Rocky Mountain ENVIRONMENTAL ASSOCIATES, INC.

MEMORANDUM

To: Permit Application File 22-13888
Fr: B. Contor
Date: 25 November, 2013

Re: Unifying Narrative

Background

On November 21, 2013, the City of Rexburg (City) met with Idaho Department of Water Resources (IDWR) regarding permit application 22-13888. Rocky Mountain Environmental Associates, Inc. (RMEA) agreed to provide a unifying narrative describing the application and mitigation plan, the materials submitted to date, their relationship to each other, and their implications for evaluation of the application and mitigation plan.

Matt Weaver of IDWR identified key deficiencies that he has observed in mitigation plans in general, and requested that these be addressed in the unifying narrative:

- Watermaster comments
- Diversion schedule
- Delivery schedule for mitigation water
- Measurement plan
- Injury analysis

Sean Vincent of IDWR requested a map showing the relative locations of the key physical features addressed in the permit application and measurement plan.

Jeff Peppersack of IDWR agreed to provide a listing of the required elements for a mitigation plan.

The organization of the memo is as follows:

- List and brief description of materials provided with the memo.
- Unified list of concerns and requirements. This will incorporate the comments of Weaver and Vincent into mitigation plan requirements extracted from the memoranda provided by Peppersack, along with the concerns expressed in a September 30, 2013 memorandum from IDWR and discussed on October 16, 2013 and November 21, 2013.
- Narrative description:
    - Background information

- Description of proposed uses
- Description of the hydrologic effects of pumping
- Description of mitigation plan
- Choosing the recharge site
- Description of the hydrologic effects of mitigation
- Proposed enhancement to the mitigation plan
- Additional proposed condition

- Point-by-point response to the unified list of requirements and concerns. Each concern will be briefly discussed, with one of three general types of response:
  - Description of where the concern or requirement is addressed in materials already submitted.
  - Expanded description of how the requirement will be met or the concern addressed.
  - A proposal for a date by which the requirement will be met or the concern addressed.
- Request for Action by IDWR

Materials Provided With This Memo

The materials provided with this memo are contained in electronic data files which are made available to IDWR at https://copy.com/Oy3GKew2Cua4 until December 9, 2013. Table 1 provides a brief description of the materials provided and the sources utilized. These are presented in alphabetical order.

Table 1
Electronic Data Folders and Files Provided

File	Source	Comment
Folder "Admin_Memoranda"		
App Process 72.pdf	IDWR	Administrative Processing Memo No. 72, May 3, 2010.
App%20process%2017.pdf	IDWR	Administrative Processing Memo No. 71, May 3, 2010.
Gmail – Mitigation Memos.pdf	IDWR	November 21, 2013. This e-mail transmits the two processing memoranda.
Folder "Contor_Hard_Drive"		
Carriage_Memo_20131105.pdf	RMEA	Provided to IDWR prior to November 21, 2013 meeting.
Jenkins_Memo_20131104.pdf	RMEA	Provided to IDWR prior to November 21, 2013 meeting.
Jenkins_Rexburg_Wells.xls	RMEA	Provided to IDWR prior to

File	Source	Comment
		November 21, 2013 meeting. This accompanies the Jenkins memo.
Priority_Analysis_20131021.zip	RMEA	Analysis of priority date interaction with intervening points of diversion. Provided to IDWR prior to November 21, 2013 meeting. Accompanies Carriage memo.
Folder "E-mail_Record"		
Gmail – Response to IDWR Memorandum on City of Rexburg application 22-13888.pdf	RMEA	Provided to IDWR prior to October 16, 2013 phone conference. This e-mail transmits the October 11, 2013 memorandum.
Memorandum_10 11 2013.pdf	RMEA	Provided to IDWR on October 11, 2013, in preparation for the October 16, 2013 phone conference. This is a preliminary response to the September 30, 2013 memo from IDWR.
Memorandum_IDWR_ Sept_2013.pdf	IDWR	Provided to RMEA on September 30, 2013.
Folder "From_IDWR"		Downloaded from the IDWR water-rights search website November 23, 2013.
Affidavit_Pub_A.pdf	The Post Register	Affidavit of Publication
Affidavit_Pub_B.pdf	Standard Journal	Affidavit of Publication
Affidavit_Pub_C.pdf	Idaho Statesman	Affidavit of Publication
Affidavit_Pub_D.pdf	The Lewiston Tribune	Affidavit of Publication
Affidavit_Pub_E.pdf	Times-News	Affidavit of Publication
Amended_Mitigation_Plan.pdf	RMEA	Received by IDWR July 22, 2013. Includes maps, pumping schedule, recharge schedule, ESPAM1.1 modeling output, and agreements with Fremont Madison Irrigation District and New Sweden Irrigation District
Application_Amended.pdf	City of Rexburg	Received by IDWR June 8, 2011. Documentation includes a map

