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August 30, 2007

Jeff Peppersack, Chief
Water Management Bureau
Idaho Department of Water Resources
322 East Front Street
Boise, Idaho 83720-0098

RECEIVED

SEP 04 2007

DEPT. OF WATER RESOURCES
SOUTHERN REGION

HAND CARRIED

Re: Filing Documents for FirstFruits Foundation and Livingwaters Ranch, Challis
Idaho

Dear Mr. Peppersack:

Please find enclosed the following documents request for filing on behalf of FirstFruits
Foundation and Livingwaters Ranch, Christopher James, Trustee:

1. Proof of Beneficial Use for Permit No. 72-16625 with a field examination
report. It is my understanding that a filing fee is not required when the field
examination report is submitted with the proof form.
2. Mitigation Plan for Permit No. 72-16625.
3. Application for Transfer involving Right No. 72-106C and other rights in the
name of FirstFruits Foundation. Check No. 5739 in the amount of \$290.00
is enclosed for the filing fee.
4. Application for Permit to appropriate water for aesthetic purposes to mitigate
losses associated with Permit No. 72-16625. Check No. 5740 in the amount
of \$100.00 is enclosed for the filing fee.

I will be happy to provide additional information if necessary for processing and
approval of the applications.

Sincerely,

Norman C. Young
Engineer, ERO Resources Corporation

RECEIVED

08-30-2007

DEPARTMENT OF
WATER RESOURCES

Encl. As noted in body of letter
c. with enclosures: Christopher James and Kent Foster

**A MITIGATION PLAN
FOR PERMIT NO. 72-16625
IN THE NAME OF FIRSTFRUITS FOUNDATION AND
CHRISTOPHER W. JAMES TRUST**

Permit No. 72-16625 authorizes diversion of 0.4 cfs from Garden Creek to a small pond from April 1 to October 31 for aesthetic purposes. The Idaho Department of Water Resources ("IDWR") approved the permit in an order entitled "*Amended Preliminary Order in the Matter of Application for Permit Nos. 72-16624 and 16625 in the Name of FirstFruits Foundation and Christopher W. James Trust*" dated September 3, 2004 (herein termed "the Order"). The Order includes several conditions describing the necessity to mitigate for diverting and using water in the pond.

- Condition No. 3 requires the permit holder to submit a plan to mitigate losses attributable to diversion and use of water for aesthetic uses.
- Condition No. 7 reserves jurisdiction for IDWR to require determination of actual losses in the system and to require additional mitigation for all system losses.
- Condition No 8. states that the permit is not a new appropriation of water from Garden Creek and only authorizes an additional use of water diverted under the right holder's existing water rights if evaporative losses from the pond are mitigated.
- Condition No. 9 indicates that diversion of water to the pond is not authorized when the right holder's existing rights are not being delivered unless the applicant mitigates for system losses.

These references to mitigation are understood to require that seasonal evaporative losses from the pond surface must be mitigated and that additional mitigation is required to compensate for depletion of the flow of Garden Creek when water is being diverted to the pond while the right holder's existing rights for irrigation purposes are not also being diverted through the pond. This plan has components to address both mitigation requirements.

Component No. 1. Mitigation of Evaporative Losses from the Pond

The purpose of this component of the mitigation plan is to prevent an increase in the overall seasonal consumptive use of water from the Garden Creek and Salmon River basins resulting from storage in the pond. The method for doing so is to retire consumptive use from an existing water right from Garden Creek to compensate for the additional consumptive use caused by evaporation from the pond.

In Finding of Fact No. 25 of the Order, the pond is described as:

The size of the pond is about 59' x 110' and averages about 5 feet deep. The pond has a surface area of 0.15 acre, holds about 0.7 AF and is located close to Garden Creek.

A field examination of the pond conducted on June 28, 2007 confirmed that this description accurately fits the pond that has been constructed under the permit. Attachment 1 is a GIS map confirming the size and location of the pond constructed in accordance with the permit.

Attachment No. 2 is a copy of a part of Map No. 2 appended to NOAA Technical Report NWS 33 entitled "Evaporation Atlas for the Contiguous 48 United States," Washington D.C. June 1982. This attachment depicts for Idaho and surrounding states the estimated average evaporation rate from shallow lakes for the period May through October. Attachment No. 3 is a copy of the Idaho part of Map No. 3 appended to the same NOAA report depicting the estimated average annual evaporation from shallow lakes. Based upon these maps the May through October evaporation is estimated to be 25 inches and the annual evaporation is estimated to be 30 inches in the vicinity of Challis, Idaho. For comparison, Finding of Fact No. 12 of the Order uses an annual evaporative depletion rate of 30 inches.

