNE 2

2

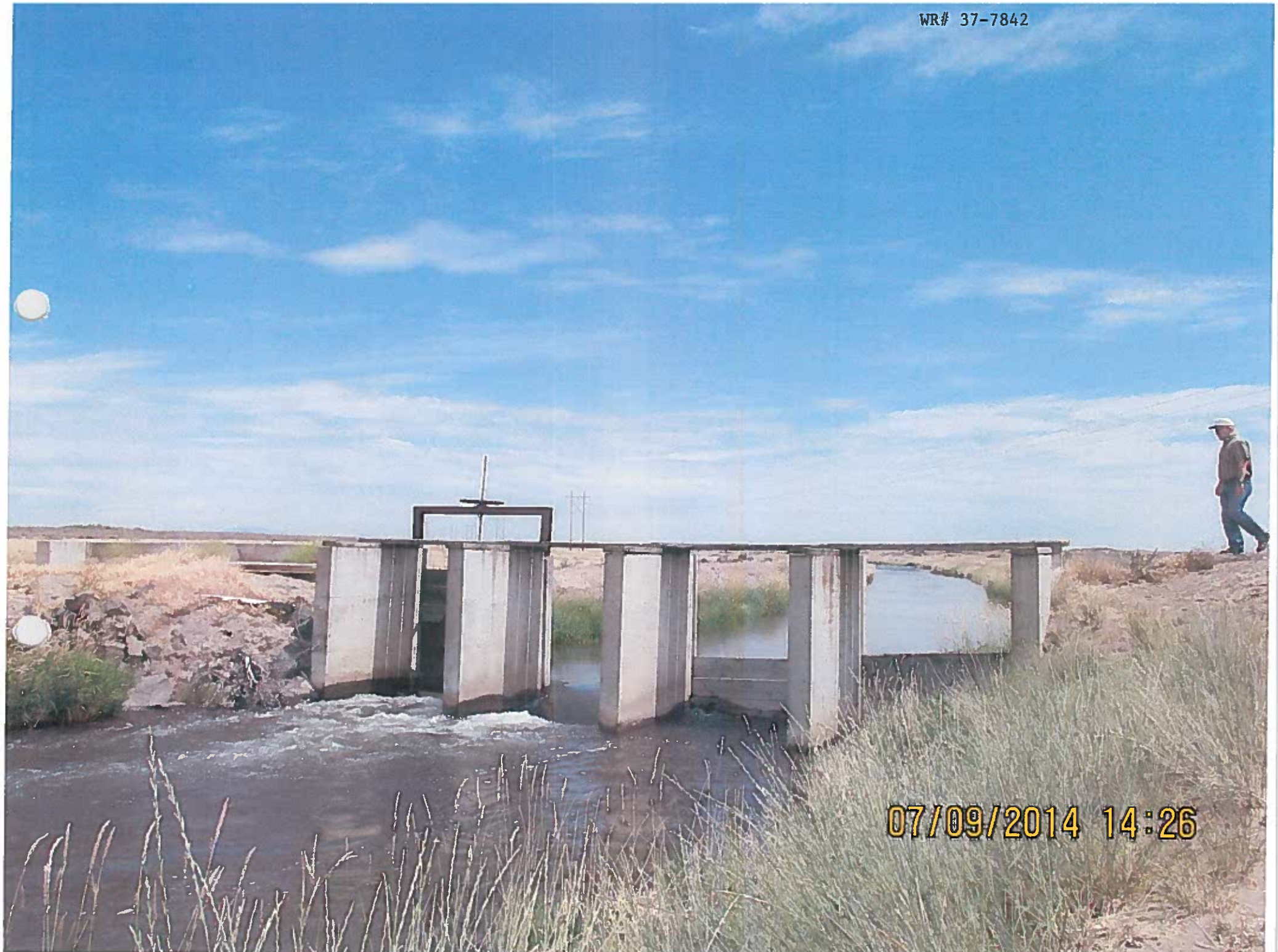
NENE 1 05S19E

1  
2  
3  
4  
5

7/9/14 photo locations WR# 37-7842

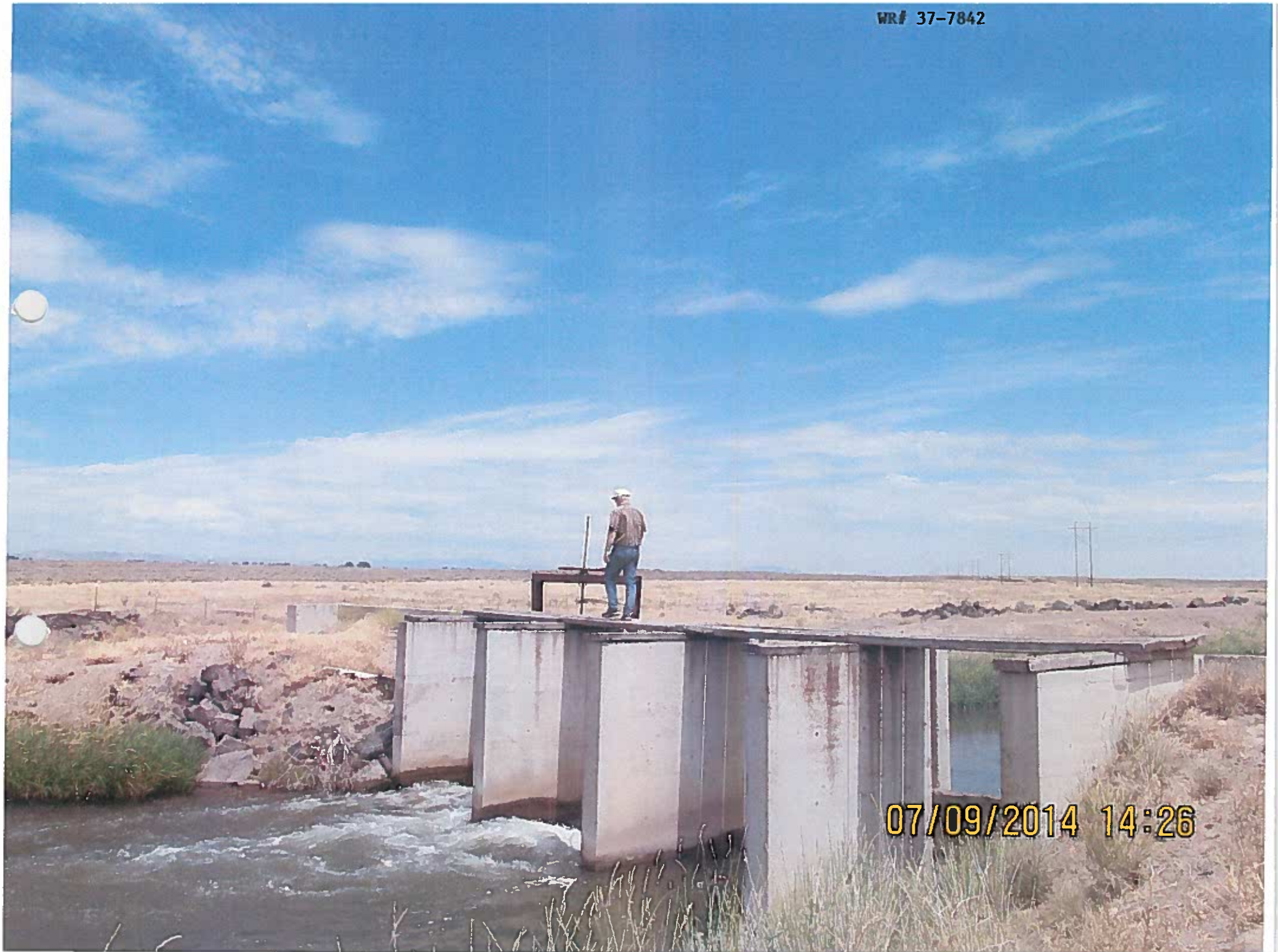


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WR# 37-7842



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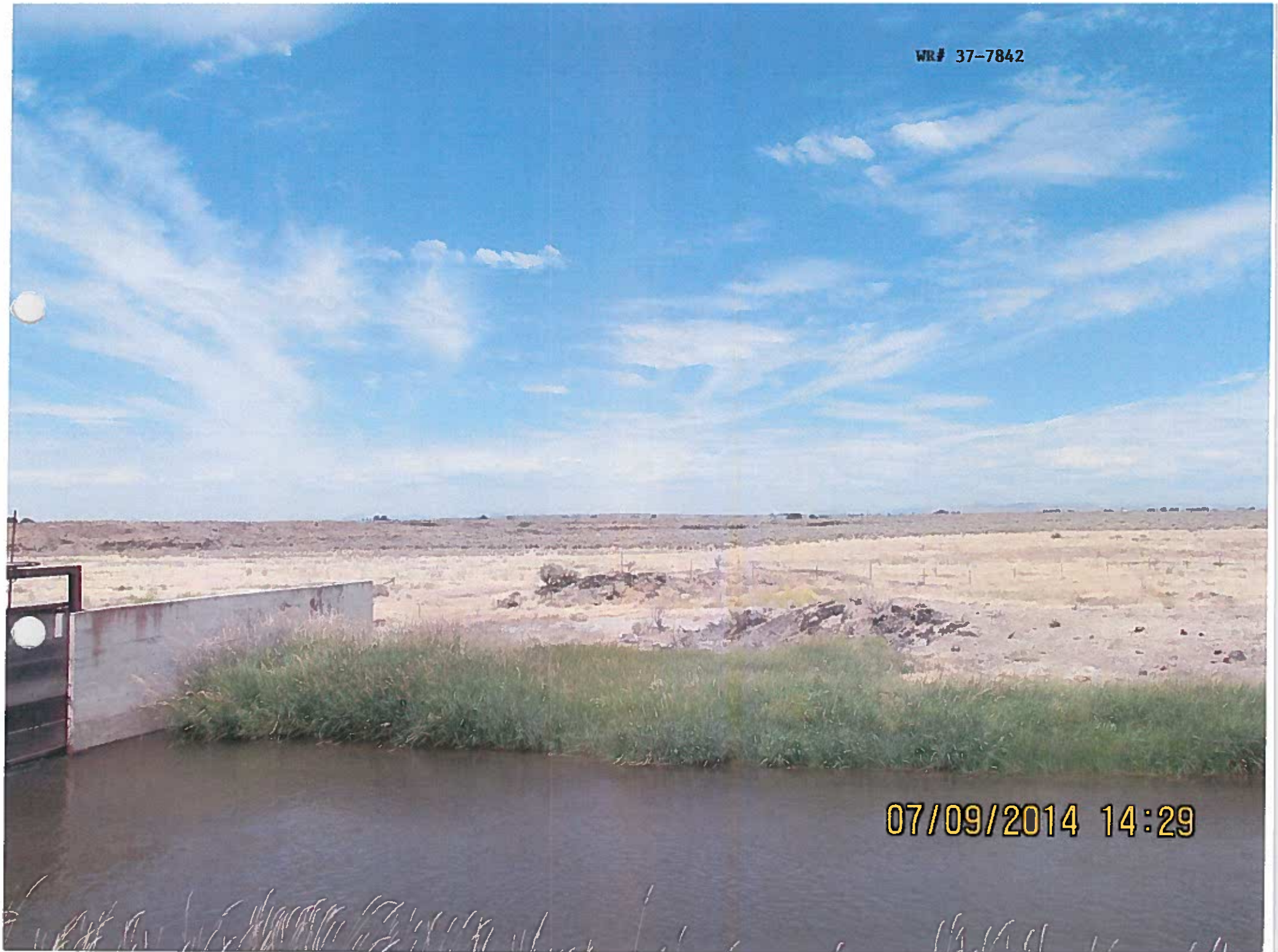
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WR# 37-7842

07/09/2014 14:29



WR# 37-7842



07/09/2014 14:27



**Edl, Michele**

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**From:** Farmer, Neal  
**Sent:** Friday, August 01, 2014 10:24 AM  
**To:** Edl, Michele; Keen, Shelley  
**Cc:** Patton, Brian; Lynn Harmon  
**Subject:** GPS coordinates for Dietrich canal floodway diversion gates

Michele,

Below is the information from a gps point I collected in year 2008 for the location of the diversion headgate structure on the Dietrich canal where water is spilled out into the BLM land.