File	Source	Comment
		and a geology report.
Application_Through_ Legal_Notice.pdf	City of Rexburg	This appears to be the original application with associated correspondence. It does not bear an IDWR date stamp. A handwritten date of 8/6/08 is noted in the "For Department Use" section of page two. An acknowledgment letter from IDWR is dated February 12, 2009.
Future_Water_Supplies.pdf	IDWR	Letter outlining options for the City
Letter_Acknowledge_ Protest.pdf	IDWR	This letter notifies the City of a protest received.
Letter_Acknowledge_ Protest_II.pdf	IDWR	This letter notifies the Protestant that the protest was received by IDWR.
Map_Generated_IDWR_ Website.pdf	IDWR	This was generated using the IDWR online tool, November 23, 2013. The file will not open on some computers.
Notice_of_Protest.pdf	Barker, Roshalt and Simpson	Notice of protest.
Protest_Withdrawal_ Acknowledgment.pdf	IDWR	The file contains letters to the Protestant and applicant.
Recommendation_ Watermaster.pdf	WD100	No opposition if conditioned.
Screenshot_Docs_ 20131123.pdf	IDWR	Screenshot of water-right documents available on IDWR website for 22-13888, as of November 23, 2013
Security_Interest_ Unprocessed.pdf	Racine Olson Nye Budge and Bailey	This document appears to be unrelated to the mitigation plan.
Withdrawal_of_Protest.pdf	Barker, Roshalt & Simpson	Withdrawal of protest.
WR_Report_22-11388_ 20131123.pdf	IDWR	Printout from IDWR website November 23, 2013
Folder "New_Materials"		This folder contains documents not previously submitted that respond to the requests made on November 21, 2013,.

File	Source	Comment
Overview_Map.pdf	RMEA	An overview map showing the geographic relationships and distances between local features of interest.
RechargeSiteAgreement2.pdf	RMEA	Agreement to recharge in Walters Pit. Not included in Amended_Mitigation_Plan.pdf
Unifying_Narrative_22-13888 _20131125.pdf	RMEA	This document

Unified List of Concerns and Requirements

Table 2 lists the concerns and requirements that are addressed in this unifying memorandum. An effort has been made to combine redundant items as single line entries. These are generally presented in order of appearance in the memoranda.

Table 2
Unified List of Concerns and Requirements

Concern/Requirement	Source
Maps	Vincent, November 21, 2013
Recharge is... an additional beneficial use	Memo 71 p 1
Source of mitigation water including water rights	Memo 71 p 2; Memo 72 p 3, p 5
Legal notice must describe the mitigation plan	Memo 71 p 2
Department record will be modified to show mitigation non-use	Memo 71 p 2
Identification of the source of water being depleted and the special administration area	Memo 72 p 5
Analysis estimating quantity, timing and location of depletion	Memo 72 p 2, p 5; Weaver November 21, 2013
Description of plan demonstrating how water is delivered, the delivery verified and the mitigation accomplished	Memo 72 p 5; Weaver November 21, 2013
Ownership or authority to use the mitigation source including agreements as necessary	Memo 71 p 2, Memo 72 p 5; Weaver November 21, 2013
Adequacy of mitigation to address delayed impacts	Memo 72 p 5
Suitability of the quality of water used to	Memo 72 p 6