Using these data, the annual volume evaporated from the pond surface can be estimated as $(0.15 \text{ acres})(2.5 \text{ acre-feet/acre}) = 0.38 \text{ acre-ft per year}$. This estimate is conservatively large because it assumes year-round evaporation from the pond although the season of use for diverting water to the pond is limited to April 1 to October 31.

The rate of evaporation from the pond is increased when the aeration fountain installed in the pond is in use. A rule-of-thumb design parameter is that evaporation is increased by 1.2 percent for each 10° Fahrenheit of cooling of the water flowing from a cooling tower/fountain (Ref. www.sustainablenc.org/thewayto/water/chap_4.htm page 9, accessed July 17, 2007). Operation of an aeration fountain such as that used in the pond lowers the temperature of the sprayed water about 7° Fahrenheit. The rate of discharge from the fountain has been estimated to be about 0.2 cfs (Ref. Attachment No. 4, an estimate prepared by Jack Hammond, P.E. dated June 9, 2004). Using these data, the additional evaporation caused by operation of the fountain can be estimated to average about $(0.7)(0.012)(0.2 \text{ cfs}) = 0.0017 \text{ cfs}$ or about 0.75 gpm. The fountain operates about 1/3 of the season when temperatures are higher and flow through the pond is limited. The seasonal volume of evaporation associated with the fountain is estimated to be $(0.0017 \text{ cfs})(1.9835 \text{ acre-feet/day/cfs})(214 \text{ days})/3 = 0.24 \text{ acre-feet per year}$.

The combined evaporation associated with the pond is 0.38 acre-feet per year from the pond surface plus 0.24 acre-feet per year from the fountain for a total of 0.62 acre-feet per year.

Historically, the site of the enlarged pond has been used as irrigated grass pasture and the surrounding area is now planted to lawn grass. The average annual consumptive use from an acre of irrigated pasture in the Challis area is estimated to be 35.2 inches and the

average annual consumptive irrigation requirement is estimated to be 31.3 inches (Ref. Allen and Brockway, 1983, Attachment No. 5).

The area of pasture that needs to be dried up to mitigate for total evaporative losses associated with operating the pond and fountain is about 0.24 acres (i.e.; (0.62 acre-feet per year)/(31.3 inches per year/12 inches per foot)).

Accordingly, the permit holder agrees to reduce the acreage under all of the rights for irrigation having the pond within the recorded place of use by 0.24 acres (rounded to 0.2 acres in accordance with IDWR recording standards). The following table lists the four water rights that have the pond within their recorded places of use, the duty of water for irrigation under each of the rights, the number of acres of each right now committed to mitigation for Permit No. 72-16624 (Reference: Condition No. 3 on page 11 of the Order), the flow rate now used for such mitigation, the additional area of irrigation and the proportionate flow rate proposed to be committed to mitigation for the pond constructed under Permit No. 72-16625 and the total acres and combined flow rate from these rights to be used for the existing and proposed mitigation for both of the permits.

Right No.	Diversion rate/acre CFS/ ACRE	Existing Mitigation rate CFS	Existing Mitigation Acres	Proposed Mitigation Acres	Proposed Mitigation Rate CFS	Total Existing and Proposed Mitigation Acres	Total Existing and Proposed Mitigation Rate CFS
72-106J	0.03939	0.06	1.5	0.2 ¹	0.01 ¹	1.7	0.07
72-109J	0.03939	0.06	1.5	0.2	0.01	1.7	0.07
72-4174C	0.04022	0.03	1.5	0.2	0.01	1.7	0.04
72-10486C	0.03939	0.06	1.5	0.2	0.01	1.7	0.07
Totals	-----	0.21	1.5	0.2	0.04	1.7	0.25

1. The area of mitigation is herein rounded to the nearest one-tenth acre and the flow rates are rounded to the nearest one-hundredth CFS in accordance with IDWR instruction (Ref. page 3 of a letter dated May 12, 2006 from Corey Skinner to Kent Foster).

The proposed mitigation of 0.2 acres and 0.04 cfs is adequate to prevent an increased consumptive use of the water supplies in the area because a smaller pond used for stock watering purposes existed at this same location for many decades. That pond was deepened and enlarged to create the present pond. The mitigation amounts herein offered are conservatively large because evaporation from the entire surface of the pond is included.