Easting = 2487028.663

Northing = 1313654.903

Neal's coordinates are in the wrong units system  
*[Signature]*

HUBSMITH,  
RODNEY F

04S19E

34 BLM

35 BLM

Gate structure for s

BLM  
3

2  
BLM

10  
BLM

11 BLM

Identify

Identify from:

<Top-most layer>

W-canal&MilnerGood features

Point\_ge

Location:

2,487,029.685 1,313,653.049 Meters

| Field      | Value                       |
|------------|-----------------------------|
| FID        | 16                          |
| Shape      | Point ZM                    |
| Comment    | dietrich floodway diversion |
| Max_PDOP   | 3.8                         |
| Max_HDOP   | 1.9                         |
| Corr_Type  | Postprocessed Code          |
| Rcvr_Type  | GeoXT 2005                  |
| GPS_Date   | 12/3/2008                   |
| GPS_Time   | 11:26:21am                  |
| Update_Sta | New                         |
| Feat_Name  | Point_ge                    |
| Datafile   | R120315B_1.cor              |
| Unfit_Pos  | 9                           |
| Filt_Pos   | 9                           |
| Data_Dicti | Generic                     |
| GPS_Week   | 1508                        |
| GPS_Second | 339995                      |
| GPS_Height | 1288.136                    |
| Vert_Prec  | 1.3                         |
| Horz_Prec  | 0.8                         |
| Std_Dev    | 0.465761                    |
| Northing   | 1313654.903                 |
| Easting    | 2487028.663                 |
| Point_ID   | 36                          |

Identified 1 feature

**Edl, Michele**

---

**From:** Farmer, Neal  
**Sent:** Friday, August 01, 2014 8:03 AM  
**To:** Edl, Michele  
**Subject:** dietrich canal hydrogeology

Michele...not much info on the hydrogeology as there hasn't been many wells drilled ...given that it appears to be all basalt for several hundred feet and a depth to water table of about 200 feet....that's about all we know.

Neal

**Edl, Michele**

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**From:** Farmer, Neal **WR#** 37-7842  
**Sent:** Friday, July 11, 2014 9:44 AM  
**To:** Edl, Michele; Keen, Shelley  
**Subject:** BLM agreement for flood water release south of Richfield along Dietrich canal attached  
**Attachments:** BLM Cooperative Agreement I-05-63 (Richfield site).pdf

Just fyi...here is the agreement to release flood waters out of the Dietrich canal onto BLM land that we discussed yesterday...no mention of authorized use as a recharge site.

Neal



# United States Department of the Interior

IN REPLY REFER TO

2800

BUREAU OF LAND MANAGEMENT  
Shoshone District Office  
P.O. Box 2 B  
Shoshone, ID 83352

June 15, 1982

Lou Pence  
Soil Conservation Service  
Wood River Resources RC&D  
131 East Avenue E  
Gooding, ID 83330

Dear Lou:

Enclosed is a copy of the flood control cooperative agreement I-05-63 that you requested. It should have all the requirements that would be expected of the cooperators, if they should need to use the public lands for this purpose.

Also enclosed is Information Bulletin No. 2, which explains what is required for filing an application for a right-of-way on public lands. You will also find an application form that must be used when making an application. All rights-of-way filings are now sent to this office.

If I can be of further help, please let me know.