Concern/Requirement	Source
compensate other water users	
Plan outlining reasonable method for measurement of water and verification of mitigation.	Memo 72 p 6
Consultation with Watermaster	Memo 72 p 6; Weaver November 21, 2013
Will water delivered into Walters Pond seep into the Teton River	IDWR memo September 30, 2013; McVay October 16, 2013; McVay and Weaver November 21, 2013
Will water delivered into the New Sweden Irrigation District pond seep into the Snake River	IDWR memo September 30, 2013
Is the ESPA transfer tool applied correctly [with respect to de minimus guidelines]	IDWR memo September 30, 2013
Are there times when Henrys Fork priorities differ from other reaches [in a manner that negatively impacts other water users]	IDWR memo September 30, 2013
Is the analysis accurate [with regard to the anticipated rate of development and water requirements]	IDWR memo September 30, 2013

Narrative

Background

The application at hand was submitted in August of 2008. This was prior to the generation of the current versions of memoranda 71 and 72, prior to the current treatment of de minimus modeling effects, and prior to the current thinking on Reasonably Anticipated Future Needs (RAFN). The application was protested and the applicant embarked on a successful but costly and time-consuming effort to address the concerns of the Protestant. During protest resolution, the application and mitigation plan were amended. Modeling with ESPAM1.1 indicated that the proposed mitigation plan kept all model reaches whole within the de minimus limits that were in place at the time of application and initial analysis, with one caveat. This was that a "carriage water" concept described below was utilized to show that all other users were kept whole as long as the sum of net accretions to the Henrys Fork and the South Fork, calculated at the confluence near Menan, was positive.

The protest was withdrawn "on condition that the mitigation plan is approved... and the conditions are placed on water right 22-13888."[1] The applicant chose the path of

[1] Withdrawal_of_Protest.pdf

negotiation in a good faith expectation that IDWR preferred settlement over proceeding to a water-right hearing. Upon withdrawal of the protest, IDWR reviewed the amended materials and communicated additional concerns. In response to these concerns RMEA has performed additional analyses[2] and proposed an enhancement to the mitigation plan.[3] The enhancement is simply an increase in the proposed volume of mitigation to be performed in each trimester. Protestants will be contacted regarding this enhancement, pending input from IDWR on its tentative acceptability. RMEA also proposed an additional condition which would not be part of the mitigation plan, but would prevent injury.

Description of Proposed Uses

The uses described in the permit application were based on projected needs for a planning horizon within the range of permit application and extension that existed at the time of application. This approach was taken following consultation with IDWR. The timing of anticipated growth was of necessity an estimate and is subject to uncertainty.

The nature of the proposed use is groundwater pumping for municipal purposes, explicitly including "irrigation of lawn, garden and landscaping."[4] Water will be pumped from existing and proposed wells. Groundwater is sought because capital costs and ongoing operating costs are lower than for treatment of surface water. Pumping rates and volumes will continue to be monitored by Water District 100.

The anticipated annual pumping schedule and the anticipated growth in annual volume over time are described fully in the amended application. It is the intent of the City to develop this right commensurate with actual growth. The rate of anticipated growth is provided for planning and informational purposes but is subject to uncertainty. The expectation of the City is that upon completion of the development period, including appropriate extensions that may be granted, a licensing exam will be performed and a license issued. The expectation is that the license will be issued for the beneficial use that has been developed at the time of the licensing exam.

Description of Hydrologic Effects of Pumping

Basic Expectations. The proposed wells are located in an alluvial aquifer effectively bounded on the northeast by rhyolite and massive basalt deposits of the Rexburg Bench,[5] on the south by the South Fork of the Snake River, and on the west by the Henrys Fork. The Teton River traverses the aquifer a short distance north of the

[2] Jenkins_Memo_20131104.pdf; Carriage_Memo_20131105.pdf
[3] Carriage_Memo_20131105.pdf
[4] Application_Amended.pdf
[5] Application_Amended.pdf, Appendix D

proposed points of diversion.[6] There is ambiguity regarding the connectedness of the Teton River to the aquifer in this location.[7] If it is connected, it would be expected that it effectively provides a northern boundary to the aquifer the wells are located within. Propagation of pumping effects would be expected to be delayed by aquifer storage and by transmission of effects through the aquifer.

