

APPENDIX 7-6b

2016 Kern Water Bank Authority Resolution

**BEFORE THE BOARD OF DIRECTORS
OF THE
KERN WATER BANK AUTHORITY**

In the Matter of:

Resolution No. 2016-2

**RESOLUTION APPROVING 2016 KWB LONG-TERM OPERATIONS PLAN AND
MITIGATION MEASURES RELATING TO MONTEREY PLUS REVISED
ENVIRONMENTAL IMPACT REPORT**

WHEREAS, the Kern Water Bank Authority (“KWBA”) owns and operates Kern Water Bank (“KWB”) groundwater banking and recovery project located on approximately 20,000 acres (“KWB Lands”) in Kern County, California; and

WHEREAS, as required by the Findings and Peremptory Writ of Mandate (“Writ of Mandate”) issued by the Sacramento County Superior Court on November 24, 2014 in *Central Delta Water Agency, et al. v. California Department of Water Resources* (“DWR”) [Case No. 34-2010-80000561] and *Rosedale-Rio Bravo Water Storage District* (“Rosedale”), *et al. v. DWR, et al.* [Case No. 34-2010-80000703], DWR, as the lead agency, is preparing revisions to the Monterey Plus EIR with regard to, among other things, the potential groundwater impacts associated with the operation of the KWB (“Monterey REIR”); and

WHEREAS, KWBA is a CEQA responsible agency regarding the Revised EIR; and

WHEREAS, the Writ of Mandate incorporates the “Interim Project Recovery Operations Plan Regarding Kern Water Bank Authority (KWB) and Rosedale-Rio Bravo Water Storage District (Rosedale) Projects,” jointly agreed to be KWBA and Rosedale, and governing interim operation of certain Rosedale projects and the KWB pending the certification of the Revised EIR and discharge of the Writ of Mandate; and

WHEREAS, KWBA's general manager has prepared a proposed "Long-Term Project Recovery Operations Plan Regarding Kern Water Bank Authority Project" ("2016 KWB Long-Term Operations Plan") attached as Attachment A hereto, to govern long-term operations of the KWB and to be included in the description of the KWB in the Revised EIR. The 2016 KWB Long-Term Operations Plan includes specific measures designed to minimize or mitigate potentially significant adverse impacts on groundwater wells related to KWB recovery operations; and

WHEREAS, the 2016 KWB Long-Term Operations Plan is modeled after and substantially similar to Rosedale's "Long-Term Project Recovery Operations Plan Regarding Rosedale-Rio Bravo Water Storage District Projects," included as a part of Rosedale's April 2015 Stockdale Integrated Banking Project Draft Environmental Impact Report (SCH#: 2013091076), and KWBA understands that Rosedale subsequently approved and adopted said long-term operations plan as applicable to all Rosedale projects subject to an MOU with adjoining entities (including, but not limited to, the Stockdale Integrated Banking Project); and

WHEREAS, the KWBA and the Kern County Water Agency ("KCWA") previously agreed on or about October 16, 2000, to implement guidelines for protection of facilities during shallow groundwater conditions, as specified in the "Cross Valley Canal / Kern Water Bank Operating Guidelines during Shallow Groundwater Conditions" ("KCWA and KWBA CVC Agreement") attached as Attachment B hereto.

NOW, THEREFORE, this Board of Directors of the Kern Water Bank Authority does hereby resolve and determine that:

1. The 2016 KWB Long-Term Operations Plan in the form attached as Attachment A is hereby approved as part of the KWB project description for purposes of DWR's Monterey REIR.

2. Subject to DWR's certification of the Monterey REIR and KWBA's obligations as a CEQA responsible agency, KWBA agrees to (a) operate the KWB as provided in the 2016 Long-Term Operations Plan, and (b) implement the Monterey REIR mitigation measures described in Attachment C hereto.

3. Nothing in this Resolution shall affect KWBA's ability to carry out its obligations as a CEQA responsible agency.

ALL THE FOREGOING, being on motion of Director Taube, seconded by Director Hamilton, was hereby authorized by the following vote, to wit:

AYES: Alternate Directors Brown and Gianquinto, Directors Hamilton, Phillipmore and Taube

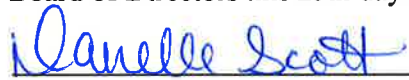
NOES: None

ABSENT: Directors Atkinson and Beard

ABSTAIN: None

I HEREBY CERTIFY that the foregoing is a true copy of the resolution of the Board of Directors of Kern Water Bank Authority as duly passed and adopted by said Board of Directors on the 25th day of May, 2016.

WITNESS my hand and official seal of said Board of Directors this 25th day of May, 2016.



Secretary of the Board of Directors

(SEAL)

KWBA Resolution
Attachment A

LONG-TERM PROJECT
RECOVERY OPERATIONS PLAN
REGARDING KERN WATER BANK AUTHORITY PROJECT

Purpose.

Consistent with Kern Water Bank Authority’s (KWBA) Memorandum of Understanding governing its banking project (MOU), this Long Term Operations Plan Regarding Kern Water Bank Authority (“Plan”) designates specific measures to be employed to “... *prevent, eliminate or mitigate significant adverse impacts*” resulting from project operations. KWBA will carry out its duties and responsibilities under this Plan in good faith and in cooperation with Adjoining Entities to the end that the objectives and purposes of this Plan will be achieved and/or carried out to the greatest extent practicable.¹ This plan applies to neighboring landowners currently using groundwater for overlying uses from an agricultural supply or domestic well. It does not apply to new wells that are installed to unsuitable depths based on historic water level fluctuations.

Plan Components:

A) Monitor and Report Groundwater Conditions to KWBA’s Board of Directors and the Public.

- 1) KWBA will monitor groundwater levels monthly, except during periods of no recovery when monitoring will occur at least quarterly. KWBA may rely on monitoring conducted by the Kern Fan Monitoring Committee to meet these requirements.
- 2) KWBA will report current groundwater levels to its Board of Directors at each monthly regular meeting, and will make the reports available to the public on its website (<http://www.kwb.org/>).
- 3) KWBA will regularly update its Groundwater Model (Model) to actual conditions and use the Model to project future groundwater conditions. KWBA will endeavor to use the best practicable science and latest information available in all modeling and technical matters. KWBA will report the results of its modeling to its Board of Directors and will make the results available to the public on its website (<http://www.kwb.org/>). Recovery in any calendar year beyond March 15 of that year shall not commence (or continue) until the Model has been run for projected operations and the results have been reported to the Board and made available to the public.²

¹ Rosedale Rio Bravo Water Storage District (Rosedale) has proposed and adopted a similar plan to prevent, eliminate or mitigate potential impacts from their projects, which plan is part of their Stockdale Integrated Banking Project Draft Environmental Report dated April, 2015. KWBA expects that an agreement will be developed with Rosedale and others for the coordinated implementation of long-term banking operations plans.