This component of the proposed mitigation plan is included in an application for transfer involving use of these four water rights (Copy without attachments is included as Attachment No. 6). IDWR policy allows approval of applications seeking to change the use of water rights associated with less than 1 acre if the new use is within the presently recorded place of use or a verification procedure is available (Ref: Page 2, "Transfer Processing Procedure," IDWR Transfer Processing No. 24, October 30, 2002). Because the pond has a fixed, verifiable area and is located within the existing place of the water rights, inclusion of the mitigation proposal in the transfer application satisfies both of these policy considerations. Approval of the application for transfer will put the mitigation plan into IDWR's records for these rights.

Component No. 2. Mitigation of System Losses When Irrigation Rights are not being Diverted

The purpose of this component of the mitigation plan is to assure that the flow rate of Garden Creek is not diminished by losses in the delivery system to, through, and from the pond. The component is applicable only to those times that the existing rights for irrigation held by the permit holder are not being diverted through the pond. When the permit holder's irrigation rights are being delivered through the ponds, the delivery system losses are no different than they were before the pond was enlarged and the evaporative losses from the pond itself are compensated for by reducing the diversion rate as described in the first component of the plan. The additional mitigation set forth in this component is required when water is being diverted out-of-priority under this permit for aesthetic purposes in the pond as needed to compensate for depletion in supply to senior priority rights calling for water from Garden Creek. The depletion in supply requiring mitigation results from evaporative and seepage losses occurring in the pond and from the ditches leading to and from the pond.

Evaporation Rate from the Pond Surface: Based upon an average pan evaporation rate for the month of July of 10.65 inches as measured at Mackay, Idaho (or an average daily rate during July of 0.34 inches) and an adjustment factor of 75 percent to convert pan evaporation data to evaporation from shallow lakes (Ref. "Evaporation Atlas for the Contiguous 48 United States", NOAA Technical Report NWS 33 and "Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States," NOAA Technical Report NWS 34). The evaporation rate from the pond surface is: $(0.15 \text{ acre})(0.34 \text{ in/day}/12\text{in/ft}) = 0.00425 \text{ acre-ft/day}$. This is equivalent to a continuous flow rate of 0.00215 cfs or 0.96 gpm.

Evaporation Rate from the Aeration Fountain: This rate was estimated in a previous section of this plan as about $(0.7)(0.012)(0.2 \text{ cfs}) = 0.0017 \text{ cfs}$ or about 0.75 gpm.

The combined rate of evaporation from the pond surface and the aeration fountain is $0.00215 \text{ cfs} + 0.0017 \text{ cfs} = 0.00385 \text{ cfs}$ or about 1.7 gpm. An estimate for seepage loss is not available, but can be considered negligible because the pond is constructed to limit seepage and the close proximity of the pond to the creek insures timely return of seepage water to the creek.

This component of the mitigation plan includes the following provisions:

1. The diversion rate to the pond will be limited to 0.2 cfs when diversions are being made only under the right established under Permit No. 72-16625.
2. Measuring devices will be installed and maintained at the point of diversion and at the point of return to Garden Creek capable of measuring the authorized rate of flow of 0.2 cfs to an accuracy of plus or minus 5 percent. Authorized representatives of IDWR and the water master of Water District 72-B will be allowed access to monitor the diversions and measuring devices at all times.
3. The diversions from Garden Creek and the releases from the pond will be managed to assure that the diversion from Garden Creek does not exceed the rate of flow returning to the Creek.
4. Storage in the pond will be drafted as necessary to maintain a rate of return flow to Garden Creek equal to that being diverted from the Creek. When the storage is depleted or the permit holder determines that the pond should not be drafted, diversions from Garden Creek will be terminated until the right established under Permit No. 72-16625 is in priority or the irrigation rights of the permit holder are again routed through the pond.
5. As an alternative to drafting pond storage, upon approval of an application for permit to divert and use 0.01 cfs of water from a spring located south of Garden Creek (Attachment No.7), losses from the pond will be replaced as they occur. The flow of this spring does not reach Garden Creek from mid-summer into late fall during most years. During such periods, when the permit holder's irrigation rights are not in priority, the flow of the spring will be conveyed by pipeline to the pond to provide an independent source of water to mitigate depletions to the flow of Garden Creek resulting from diversion and use of water in the pond.

The provisions of the plan may be recorded by incorporation of the plan as a condition in the license issued for Permit No. 72-16625.

List of Attachments:

1. GIS map confirming area and location of pond
2. Map of Free Water Surface Evaporation (May – October)
3. Map of Free Water Surface Evaporation (January –December)
4. Estimate of flow through fountain into pond
5. CU and CIR for Crops in the Challis Area
6. Application for transfer incorporating mitigation plan element
7. Application for permit incorporating mitigation plan element