The basic hydrologic expectation of this landscape is that virtually all effects of pumping will be captured by the bounding streams, in inverse proportion to the distance of the centroid of pumping from each of the streams. If the Teton River is hydraulically connected to the aquifer it is expected that the bulk of pumping effects will propagate to the Teton. If not, the expectation is that the bulk of effects will propagate to the Henrys Fork. In either case, the expectation is that the balance of effects will propagate to the South Fork of the Snake River.

The calibrated ESPAM1.1 aquifer model assumes that the Teton River is disconnected from the aquifer and therefore propagates most effects to the Henrys Fork, lesser effects to the South Fork, and some effects to other model reaches.

ESPAM1.1 Modeling. ESPAM1.1 evaluations are included in the amended mitigation plan,[8] where tables provide the modeled row and column of pumping, the modeled pumping schedule, and modeled effects. These data allow independent verification of model results. ESPAM1.1 evaluations are technically preferred if the Teton River is not hydraulically connected to the aquifer in the vicinity of Rexburg.

Jenkins Analysis. Alternative analysis was performed using the Jenkins methodology.[9] If the Teton River is connected to the aquifer, this methodology is arguably superior to ESPAM1.1 for this particular question. However, Jenkins indicates a different mitigation plan than already accepted by the Protestant. Jenkins is a peer-reviewed methodology that has long-standing and broad acceptance, but it has not received the endorsement of the Eastern Snake Hydrologic Modeling Committee nor the Idaho judicial system. The ESPAM1.1 methodology enjoys both. The Jenkins analysis materials are presented here for completeness but we do not propose that they be relied upon.

Description of Mitigation Plan

The mitigation plan has two components. The first is to recharge natural flow municipal rights from the Teton River, owned by the City, into a gravel pit on the north side of the City. Water would be pumped directly from the Teton River using a constant-speed vertical turbine pump powered by electricity. This configuration allows accurate determination of pumped volume using the Power Consumption Coefficient

[6] Overview_Map.pdf; see also Map_Generated_IDWR_Website.pdf
[7] Memorandum_IDWR_Sept_2013.pdf; Memorandum_10 11 2013.pdf; Jenkins_Memo_20131104.pdf
[8] Amended_Application_Plan.pdf
[9] Jenkins_Memo_20131104.pdf; Jenkins_Rexburg_Wells.xls

methodology. Recharge at the pit would commence with the operation of the mitigation plan.

The second component of the mitigation plan is to recharge storage water held by the City within Fremont Madison Irrigation District. Recharge will occur at a dedicated recharge site already in use by New Sweden Irrigation District.[10] Temporary change in the nature of use will be accomplished via private rental through the Water District 01 Rental Pool. Rental volume and delivery volume to New Sweden Irrigation district will be measured and reported by Water District 01 as part of its existing water-rights accounting program. Delivery to the recharge site will be monitored and reported by New Sweden Irrigation District via an existing Cipolletti Weir with stilling well and stage recorder. Recharge at New Sweden will commence when a threshold of annual pumping volume is reached. Modeling utilized an estimate of when this might occur, but the actual timing could be several years in advance or arrears of the estimated date.

The plan specifies that "*Annual reports shall be submitted to the Department and Water District 01 that adequately describe all recharge locations and amounts diverted for the purposes of this permit. Records will demonstrate how the mitigation recharge satisfied the additional annual diversion from the municipal system.*"[11]

A third potential mitigation mechanism is to leave water in the Teton River,[12] but this is not proposed.