² Model data for a preceding year becomes available at different times in the following year. Modeling at the beginning of any given year will necessitate estimating certain model input data for the preceding year (e.g. Kern River losses). These estimates will be replaced with actual data at regular intervals when the model is updated.

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B) Implement Proactive Measures (in addition to A. above).

- 1) KWBA will use its Model as a tool to evaluate potential groundwater impacts resulting from its project operations. The Model will be periodically run and updated as projected recovery plans become known or change and the Model will assume such conditions as described in A)3).
- 2) The Model will be used to:
 - a) Forecast groundwater levels.
 - b) Forecast and predict the contribution of KWB operations to groundwater level declines in the area.
 - c) Determine water level conditions with “Without KWB Operations” for purposes of evaluating the potential impact of “With KWB Operations.” The “Without KWB Operations” condition is the water level that would have been at any particular well location absent “KWB Operations.”
 - d) Identify, based upon an analysis of “Without KWB Operations” versus “With KWB Operations,” if a **negative potential impact (“NPI”)** has or is likely to occur for which the measures described at D, E, and F may be operative. NPI is determined according to C)1) below.
 - e) Forecast any localized areas for special attention and/or additional monitoring, where groundwater levels will decline 30 or more feet below the “Without KWB Operations” groundwater level.
 - f) Identify wells at risk of potential impacts during recovery operations.
- 3) KWBA will provide notification on its website if the Model shows that an **NPI** has or is likely to occur, including steps that potentially affected landowners must follow if the landowner desires to make a claim to KWBA regarding potential well impacts due to KWBA’s recovery operations.

C) Implement Triggers and Actions.

The actions described in sections D, E, and F, will be implemented in consultation with affected landowners/well owners that make a claim to KWBA regarding well impacts relating to KWBA’s recovery operations and groundwater level declines, subject to the following:

- 1) The trigger for mitigation shall be based upon an analysis and comparison of Model generated “Without KWB Operations” versus “With KWB Operations.” When “With KWB Operations” are 30 feet deeper than the “Without KWB Operations” at an operative well, and the well has (or is expected to) experience mechanical failure or other operational problems due to declining water levels, a negative potential impact (“NPI”) is triggered.
- 2) For a well owner to be eligible for mitigation as provided below, the affected landowner shall submit a claim to KWBA, in accordance with the Government Claims Act, which shall, at a minimum, provide information concerning the condition of the well and casing and pumping equipment of the well, and other information that is relevant to the landowner’s claim. Upon receipt of a claim, KWBA shall use the Model (or the results of modeling as reported to the Board and the public) to determine whether an NPI exists at the landowner’s well and respond with the appropriate action described below.
- 3) KWBA will provide mitigation and/or compensation for the KWB operations’

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contribution to the adverse impact. Mitigation and/or compensation is not required for a well owner's lack of well maintenance, normal wear and tear, depreciation, failure of well equipment, well casing degradation, etc., or other reasons not relating to KWB operations.

D) Implement Action for Agricultural Wells When Well Adjustment Is Needed and Available

- 1) Trigger: When the Model predicts NPI for an operational agricultural well outside the current operating range of the pump but within the potential operating range of the well.
- 2) KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:
 - a) Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:
 - (1) Obtain right of entry permit and well data release from well owner.
 - (2) Collect pump manufacturer data, the in-situ pump setting, and casing depth information.
 - b) Compare pump setting information with Model projected pumping water levels throughout the year to determine pump submergence levels and evaluate the necessity and feasibility of lowering the well pump to meet the landowner's needs to provide the least-cost short- and long-term solution.
 - c) Develop a cost estimate to complete the necessary work.
 - d) Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.
- 3) At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent avoid, or eliminate the NPI, using the Model to identify the well or wells that may require reduction or adjustment in pumping.
- 4) If groundwater declines are due to KWB operations, unless KWBA implements D)3), once agreement is reached between KWBA and the landowner pursuant to D)2)b) and all cost estimates have been completed, pay costs associated with the landowner claim (considering C)3) above), including the cost to complete the necessary work.

E) Action for Ag Wells – Well Adjustment Unavailable

- 1) Trigger: When the Model predicts NPI for an operational agricultural well outside the current and potential operating range of the well.
- 2) KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:
 - a) Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:
 - (1) Obtain right of entry permit and well data release from well owner.
 - (2) Collect pump manufacturer data, the in-situ pump setting, and casing depth information.

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- b) Identify water of an equivalent water quantity and quality suitable for agricultural uses for the affected landowner from an alternate source at no greater cost to the affected landowner or, with the consent of the affected landowner, identify acceptable mitigation (for example, drill and equip a new well) to provide the least-cost short- and long-term solution, including an estimate to complete the necessary work.
- c) Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.
- 3) At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent avoid, or eliminate the NPI, using the Model to identify the well or wells that may require reduction or adjustment in pumping.
- 4) If groundwater declines are due to KWB operations, unless KWBA implements E)3), once agreement is reached between KWBA and the landowner pursuant to E)2)b) and all cost estimates have been completed, pay costs associated with the landowner claim (considering C)3) above), including the cost to complete the necessary work.

F) Implement action for Domestic Wells.

- 1) Trigger: When the Model predicts NPI for an operational domestic well.
- 2) KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:
 - a) Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:
 - (1) Obtain right-of-entry permit and well data release from well owner.
 - (2) Collect pump manufacture data, the in-situ pump setting and the casing depth information.
 - b) Identify availability of and cost of a permanent connection to the nearest water service provider.
 - c) Identify acceptable mitigation (for example, lower the domestic submersible pump bowl setting sufficient to restore and maintain service or drill and equip a new well that complies with applicable county well standards) to provide the least-cost short- and long-term solution, including an estimate to complete the necessary work.
 - d) Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.
 - e) If necessary for emergency health and safety concerns, provide interim in-home water supplies within 14 days after receipt of the claim until a permanent mitigation action is implemented or the claim has been denied because groundwater declines are not due to KWB operations.
- 3) At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent, avoid, or eliminate the NPI using the Model to identify the well or wells that may require reduction or adjustment in pumping.
- 4) If groundwater declines are due to KWB operations, unless KWBA implements F)3), once an agreement is reached for KWBA to provide mitigation pursuant to F)2)c) above and all cost estimates have been completed, pay costs associated with the landowner

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claim (considering C)3) above), including the cost to complete the necessary work.