Sincerely,

*Ervin Cowley*  
Ervin Cowley  
Monument Area Manager

Enclosures

COOPERATIVE AGREEMENT  
I-05-63

BETWEEN

DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
SHOSHONE DISTRICT OFFICE  
P.O. BOX 2B  
SHOSHONE, ID 83352

AND

MUTUAL AGREEMENT OF:

GOODING COUNTY COMMISSIONERS  
GOODING, IDAHO 83330

LINCOLN COUNTY COMMISSIONERS  
SHOSHONE, IDAHO 83352

CITY OF GOODING  
GOODING, IDAHO 83330

CITY OF SHOSHONE  
SHOSHONE, IDAHO 83352

## TABLE OF CONTENTS

COVER PAGE

TABLE OF CONTENT

I. PURPOSE

II. AUTHORITY

A. Bureau of Land Management

B. Cooperator

III. AGREEMENT AREA

IV. DEFINITIONS

A. Bureau of Land Management

B. Cooperator

C. District Manager

D. Contractor

V. OPERATION AND RESPONSIBILITIES

A. Bureau of Land Management

B. Cooperator

C. Mutual Agreement

D. Effective Date

E. Degradation

IV. APPENDIX

A. Area Map

B. Site Map

## COOPERATIVE AGREEMENT

- I-05-63

### I. PURPOSE:

The purpose of this agreement is to establish mutual guidelines and provide procedures and authorization so the cooperators can enter public lands administered by the Bureau of Land Management (BLM) for flood control purposes. The public lands will only be used when there is an emergency to alleviate the dangers of flooding the communities of Shoshone and Gooding and when the natural drainage capacity of the Little Wood River and other canal laterals are insufficient to contain the water.

### II. AUTHORITY:

#### A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

#### B. Cooperators:

### III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 19 E., Boise Meridian, Lincoln County, Idaho

|                                |           |
|--------------------------------|-----------|
| Section 2: SW2NE4, SW4, NW4SE4 | 240 acres |
| Section 3: SE4                 | 160 acres |
| Section 8: SE4                 | 160 acres |
| Section 9: S2                  | 320 acres |
| Section 10: NE4, W2, W2SE4     | 560 acres |
| Section 11: NW4NW4             | 40 acres  |
| Section 15: NE4NW4, W2W2       | 200 acres |
| Section 17: ALL                | 640 acres |

There are 2,320 acres of public land in the agreement area which is considered a desert environment. The State of Idaho owns 640 acres contiguous on three sides to the agreement area and identified as Section 16, which is not part of this agreement.

The agreement area lies entirely within the Richfield Pasture of the Dietrich Butte Grazing Allotment. This allotment currently has 10 livestock operators who may use up to 5,419 active cattle AUMs each year. Also, there is fall sheep use on these lands by another livestock operator having grazing preference in the adjoining Wildhorse Allotment. Idaho Power Company has a 46 kv transmission line that traverses the tract with a 50 ft. right-of-way. The Dietrich Canal is also authorized by a right-of-way. This agreement is continuing the existing use of the lands for flood control purposes and is no way authorizing addition or new development to occur.

#### IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental bodies of Lincoln and Gooding Counties and the cities of Shoshone and Gooding that have jointly agreed to the provisions of this agreement for the common purpose and effort of controlling flood waters along the Little Wood River.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include federal and state agencies who are retained by the cooperators in their flood control program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperators use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to, the hydraulic action of flood waters or the disturbance by vehicles or heavy equipment.

#### V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperators, acting through the respective mayors and commission chairmen, agree as follows:

A. The Bureau of Land Management will:

1. Provide only the land used in the operation of this agreement.
2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, livestock grazing, wildlife habitat, and public access.

B. The Cooperators will:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperators for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperators or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees, from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965, as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsible for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperators and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed, beyond that which now exists, to prevent flood waters from overflowing the use area to external lands, provide the district manager with detailed plans for such development, 30 days in advance, for review and concurrence.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperators:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statutes 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperators. This will be accomplished by a 30-day written notice by either party on the other.

Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by all the cooperators and BLM.