Choosing the Recharge Site

The intent of mitigation has always been to keep all other water users whole. The selection of the recharge location and the design of the mitigation plan have pursued this goal based on ESPAM1.1 modeling. As discussed in the November 21 meeting, the selection of Walters Pit as a recharge site was dictated by ESPAM1.1 representations of where recharge must occur to keep all reaches whole while providing acceptable benefit back to the city. Other sites that might be conceptually superior were not used, because of the ESPAM1.1 representation of their suitability.

We recognize that recharge at the Walters Pit is as yet untested. Indications are that it will readily accept recharge water, but this is not a certainty. We also recognize that models are best efforts to simulate reality, but that any model can potentially be improved. Until ESPAM2.1 is fully vetted for use in administrative matters, we agree that it is appropriate to continue to use ESPAM1.1 because of its endorsement by the Eastern Snake Hydrologic Modeling Committee and Idaho courts.

---

[10] Amended_Mitigation_Plan.pdf, Appendix G
[11] Ammended_Mitigation_Plan.pdf, p. 4
[12] Jenkins_Memo_20121104.pdf

We propose that RMEA and the applicant work with IDWR to incorporate into the mitigation plan language that allows the possibility of amending the plan to recharge at other locations, should Walters Pit not adequately receive water, or should future modeling indicate that recharge at locations east or northeast of Rexburg would be preferable. These locations are attractive because the likelihood that the Teton River is unconnected with the aquifer increases in the northeasterly direction from Rexburg.

The language should provide due process and opportunity for review by affected parties, without making improvements to the plan impossible to achieve. We hope that together we can craft appropriate language.

Description of Hydraulic Effects of Mitigation

Recharge at Walters Pit is in the general vicinity of the proposed pumping and the same hydraulic expectations apply. If the Teton River is hydraulically connected to the aquifer, then the expectation is that nearly all the benefit of recharge at Walters Pit will propagate to the Teton River. If it is not, then like the wells, the expectation is that much of the effect of recharge would propagate to the Henrys Fork and nearly all the balance to the South Fork. Propagation of recharge effects would be expected to be delayed by aquifer storage and by transmission of effects through the aquifer.

The New Sweden Irrigation District recharge site is above the regional Snake Plain aquifer. To the northwest of the site are extensive basalts and to the southeast is the Snake River. The distance to the river is similar to the distance to the basalts. The distance to the aquifer is two orders of magnitude smaller and is in the direction of the driving force (gravity). The hydrologic expectation is that the primary effect of recharge at this location would be to create a local groundwater mound, which would propagate in all hydraulically-connected directions. Some effects would propagate to the Snake River and some to the broader Snake Plain and all its hydraulically connected reaches. Propagation of effects would be expected to be delayed by aquifer storage and by transmission of effects through the aquifer.

The effects of leaving the rights unused (leaving water in the river, which is not proposed) would be immediate, and would accrue entirely to the Teton River.

Analysis of Mitigation Effects. ESPAM1.1 modeling was performed to assess the effect of recharge at both the Walters Pit and the New Sweden Irrigation District recharge site. Modeling of Walters Pit is subject to the same uncertainties as modeling the proposed wells, due to the uncertainty regarding the interaction of the Teton River with the aquifer. Like the wells, the Walters Pit will primarily affect the Teton River if the river is connected, and if not, it will primarily affect the Henrys Fork and the South Fork. ESPAM1.1 shows these effects as expected, with small additional effects indicated to other reaches.

ESPAM1.1 modeling of recharge at New Sweden shows primary effects to the nearest reach of the river, with lesser effects to other reaches connected to the aquifer. This also corresponds with expectations.

ESPAM1.1 input data and summaries are provided in the amended mitigation plan.[13] Note that the amended application[14] includes input data and summaries for modeling of locations which are no longer part of the mitigation plan.

Proposed Enhancement to the Mitigation Plan

ESPAM1.1 modeling indicates that the net effect of pumping and recharge will be that some mitigation designated for the South Fork will accrue to the Henrys Fork. If some pumping and recharge actually accrue to the Teton, the effect could be greater. In either case, the net effect at the confluence of the Henrys Fork and South Fork will always be positive.