G) Action for Other Landowner Claims.

- 1) Trigger: A landowner makes a claim of impact on his groundwater use (which could be due to KWBA's operations, adjacent landowners, or a combination) that does not relate to the actual (or likely) cessation of production at a well.
- 2) Actions:
 - a) Refer claim to the Board of Directors to evaluate and respond to landowner claim at its next regularly scheduled meeting.
 - b) Process claim according to agreed upon dispute resolution process (e.g., mediation, arbitration, etc.) in the event the affected landowner does not agree with the Board of Directors' response.

Development of Joint Operating Plan

The Triggers and Actions described above apply to the operations of the Kern Water Bank. In the evaluation of KWB operations, the Model compares groundwater conditions with the operation of the KWB (the "With KWB Operations" condition) against groundwater conditions without the operation of the KWB (the "Without KWB Operations" condition). In the "Without KWB Operations" condition, the Model assumes the continued operation of other groundwater banks in the area of the project. This KWB Long-Term Operations Plan is modeled after and is substantially similar to Rosedale's "Long-Term Project Recovery Operations Plan Regarding Rosedale-Rio Bravo Water Storage District Projects," (Rosedale Operations Plan) included as a part of Rosedale's April 2015 Stockdale Integrated Banking Project Draft Environmental Impact Report (SCH#: 2013091076). The implementation of the Long-Term Operations Plan and the Rosedale Operations Plan address the cumulative impacts on groundwater of both projects. KWBA and Rosedale are coordinating to develop a joint operations plan applicable to the combined groundwater impacts of the KWB and Rosedale operations. Under a joint plan, the modeling of the "Without KWB Operations" condition will assume that neither the KWB nor the Rosedale banks will be in operation. As a result, the joint plan may include triggers applicable to the joint operations that may be applied in lieu of the Triggers described in this KWB Long-Term Operations Plan and the Rosedale Operations Plan.

Release; KWBA's Rights Against Others

In all instances when KWBA takes action to mitigate the effects of declining groundwater levels under this Plan, the affected landowner shall be required to execute an appropriate release in favor of KWBA. Nothing in this Plan or any action taken by KWBA hereunder shall affect KWBA's rights or remedies against any other person or entity (e.g., adjacent landowners, other recovery projects in the area and participants in such projects, etc.) which may have caused or contributed to the effects for which KWBA has mitigated; if appropriate, an affected landowner that receives assistance from KWBA hereunder shall assign its rights against such other person(s) or entity(ies) to KWBA.

**CROSS VALLEY CANAL / KERN WATER BANK
OPERATING GUIDELINES DURING SHALLOW GROUNDWATER CONDITIONS**

1 INTRODUCTION

The Cross Valley Canal (CVC) and the Kern Water Bank (KWB), which coexist along 7 ¼ miles in the southwestern San Joaquin Valley, contribute significantly to water supply management and conservation in Kern County. The Kern County Water Agency (KCWA) and the KWB Authority (KWBA) believe it is in the best interests of both projects to develop guidelines that will allow the projects to operate to the fullest extent possible while at the same time being protective of facilities.

It should be noted that several proactive measures have already been undertaken by the CVC and KWBA. These include:

- Installing a shallow groundwater monitoring network and conducting regular monitoring and evaluation of shallow groundwater conditions;
- Raising the low-level cut-off float switch and installing a secondary low-level cut-off float switch at the forebay of CVC Pumping Plant No. 1;
- Increasing the range of the forebay level gauge for CVC Pumping Plant No. 1;
- Installing a low-level cut-off switch at the KWBA's Pool 1 Pump turnout;
- Conducting frequent inspections of the CVC's concrete liner for voids, displacement, etc. and making repairs as needed and as conditions permit;
- Expanding real-time forebay level monitoring and trending analyses capabilities;
- Increasing recharge pond setbacks
- Reducing recharge activities in the vicinity of the CVC

The implementation of the following guidelines should further these initial efforts to protect facilities and, at the same time, allow for project flexibility. It is expected that, as time goes on and additional information is developed, modifications to these operating guidelines may be made.

2 GROUNDWATER MONITORING PROGRAM

The groundwater monitoring program will include the installation of additional piezometers along the CVC in areas where the CVC lining is below grade and the formalization of a monitoring and evaluation plan. Each of these aspects of the program is described below.

2.1 Piezometer Installation

Several piezometers have already been installed to monitor groundwater conditions near the CVC. Approximately 32 additional piezometers will be installed at the locations shown in Figure 1 to supplement this monitoring network. Three of the piezometers will be installed to a depth of 50 feet; the remaining 29 will be installed to a depth of 20 feet. The piezometers will be

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constructed with 2- inch diameter PVC to industry standard specifications. A licensed surveyor will determine the location and elevation of each. All direct costs for the installation and monitoring of the piezometers, as well as the evaluation of the resulting data shall be shared equally between the CVC and the KWBA

2.2 Groundwater Monitoring Frequency

The frequency of groundwater monitoring will vary as groundwater levels change. Unless depth to groundwater is known to exceed 75 feet, the monitoring schedule will be as follows:

- During periods of adjacent recharge:
 - Groundwater > 20 feet – monitor monthly
 - Groundwater < 20 feet – monitor weekly
- During periods with no recharge – monitor weekly until depth to groundwater is > 20 feet, then monitor semi-annually

2.3 Evaluation of Groundwater Conditions

CVC and KWBA staff will jointly evaluate groundwater conditions and, as necessary, determine appropriate modifications to operations as described in these guidelines. These evaluations will be conducted according to the following schedule:

- During periods of adjacent recharge:
 - Groundwater < 50 feet – evaluate monthly
 - Groundwater < 20 feet – evaluate weekly, prepare gradient maps weekly, prepare written recommendations regarding modifications to operations and submit to KCWA/KWBA
 - Groundwater within 5 feet of design operational levels of the CVC – implement written recommendations regarding modifications to operations
- During periods with no recharge:
 - Groundwater < 20 feet – evaluate weekly, prepare gradient maps monthly
 - Groundwater > 20 feet – evaluate semiannually
 - Groundwater > 50 feet – no evaluations

The evaluations are expected to consist of brief teleconferences between CVC and KWBA staff unless depth to groundwater is 20 feet of ground surface or less. Under these conditions and when recharge is occurring, written evaluations and recommendations will be prepared weekly as a joint effort by CVC and KWBA staff.