4. This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing, of the district manager and the cooperators.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperators or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperators or contractor and will be removed by the cooperators or contractor within a reasonable time after completion of their work. If they are not removed as directed by the district manager, within a reasonable time, then trespass actions can be taken towards the cooperators or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands will be the responsibility of the cooperators or contractor use. If mineral materials such as gravel, fill dirt, etc., are needed for any phase of maintaining or rehabilitating the subject land, the cooperators will notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

FLOOD CONTROL COOPERATORS

LINCOLN COUNTY COMMISSIONERS

O. J. Harris  
O. J. HARRIS, CHAIRMAN  
SHOSHONE, IDAHO  
4-10-81  
DATE

GOODING COUNTY COMMISSIONERS

Rick Brailsford  
RICK BRAILSFORD, CHAIRMAN  
GOODING, IDAHO  
4-10-81  
DATE

CITY OF SHOSHONE

Elwood Werry  
ELWOOD WERRY, MAYOR  
SHOSHONE, IDAHO  
4-8-81  
DATE

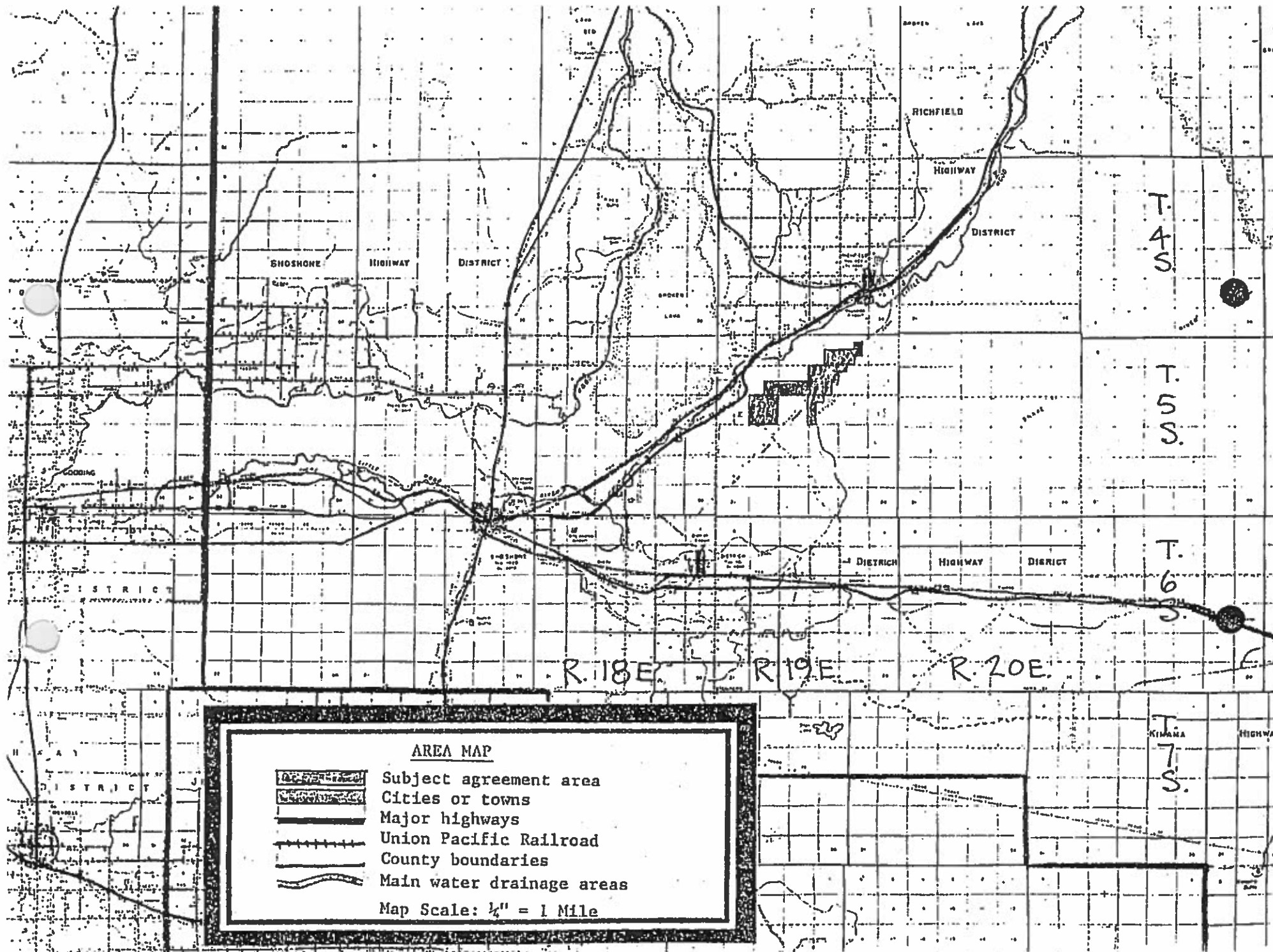
CITY OF GOODING

J. E. Heller  
J. E. HELLER, MAYOR  
GOODING, IDAHO  
4-17-81  
DATE

DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

Lawrence B. Gray  
for CHARLES J. HASZIER  
SHOSHONE DISTRICT MANAGER  
SHOSHONE, IDAHO

20 April 1981





bifurcation 7/9/2014 photo locations WR# 37-7842



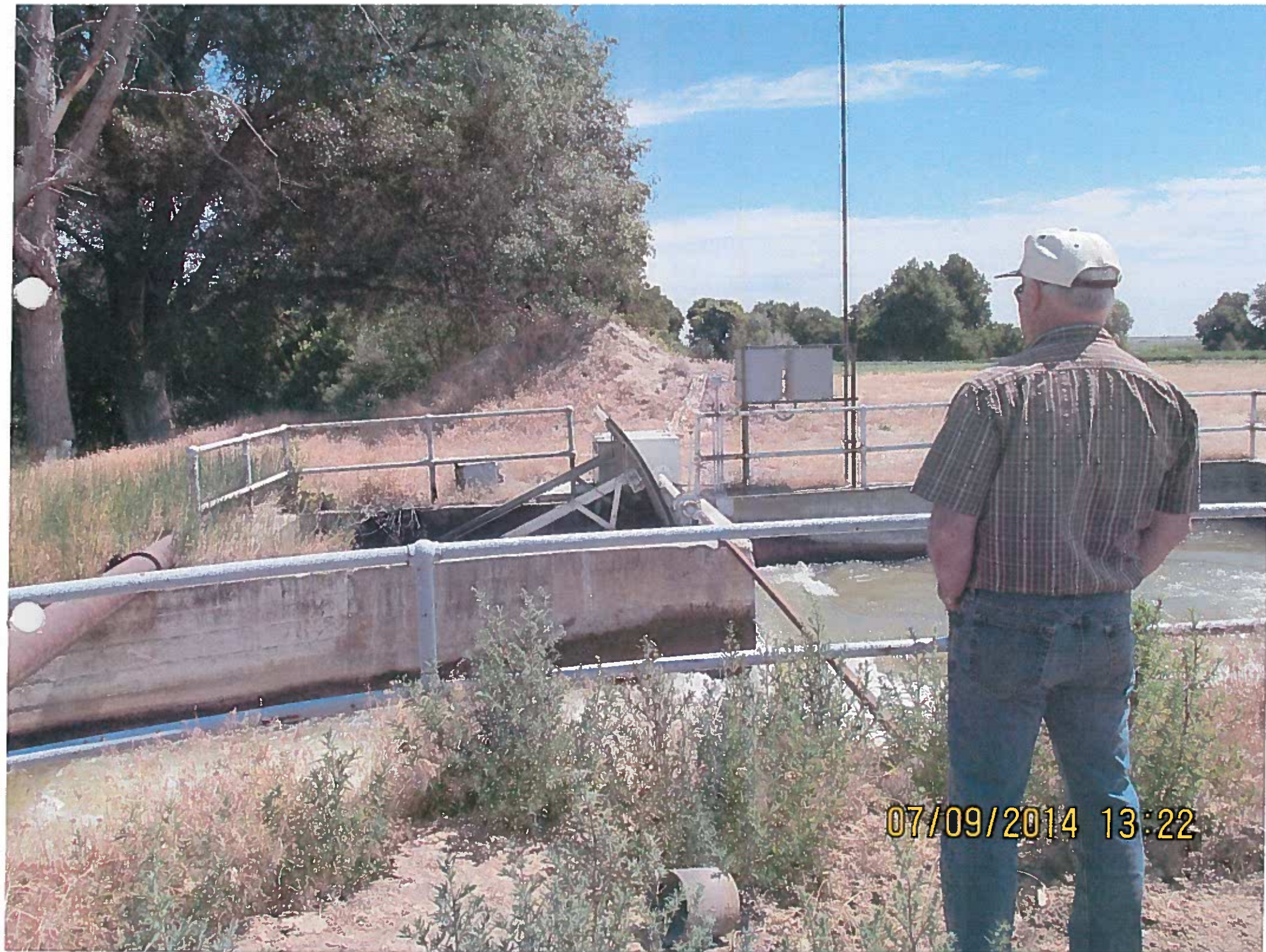
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W&P 31-7042