Based on earlier consultation with Water District 01, the amended mitigation plan asserts that: "Any diverters from the South Fork between Heise and the confluence of the Henrys Fork and the South Fork will have sufficient flows from which to divert their water rights due to carriage of storage water releases from Palisades Reservoir." This statement was based on an understanding that there was a single intervening point of diversion on the Henrys Fork, for an irrigation water right for 0.06 cfs with a priority date of 1978 and the point of diversion at Beaver Dick Park.

However, there is the possibility of administrative harm under certain conditions of priority-date relationships. We realize that a simple adjustment in the Water District 01 water-right accounting could overcome this potential harm, and also that for good reasons Water District 01 will be reluctant to make such an adjustment.

The carriage-loss memo[15] reports on additional analysis based on the potential priority conditions under which administrative harm could occur, and additional points of diversion (including Teton River points of diversion) that could potentially intercept mitigation water. The expanded analysis[16] indicates that occasionally intervening juniors could divert excess gains from the Teton or Henrys Fork, at times when the priority hierarchy is such that this could cause administrative harm. This possibility can be mitigated if 0.14 cfs additional is available in the Henrys Fork in the Spring Trimester, 0.06 cfs additional in the Summer Trimester, and 0.08 cfs additional in the Winter Trimester.[17] Modeling[18] indicates that 50 acre feet per trimester year-round will

[13] Amended_Mitigation_Plan.pdf
[14] Application_Amended.pdf, Appendix A and Appendix C
[15] Carriage_Memo_20131105.pdf
[16] Priority_Analysis_20131021.zip
[17] Carriage_Memo_20131105.pdf
[18] R59_C183_50_AF_per_TRI_out.xls

provide an additional 0.16 cfs after a short ramp-up period, and eventually an additional 0.17 cfs. We propose that the mitigation plan be enhanced by 50 acre feet of additional recharge per trimester in order to provide this additional benefit.

Additional Proposed Condition

The analysis also revealed that one of the City of Rexburg points of diversion is in an intervening position to potentially divert from the Teton gains which should have accrued to the South Fork. We propose an additional condition limiting diversion *at that point of diversion only* to the rate of discharge from the waste water treatment plant, whenever the priority cut on the Henrys Fork is junior to that on the South Fork. We view that this is an additional condition but not a change to the mitigation plan.

Response to Unified List of Requirements and Concerns

Maps

Additional maps are provided with this memorandum.[19] Previously-submitted materials also contain maps.[20]

Recharge is... an additional beneficial use

The application is submitted on the assumption that recharge is one of the authorized uses under a municipal right.[21]

Source of mitigation water including water rights

Please see the Amended Permit Application. [22]

Legal notice must describe the mitigation plan

The advertisement of this application precedes by more than a year the Administrative Memorandum that makes this requirement. It appears from the record that the legal notice did not describe the mitigation plan.[23] However, the lack of mention of a plan would tend to alarm rather than comfort potential protestants, so we do not believe that this omission deprived anyone of the opportunity to protest. The party that did protest has been apprised of the plan and has had opportunity to carefully review it. We believe that due process and the intent of this requirement have been met.

---

[19] Overview_Map.pdf; Map_Generated_IDWR_Website.pdf
[20] Amended_Mitigation_Plan.pdf, Appendix C; Application_Amended.pdf, p 7
[21] See discussion in Memorandum_IDWR_Sept_2013.pdf, p 1 and 2
[22] Amended_Mitigation_Plan.pdf, Appendix B and Appendix G (FMID agreement)
[23] Application_Through_Legal_Notice.pdf, p 17

Department record will be modified to show mitigation non-use

This provision does not apply, as the mitigation plan does not propose non-use.

Identification of the source of water being depleted and the special administration area

The source and area affected is the Eastern Snake Plain Aquifer.