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3 GROUNDWATER RECHARGE MANAGEMENT

The KWBA will manage recharge operations to help ensure that groundwater gradient is away from the CVC during shallow groundwater conditions. Should groundwater conditions develop that might induce piping behind the CVC's liner, the KWBA will minimize recharge adjacent to the CVC either by reducing inflow to adjacent ponds or increasing the setbacks of adjacent ponds¹. The goal of these actions will be to prevent flow into the CVC.

It is important to note that controlling groundwater levels in the vicinity of the CVC cannot be entirely achieved by managing recharge. At times, the canal has been operated at levels above the liner, thereby recharging groundwater. As a result, groundwater elevations near the CVC are maintained at or above the level of the lining. Irrespective of the foregoing, the protective measures described above will be undertaken.

4 CVC OPERATIONS MANAGEMENT

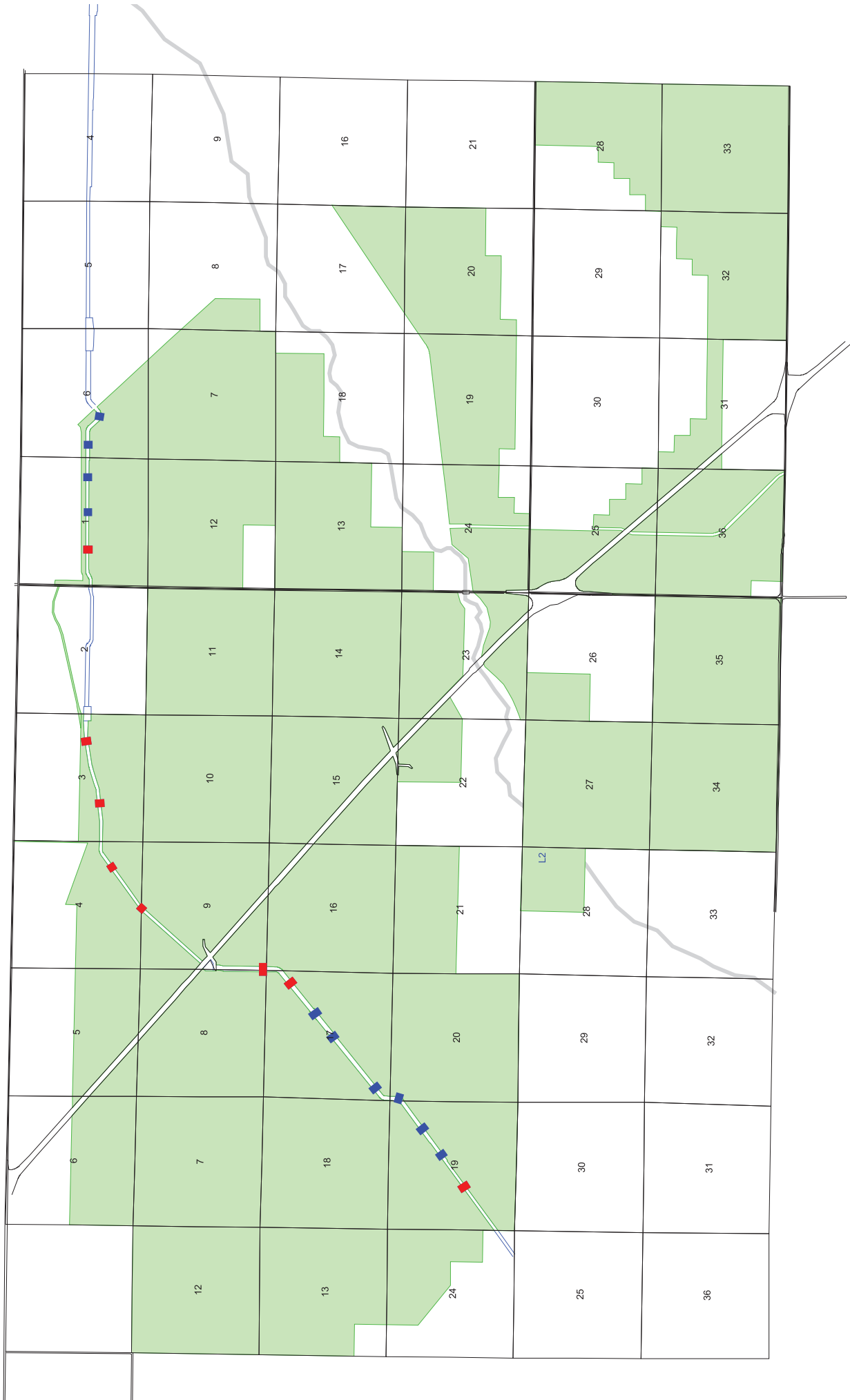
The management of CVC operations will also play an important role in preventing future lining damage. During periods where shallow groundwater conditions exist, the CVC will be operated in such a manner as to maintain higher than normal pool levels, unless prohibited by delivery demands. Also, additional low-level cut-off float switches, adjustment of low-level alarms and improved monitoring of CVC forebay levels have been incorporated into CVC operations during periods where shallow groundwater conditions exist.

In addition to the above, regular inspections of the CVC's concrete liner will continue to be conducted, and any observed voids will be repaired promptly.

5 CONCLUSION

CVC and KWBA staff have developed these operating guidelines to maximize the flexibility of their respective projects while preventing structural damage to facilities. Both projects will work together to ensure that the goals of the guidelines are met. It is expected that these guidelines may be modified in response to structural changes to the CVC (e.g. liner modifications) and as more knowledge is gained regarding the behavior of the shallow aquifer.

¹ The current setback is 20:1. CVC and KWBA staff have considered engaging a consultant to determine a "safe" setback. However, given the varying soil conditions present on the KWB and CVC properties, determining a single "safe" setback would be very difficult to achieve.