07/09/2014 13:22





07/09/2014 13:21

**GENERAL PLAN**

**SPILLWAY**

**SECTION A-A**

**SECTION B-B**

**SECTION C-C**

**SECTION D-D**

**SECTION E-E**

**SECTION F-F**

**SECTION G-G**

**SECTION H-H**

**SECTION J-J**

**SECTION K-K**

**SECTION OF SIPHON BOX**

**HYDRAULIC PROPERTIES**

| SECTION     | A      | V    | Q    | H    | F    | S      |
|-------------|--------|------|------|------|------|--------|
| Canal Above | 165.04 | 1.93 | 1000 | 2.13 | 4.77 | 0.0018 |
| Siphon      | 80.50  | 0.85 | 150  | 2.11 | 2.31 | 0.0018 |
| Canal Below | 154.16 | 2.85 | 154  | 1.02 | 4.03 | 0.0018 |

**ESTIMATED QUANTITIES**

Concrete 455 Cu.Yds.  
Reinforcement Steel 46,000 lbs.  
Gates and Hoists 10,000 lbs.

**NOTES**

Top Reinforcement Bars 40 Diameters of Splices Staggered Splices.  
All Reinforcement Bars to be 2" from Face of Concrete unless otherwise shown.  
Hoists with a Radius of 4 Bar Diameters to be provided where shown.  
Thickness of Concrete Slab to vary uniformly between dimensions shown.

DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
MINIDOKA PROJECT - IDAHO  
GOODING DIVISION

MILNER-WOODING CANAL- STA. 3+28-  
LITTLE GOOD RIVER CROSSING AND TIE

DATE SUBMITTED 5-1-68  
BY BAKER J. L. RECD 5-1-68  
CHECKED BY J. L. APPROVED J. L.  
DIVISION OFFICE 10, 1500 17



S. Keen's note RE: Permit 37-7847  
7/9/2014

(1)

Difference between 54 + 14 on the LWR could be attributable to losses during high flows. Unlikely that water came from ~~the~~ LWR into Milne Goring because flows were 400+ cfs in the canal.

at Shoshone  $\Rightarrow$  Lynn doesn't think getting LWR water into the canal with 400 cfs in the canal is possible.

No losses from 56 to 57.

Canal is flat from 53 to 56. Can make it look like a gaining reach by setting gates.

April 1984 228' to 258' in the District Main Canal flood runoff from LWR + BWR to the floodway.  
Huge area

May 30 still 220 cfs  $\nwarrow$

Would normally run 100 to 150 cfs for irrigation in late May. Would have to have deep water

Anything over 150 yds was probably being dumped. Dymn thinks this would be a conservative estimate. (From District road early in the irrigation season.