Analysis estimating quantity, timing and location of depletion

This analysis is provided in the Amended Mitigation Plan.[24]

Description of plan demonstrating how water is delivered, the delivery verified and the mitigation accomplished

A basic description is provided in the proposed conditions in the Amended Mitigation Plan.[25] As described in the narrative above, the proposed physical configuration of the pump delivering water to the pond will be suitable for volume measurement using a Power Consumption Coefficient. The City already participates in measurement and reporting of existing well diversions through its membership in Water District 100 and we anticipate that this will continue for all wells, including those to be used under this permit application.

The proposed condition limiting the rate of diversion from the intervening City point of diversion will be verified using discharge records from the waste water treatment plant from existing data.[26] On an annual basis, the City will submit to IDWR a compilation of waste water treatment discharge data and priority data obtained from Water District 01, along with City diversion data from Water District 01.

Ownership or authority to use the mitigation source including agreements as necessary

Ownership and authority are described in the Amended Mitigation Plan. Agreements are in the plan and in the additional documentation supplied.[27,28]

Adequacy of mitigation to address delayed impacts

The water rights proposed to be used for mitigation are senior in priority and are never cut. They belong to and are under full control of the applicant. Modeling shows that

---

[24] Amended_Mitigation_Plan.pdf, Appendix D and Appendix E.
[25] Amended_Mitigation_Plan.pdf, p 3-4
[26] We propose to verify by December 2, 2013 that these data are already collected and reported to Idaho Dept. of Environmental Quality.
[27] Amended_Mitigation_Plan.pdf, Appendix B and Appendix G (agreements)
[28] RechargeSiteAgreement.pdf

the timing of benefits of recharge is appropriate to address the timing of effects of pumping, considering both delays in the effects of pumping and delays in the benefits of recharge. Should diversion cease under the proposed water right, the City has full ability to perform follow-up mitigation that might be required beyond the final year of diversion.

Suitability of the quality of water used to compensate other water users

The source of proposed recharge water is the Teton River, which is the source of the local incidental recharge that currently sustains the aquifer.

Plan outlining reasonable method for measurement of water and verification of mitigation.

Please see discussion under *"description of plan demonstrating how water is delivered, the delivery verified and the mitigation accomplished"* above.

Consultation with Watermaster

Please see the Watermaster recommendation among the existing documents.[29]

Will water delivered into Walters Pond seep into the Teton River

This concern is addressed to some extent in the narrative. In discussions on November 21, 2013, Mike McVay of IDWR clarified that he was not particularly concerned about the omission of the Teton River from the ESPAM1.1 model; his concern was specifically that the recharge site is in such proximity to the river that water would go directly from the site to the river. A response to this concern includes the following factors:

- The depth of the pit approaches the depth of local wells, as reported to IDWR in both the October 16, 2013 and November 21, 2013 meetings. This suggests an expectation that water in the pit indeed has communication with the aquifer.
- Historical indications are that the pit is always filled with water. This also indicates that the pit is connected to the aquifer.
- If the pit is connected to the aquifer, the path for water to flow from the pit to the Teton River would be via the aquifer.
- If such flow occurs, the Teton River must also be connected to the aquifer.
- If the Teton River is connected to the aquifer, the ESPAM1.1 analysis is deficient in both its representation of the benefits of recharge *and* its representation of the effects of pumping.
- It is unlikely from a technical standpoint that the Teton would be connected to the aquifer in reference to assessment of recharge benefits, but not in reference to assessment of pumping effects.

[29] Recommendation_Watermaster.pdf

- Regardless of the connectedness of the Teton, the geographic relationships are the same; the recharge site is further from the South Fork than is the centroid of the proposed pumping.
- The implication is that in either case, the effect of recharge will be that some flux required for the South Fork will actually accrue to the Henrys Fork and/or its tributary the Teton.
- The carriage water analysis discussed elsewhere in this memo demonstrates that the proposed additional mitigation and condition compensate for the occasions when an intervening junior on the Teton or Henrys Fork could potentially divert water designated for the South Fork.