 Proposed Piezometer Transect
 Exiting Piezometer Transect
 KWB Canal

KWB - CVC Piezometers

KWBA Resolution

Attachment C

Mitigation Measures for KWBA Resolution

7.1-2

KWBA will establish a program that meets the following requirements in accordance with the Long-Term Project Recovery Operations Plan regarding Kern Water Bank Project (2016 KWB Long-Term Operations Plan, Attachment A):

A. Monitor and Report Groundwater Conditions to KWBA's Board of Directors and the Public

- 1) *KWBA will monitor groundwater levels monthly, except during periods of no recovery when monitoring will occur at least quarterly. KWBA may rely on monitoring conducted by the Kern Fan Monitoring Committee to meet these requirements.*
- 2) *KWBA will report current groundwater levels to its Board of Directors at each monthly regular meeting, and will make the reports available to the public on its website (<http://www.kwb.org/>).*
- 3) *KWBA will regularly update its Groundwater Model (Model) to actual conditions and use the Model to project future groundwater conditions. KWBA will endeavor to use the best practicable science and latest information available in all modeling and technical matters. KWBA will report the results of its modeling to its Board of Directors and will make the results available to the public on its website (<http://www.kwb.org/>). Recovery of banked groundwater in any calendar year beyond March 15 of that year shall not commence (or continue) until the Model has been run for projected KWB operations and the results have been reported to KWBA's Board of Directors and made available to the public. Model data for a preceding year becomes available at different times in the following year. Modeling at the beginning of any given year will necessitate estimating certain model input data for the preceding year (e.g., Kern River losses). These estimates will be replaced with actual data at regular intervals when the model is updated.*

B. Implement Proactive Measures (in addition to A above)

- 1) *KWBA will use its Model as a tool to evaluate potential groundwater impacts resulting from its project operations. The Model will be periodically run and updated as projected recovery plans become known or changed and the Model will assume such conditions as described in A.3.*
- 2) *The Model will be used to:*

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- a) *Forecast groundwater levels.*
 - b) *Forecast and predict the contribution of KWB Operations to groundwater level declines in the area.*
 - c) *Determine water level conditions with “Without KWB Operations” for purposes of evaluating the potential impact of “With KWB Operations”. The “Without KWB Operations” is the water level that would have been at any particular well location absent “KWB Operations.”*
 - d) *Identify, based upon an analysis of “Without KWB Operations” versus “With KWB Operations,” if a **negative potential impact (“NPI”)** has or is likely to occur for which the measures described at D, E, and F may be operative. **NPI** is determined according to C.1 below.*
 - e) *Forecast any localized areas for special attention and/or additional monitoring where groundwater levels will decline 30 or more feet below the “Without KWB Operations” groundwater level.*
 - f) *Identify wells at risk of potential impacts during recovery operations.*
- 3) *KWBA will provide notification on its website if the Model shows that an **NPI** has or is likely to occur, including steps that potentially affected landowners must follow if the landowner desires to make a claim to KWBA regarding potential well impacts due to KWBA’s recovery operations.*

C. Implement Triggers and Actions

The actions described in sections D, E, and F will be implemented in consultation with affected landowners/well owners that make a claim to KWBA regarding well impacts relating to KWBA’s recovery operations and groundwater level declines, subject to the following:

- 1) *The trigger for mitigation shall be based upon an analysis and comparison of Model generated “Without KWB Operations” versus “With KWB Operations.” When “With KWB Operations” are 30 feet deeper than the “Without KWB Operations” at an operative well, and the well has (or is expected to) experience mechanical failure or other operational problems due to declining water levels, a **negative potential impact (“NPI”)** is triggered. If KWBA enters into a joint operations agreement with other water banks in the area, the depth at which a **NPI** is triggered shall provide an equivalent measure of potential impact as described in the 2016 KWB Long-Term*

KWBA Resolution **Attachment C**

Operations Plan.

- 2) *For a well owner to be eligible for mitigation as provided below, the affected landowner shall submit a claim to KWBA, in accordance with the Government Claims Act, which shall, at a minimum, provide information concerning the condition of the well and casing and pumping equipment of the well, and other information that is relevant to the landowner's claim. Upon receipt of a claim, KWBA shall use the Model (or the results of modeling as reported to the Board and the public) to determine whether an **NPI** exists at the landowner's well and respond with the appropriate action described below.*
- 3) *KWBA will provide mitigation and/or compensation for the KWB Operations' contribution to the adverse impact. Mitigation and/or compensation is not required for a well owner's lack of well maintenance, normal wear and tear, depreciation, failure of well equipment, well casing degradation, etc., or other reasons not relating to KWB Operations.*

D. Implement Action for Agricultural Wells When Well Adjustment Is Needed and Available

- 1) *Trigger: When the Model predicts **NPI** for an operational agricultural well outside the current operating range of the pump but within the potential operating range of the well.*
- 2) *KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:*
 - a) *Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:*
 - *Obtain right-of-entry permit and well data release from well owner.*
 - *Collect pump manufacturer data, the in-situ pump setting, and casing depth information.*
 - b) *Compare pump setting information with Model projected pumping water levels throughout the year to determine pump submergence levels and evaluate the necessity and feasibility of lowering the well pump to meet the landowner's needs to provide the least-cost short and long-term solution.*

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- c) *Develop a cost estimate to complete the necessary work.*
- d) *Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.*
- 3) *At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent, avoid, or eliminate the **NPI**, using the Model to identify the well or wells that may require reduction or adjustment in pumping.*
- 4) *If groundwater declines are due to KWB operations, unless D.3 occurs, once agreement is reached between KWBA and the landowner pursuant to D.2.b and all cost estimates have been completed, pay costs associated with the landowner claim (considering C.3 above), including the cost to complete the necessary work.*

E. Implement Action for Agricultural Wells When Well Adjustment Is Unavailable

- 1) *Trigger: When the Model predicts **NPI** for an operational agricultural well outside the current and potential operating range of the well.*
- 2) *KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:*
 - a) *Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:*
 - *Obtain right-of-entry permit and well data release from well owner.*
 - *Collect pump manufacturer data, the in-situ pump setting, and casing depth information.*
 - b) *Identify water of an equivalent water quantity and quality suitable for agricultural uses for the affected landowner from an alternate source at no greater cost to the affected landowner or, with the consent of the affected landowner, identify acceptable mitigation (for example, drill and equip a new well) to provide the least-cost short- and long-term solution, including an estimate to complete the necessary work.*

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Develop and submit a report to the landowner informing the landowner of the findings and resulting proposed actions, including denying the claim because groundwater declines are not due to KWB operations.