In summary, the unique physical, geographic and water-right priority conditions are such that the proposed mitigation plan as modified, and the additional proposed condition, are able to keep other water users whole whether the Teton River is or is not connected to the aquifer, or in other words, whether Walters Pit recharge accrues primarily to the Teton or to the Henrys Fork.

Will water delivered into the New Sweden Irrigation District pond seep into the Snake River

The New Sweden Irrigation District recharge site is located above the Snake Plain Aquifer between a reach of the river that is included in ESPAM1.1 and extensive basalts also included in ESPAM1.1, at similar distances to both features. The vertical distance from the site to the water table is shorter by two orders of magnitude and is in the direction of the driving force.

An explicit component of the ESPAM1.1 model water budget was incidental recharge from the canals and irrigated lands surrounding the recharge site. Aquifer water levels in the vicinity and reach gains in the adjacent reach of the Snake River were calibration targets. Given the data, methods and resources available for calibration, ESPAM1.1 is likely the best methodology available[30] to estimate the effect of recharge at the New Sweden site upon all reaches of the Snake River and tributary springs.

Is the ESPA transfer tool applied correctly [with respect to de minimus guidelines]

IDWR concurred in the October 16, 2013 teleconference that it is appropriate to use the de minimus guidelines that were in effect at the time of application.

[30] (until deployment of ESPAM2.1)

Are there times when Henrys Fork priorities differ from other reaches [in a manner that negatively impacts other water users]

This question is addressed by the carriage-loss memo,[31] the proposed enhancement of an additional 50 acre feet of recharge every trimester, and an additional proposed condition.

Is the analysis accurate [with regard to the anticipated rate of development and water requirements]

This concern arises from the evolution in the interpretation and application of the RAFN concept, occurring in the years since the application was filed. The application was filed initially based on the anticipation of a five-year permit development period and potential extension, following consultation with IDWR.

This concern also appears to stem from the fact that the admittedly uncertain projected growth rates do not show full utilization of the applied-for rate and volume within five years, and an expectation that in five years, the guidelines for extension may be different than they were at the time of application.

Our response is three-fold:

- Growth could easily occur much faster (or slower) than the best estimates used in modeling.
- It is difficult to forecast policy five years into the future.
- At the time of licensing it will be known how fast growth did or did not occur, and it will be known whether or not an extension was applied for and granted.

If the full applied rate and volume have not been developed at the time of licensing, it is anticipated and accepted that the license will be issued for the beneficial use actually developed. No harm will result from the unused potential having existed for a time. On the other hand, should growth occur faster than estimated, the proposed mitigation plan and underlying water sources are robust to keep all users whole and fully mitigate for the rate and volume applied for. In this condition the City would be in a position to enjoy the full benefits of its substantial efforts and expenditures in obtaining, negotiating and defending this permit application.

We propose that it is premature to reduce the permit rate and volume based on expectations of uncertain future events, given that mitigation plan is adequate for the full requested quantities. We acknowledge that at the time of licensing, it will be appropriate for the license to reflect the beneficial use actually developed.

[31] Carriage_Memo_20131105.pdf

Request For Action By IDWR

We request the following from IDWR:

- Grant an additional week for us to produce verification that discharge data are currently collected for the waste water treatment plant, or propose procedures to measure and report these volumes.
- As soon as possible communicate whether the proposed enhancement is tentatively acceptable. If it is, we will notify the Protestant of the intent to enhance the mitigation plan.
- Carefully review this memorandum and all accompanying documents, files and technical work.
- Work with us on any adjustments needed to the application or accompanying documentation.
- Upon technical acceptance, notify us of conceptual agreement with the following:
    - Approval of the proposed points of diversion.
    - Approval of the proposed place of use.
    - Approval of the requested rate of diversion and annual diversion volume.
    - Approval of the mitigation plan as enhanced.
    - Approval of the proposed additional condition.
- To the extent possible, avoid requiring modifications to the mitigation plan beyond the proposed enhancement, since the plan has been accepted by the protestants.
- Provide us the opportunity to assist with crafting water right conditions that correctly implement the intent and terms of the mitigation plan.