- 3) *At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent, avoid, or eliminate the **NPI** using the Model to identify the well or wells that may require reduction or adjustment in pumping.*
- 4) *If groundwater declines are due to KWB operations, unless E.3 occurs, once an agreement is reached between KWBA and the landowner to provide mitigation pursuant to E.2.b and all cost estimates have been completed, pay costs associated with the landowner claim (considering C.3 above), including the cost to complete the necessary work.*

F. Implement Action for Domestic Wells

- 1) *Trigger: When the Model predicts **NPI** for a domestic well that is outside the current operating range of the pump but within the potential operating range of the well production.*
- 2) *KWBA's actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:*
 - a) *Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline. If needed:*
 - *Obtain right-of-entry permit and well data release from well owner.*
 - *Collect pump manufacturer data, the in-situ pump setting, and casing depth information.*
 - b) *Identify availability and cost of a permanent connection to the nearest water service provider.*
 - c) *Identify acceptable mitigation (for example, lower the domestic submersible pump bowl setting sufficient to restore and maintain service or drill and equip a new well that complies with applicable county well standards) to provide the least-cost short- and long-term solution, including an estimate to complete the necessary work.*

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- d) *Develop and submit a report to the landowner informing the landowner of the findings and resulting proposed actions, including denying the claim because groundwater declines are not due to KWB operations.*
- e) *If necessary for emergency health and safety concerns, provide interim in-home water supplies within 14 days after receipt of the claim until a permanent mitigation action is implemented or the claim has been denied because groundwater declines are not due to KWB operations.*
- 3) *At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent, avoid, or eliminate the **NPI** using the Model to identify the well or wells that may require reduction or adjustment in pumping.*
- 4) *If groundwater declines are due to KWB operations, unless F.3 occurs, once an agreement is reached for KWBA to provide mitigation pursuant to F.2.c above and all cost estimates have been completed, pay costs associated with the landowner claim (considering C.3 above), including the cost to complete the necessary work.*

7.1-7 *KWBA will implement the following measures in accordance with the KCWA and KWBA CVC Agreement (Attachment B):*

- a) *KWBA will monitor water levels frequency, evaluating groundwater conditions on a weekly/monthly basis.*
- b) *KWBA will coordinate water operations with KCWA.*
- c) *KWBA will manage recharge operations to help ensure that groundwater gradient is away from the CVC during shallow groundwater conditions. Should groundwater conditions develop that might induce piping behind the CVC's liner, KWBA will minimize recharge adjacent to the CVC either by reducing inflow to adjacent ponds or increasing the setbacks of adjacent ponds.*

7.2-2 *KWBA will implement the following measures:*

- b) *Hazardous waste sites would be subject to the county public health department and/or the CVRWQCB oversight with the responsible parties. KWBA will cooperate with the regulatory agency(s) during the process and provide pertinent groundwater elevations and water quality data the regulatory agencies may request.*

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- c) *On an annual basis, KWBA shall report the status of shallow groundwater level monitoring activities and water quality analysis in areas of contamination to the Kern Fan Monitoring Committee.*
- d) *KWBA will continue to monitor and evaluate the nature and extent of any current and future contamination and remediation within KWB Lands as follows:*
 - i. *For all evaluation and monitoring activities performed by third parties on KWB Lands, KWBA shall obtain reports and sampling data as soon as they become available. Monitoring and evaluation shall continue until verification by third party documentation, regulatory correspondence, and/or laboratory analysis is obtained that indicates soil or groundwater contamination has been remedied and no longer provides a threat to groundwater quality.*
 - ii. *On an annual basis, KWBA shall report the status of contamination for each issue and provide water quality data monitoring activities, where available, to the Kern Fan Monitoring Committee. Any newly discovered contamination shall be reported to the Kern Fan Monitoring Committee immediately.*

7.2-3 *KWBA will implement the following measures:*

- a) *Prior to construction, identify all plugged and abandoned wells through agency contacts. This includes identification of abandoned wells through the DOGGR website, field verification of an abandoned well prior to construction, notifying DOGGR of intent to construct a recharge pond adjacent to or over an abandoned well.*
- b) *Modify excavation and grading activities to ensure the near surface seals and wellhead remain undamaged.*
- c) *If the top of an abandoned well or wellhead is damaged during pond construction, appropriate authorities (i.e., DOGGR, CVRWQCB, and/or Kern County Environmental Health) will be notified as to the nature and extent of the damage along with plans to repair the damage, as needed and in accordance with existing regulations.*

7.4-3 *KWBA will implement the following terms required of KWBA as specified in the 1997 Monterey IS and Addendum, in this 2016 KWBA Resolution, and KWB HCP/NCCP, including Appendix A (Kern Water Bank Operations Manual), Appendix C (Kern Water Bank Vegetation Management Plan, and Appendix D (Kern Water Bank Waterbird Management Plan):*

a) *Biological Monitor*

A qualified biologist shall monitor all ground disturbing activities during construction in the Sensitive Habitat Sector and will oversee measures undertaken to reduce the take of listed species.

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b) *Construction Practices*

- i. *Delineation of Disturbance Areas – During construction, KWBA shall clearly delineate disturbance area boundaries by stakes, flagging, or by reference to terrain features, as provided in the KWB HCP/NCCP directed by CDFG and USEWS to minimize degradation or loss of adjacent wildlife habitats during operation.*
- ii. *Signage – During construction, KWBA shall post signs and/or place fencing around construction sites to restrict access of vehicles and equipment unrelated to site operations.*
- iii. *Resource Agency Notification – At least 20 working days prior to initiating ground disturbance for project facilities in designated salvage/relocation areas, KWBA shall notify the Fresno Field Office of CDFWG and the Sacramento Field Office of USFWS of its intention to begin construction activities at a specific location and on a specific date. The agencies will have ten working days to notify the KWBA of their intention to salvage or relocate listed species in the construction area. If KWBA is notified, it shall wait an additional five days to allow the salvage/relocation to take place.*
- iv. *Salvage and Relocation – KWBA shall allow time and access to USFWS and/or CDFWG, or their designees, to relocated listed species, at the Resource Agencies' expense, from construction areas prior to disturbance of areas that have been identified by the Resource Agencies as having known populations of the listed species they wish to salvage or relocate.*
- v. *Construction Site Review – All construction pipes, culverts, or similar structures with a diameter of three inches or greater that are stored at a construction site on the Kern Water Bank for one or more overnight periods shall be thoroughly inspected for trapped kit foxes and other animals before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight shall be capped. If during construction a kit fox or other animal is discovered inside a pipe, that section of pipe shall not be moved or, if necessary, shall be moved only once to remove it from the path of construction activity until the animal has escaped.*
- vi. *Employee Orientation – An employee orientation program for construction crews, and others who will work on-site during construction, shall be conducted and shall consist of a brief consultation in which persons knowledgeable in endangered species biology and legislative protection explain endangered species concerns. The education program shall include a discussion of the biology of the listed species, the habitat needs of these species, their status under FESA and CESA, and measures being taken for the protection of these species and their habitats as a part of the project. The orientation program shall be conducted on an as needed basis prior to any new employees commencing work*

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on the Kern Water Bank. Every two years or at the beginning of construction for the Supply/Recovery canal, a refresher course will be conducted for employees previously trained. A fact sheet conveying this information shall also be prepared for distribution to all employees. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at KWBA's office and shall be accessible by CDWEG and USFWS.

- vii. *Standards for Construction of Canals – Concrete-lined canals will have a side slope of 1.5 to 1 or less and the sides will have a concrete finish which will assist in the escape of animals. If canals are determined by CDFWG or USFWS to be substantial impediments to kit fox movement, plank or pipe crossings will be provided across concrete canals in areas identified as having high kit fox activity.*

c) *On-Going Practices*

- i. *Equipment Storage - All equipment storage and parking during site development and operation shall be confined to the construction site or to previously disturbed off site areas that are not habitat for listed species.*
- ii. *Traffic Control - KWBA's project representative shall establish and issue traffic restraints and signs to minimize temporary disturbances. All construction related vehicle traffic shall be restricted to established roads, construction areas, storage areas, and staging and parking areas. Project related vehicles shall observe a 25 MPH speed limit in all project areas except on county roads and state and federal highways.*
- iii. *Food Control - All food-related trash items such as wrappers, cans, bottles, and food scraps generated both during construction and during subsequent facility operation shall be disposed of in closed containers and shall be regularly removed from the site. Food items may attract kit foxes onto a project site, consequently exposing such animals to increased risk of injury or mortality.*
- iv. *Dog Control - To prevent harassment or mortality of kit foxes or destruction of kit fox dens or predation on this species; no domestic dogs or cats, other than hunting dogs, shall be permitted on-site.*
- v. *Pesticide Use - Use of rodenticides and herbicides on the site shall be permitted in accordance with the Vegetation Management Plan, which incorporates by reference the Interim Measures for Use of Rodenticides in Kern County, and which will incorporate by reference any other applicable laws, rules, and regulations regarding the use of pesticides as they take effect.*

d) *Project Representatives*

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KWBA shall designate a specific individual as a contact representative between KWBA, USFWS, and CDFWG to oversee compliance with protection measures-detailed herein. KWBA shall provide written notification of the contact representative to CDFWG and USFWS within 30 days of issuance of the Permits and the Management Authorizations. Written notification shall also be provided by KWBA to CDFWG and USFWS in the event that the designee is changed.

e) *Notification Regarding Dead, Injured or Entrapped Listed Animals*

Any employee or agent of KWBA who kills or injures a San Joaquin kit fox, blunt nosed leopard lizard, Tipton kangaroo rat, San Joaquin antelope squirrel, or other listed species listed as a threatened or endangered animal under FESA or CESA, or who finds any such animal either dead, injured, or entrapped on the Kern Water Bank shall report the incident immediately to KWBA's representative who shall, in turn, report the incident or finding to USFWS and CDFWG. In the event that such observations are of entrapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape unimpeded. In the event that such, observations are of injured or dead animals, KWBA shall immediately notify USFWS and CDFWG by telephone or other expedient means. KWBA shall then provide formal notification to USFWS and CDFWG, in writing, within three working days of the finding of any such animal(s). Written notification shall include the date, time, location, and circumstances of the incident.

The USFWS contact for this information shall be the Assistant Field Supervisor for Endangered Species, Sacramento Field Office. The CDFWG contact shall be the Environmental Services Supervisor at the San Joaquin Valley-Southern Sierra Region Headquarters.

USFWS or CDFWG will be notified if any other animal, which is otherwise a listed species, is found dead or injured.

f) *Construction of Supply/Recovery Canal*

Within 60 days prior to the construction of the supply/recovery canal within the zone marked within the Map of the Kern Water Bank, KWBA shall conduct a limited survey within the area of the Kern Water Bank, which will be affected by that construction, with the sole goal of identifying potential San Joaquin kit fox dens. KWBA shall contact USFWS and CDFWG pursuant to the salvage procedures set forth above if any kit fox dens are found.

g) *Take Avoidance Protocol for Fully Protected Species*

Although a population of blunt nosed leopard lizards was relocated to the Kern Water Bank, there is no known present occurrence of them. Existing data on the blunt nosed leopard lizard at the Kern Water Bank indicates that populations, if they exist, occur within habitat set asides (either sensitive, compatible, or conservation bank habitat), thus the likelihood of take from project construction, operation, and maintenance is negligible. However, in the future adaptive management measures may expand to areas of suitable habitat.

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Three other species, which may be found on the Kern Water Bank, are also state designated fully protected species: American peregrine falcon, Greater sandhill crane, and White-tailed kite. The likelihood of the take of any of these species from project construction, operation, and maintenance is negligible due to their mobility and preferred habitats. ~~However, to avoid any take of these species, the same take avoidance protocol as set out for the blunt nosed leopard lizard shall apply to each of these three species.~~

KWBA will comply with the terms of the NCCP Approval and Take Authorization as it relates to ~~Until such time that the KWBA obtains appropriate authorization for take of the state-designated fully protected species blunt nosed leopard lizard by the Fish and Game Commission,~~ The following take avoidance protocol shall apply in any areas that contain suitable habitat for fully protected species not covered by authorization for take of state-designated fully protected species identified in this subsection (g) of the blunt nosed leopard lizard:

- i. A qualified biologist shall survey any areas proposed for project related disturbance that contain suitable habitat for fully protected species the blunt nosed leopard lizard to determine the likelihood of presence. ~~Suitable habitat consists of valley and foothill grasslands, saltbush scrubland, iodine bush grassland, and alkali flats.~~*
- ii. If these fully protected species blunt nosed leopard lizards are found to occur in areas proposed for project facilities construction or maintenance, ~~consideration of avoidance should take place. first. If avoidance is not practicable, then the blunt nosed leopard lizard will be trapped and relocated prior to disturbance at KWBA's expense in accordance with the applicable annual management plan. This work must be done by or under the direction of USFWS staff by persons with appropriate experience and with their own take for scientific purposes permits. This procedure will avoid any violation of state law.~~*

The use of a biological monitor, and special construction activities and on-going practices will result in a heightened awareness and education regarding sensitive biological resources, which will reduce the potential for impacts on special-status species. In addition, the use of a project representative as a liaison between the KWBA and the resource agencies will expedite notification regarding any take of a listed animal. ~~While take of a fully protected species is not anticipated, this mitigation outlines avoidance protocol to further reduce the likelihood of said take. Together these mitigation measures and the beneficial net increase of habitat for special-status species through implementation of the HCP/NCCP will reduce any potential impact to a less-than-significant level.~~

7.11-1 *KWBA will implement the following measures:*

- c) Provide a comprehensive Worker Environmental Awareness Program (WEAP) that will include all training requirements identified in Best Management Practices, Worker Site Specific Health and Safety Plan, and mitigation measures, including training for all field personnel (e.g., KWBA employees, agents, and contractors).*

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The WEAP shall include protocols and training for responding to and handling of hazardous materials and hazardous waste management, and emergency preparedness, release reporting, and response requirements. KWBA will ensure that all construction workers at risk of inhaling dust shall be provided masks with filters designed to trap spores of the size of Valley Fever fungus.

7.11-4 *KWBA will implement the following measures:*

- c) KWBA shall implement the following measures before and during ground-disturbing activities to reduce health hazards associated with potential exposure to hazardous substances.*
 - i. If stained or odorous soil is discovered during project-related construction activities, KWBA shall retain a qualified environmental professional to conduct a Phase II Environmental Site Assessment and/or other appropriate testing. Recommendations in the Phase II Environmental Site Assessment to address any contamination that is found shall be implemented before continuing with ground-disturbing activities in these areas.*
 - ii. As required by law, notify the appropriate federal, state, and local agencies if evidence of previously undiscovered soil or groundwater contamination (e.g., stained soil, odorous groundwater) or if unknown or previously undiscovered underground storage tanks are encountered during construction activities.*

7.13-1a *KWBA will implement the following measures to minimize potential adverse impacts on cultural resources:*

- a) Prior to ground disturbance for new pond or well construction and associated facilities, an analysis to identify the potential presence of archaeological resources on the project site shall be conducted. The analysis shall include, at a minimum, a records check and literature survey from the appropriate California Historical Resources Information System (CHRIS) center and a Phase I Cultural Resources Investigation by an archaeologist meeting the Secretary of the Interior's Standards. If resources are known to exist on a project site, the analysis shall include an assessment of the resource and shall include measures for the in-situ protection, or the recovery, preservation, study, and curation of the resource, as appropriate. The analysis and the measures developed shall be consistent with the practices and intent described in Section 21083.2 et seq. of the Public Resources Code, as well as Sections 15064.5 et seq. and 15126.4(b) of the California Code of Regulations, and shall be consistent with current professional archaeological standards. The archaeologist shall prepare a report of the results of any study prepared, following accepted professional practice. Copies of the report shall be submitted to the KWBA and to the appropriate CHRIS information center. KWBA shall also consult, as appropriate, with the Native American Heritage Commission and appropriate Native American tribal representatives to address Native American cultural values with respect to archaeological contexts and places of traditional use or importance.*

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- b) *As a condition of all contracts for new pond or well construction and associated facilities and prior to ground-disturbing activities, all earth-moving and excavation contractor employees shall attend an orientation session informing them of the potential for inadvertently discovered cultural resources and/or human remains and protection measures to be followed to prevent destruction of any and all cultural resources discovered on site. The applicant's designated project construction manager, a qualified archaeologist, and a qualified cultural resource manager/monitor from a local California Native American tribe shall conduct the orientation (unless the local tribe opts not to participate). The orientation will include information regarding the potential for objects to occur on site, a summary of applicable environmental law, procedures to follow if potential cultural resources are found, and the measures to be taken if cultural resources and/or human remains are unearthed as part of the project.*

- c) *Construction areas for new ponds and wells and associated facilities shall be staked prior to earthmoving by a qualified archaeologist in consultation with the contractor to indicate the construction area, construction staging area, and buffer. No earthmoving, parking, or materials storage will be allowed outside the staked areas. Prior to construction, the archaeologist shall survey the area to identify any surface artifacts within the staked area. An archaeologist and qualified cultural resource manager/monitor from a local California Native American tribe (unless the local tribe opts not to participate) shall be present during any grubbing or topsoil grading within the staked area. If previously unknown buried cultural resources, such as flaked or ground stone, historic debris, building foundations, or nonhuman bone (unless determined to be from present day grazing operations), are discovered during ground-disturbing activities, work will stop in that area and within an appropriate buffer area, as determined by the archaeologist. The archaeologist shall assess the significance of the affected cultural resources and, if necessary, develop feasible and appropriate treatment measures in consultation with the project staff, such as avoidance, capping with geotextile and fill, or Phase III data recovery consistent with applicable standards adopted pursuant to the National Historic Preservation Act.*

- d) *In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately, the area of the find shall be protected, and KWBA immediately shall notify the County Coroner of the find and comply with the provisions of PRC Section 5097 with respect to Native American involvement, burial treatment, and re-burial, if necessary.*

7.13-1b *KWBA will implement the following measures to minimize potential adverse impact on previously unknown potentially unique, scientifically important paleontological resources:*

- a) *Before the start of any well-drilling activities, KWBA shall retain a qualified paleontologist or other qualified individual to train all personnel involved with earthmoving and/or well drilling activities regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered (this training can take place at the same time as the orientation required by 7.13-1a).*

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- b) *In the event that paleontological resources are discovered, KWBA will notify a qualified paleontologist. The paleontologist will document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. If fossil or fossil bearing deposits are discovered during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist. The paleontologist will notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If KWBA determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important. The plan will be submitted to KWBA for review and approval prior to implementation. The analysis and measures developed shall be consistent with the Conformable Impact Mitigation Guidelines developed by the Society of Vertebrate Paleontology and current professional paleontological standards.*

12-1 KWBA will implement the following measures:

- a) **Pump Efficiency Monitoring:** KWBA will conduct pump efficiency monitoring to ensure that all KWB pumps are monitored and evaluated at regular intervals during recovery periods.
- i. *Daily Pump Efficiency Monitoring: Pumps shall be monitored daily for their total water volume pumped (acre-feet [AF]) and electricity consumption (kilowatt-hours [kWh]), which will be used to calculate a daily energy efficiency value (i.e., kWh/AF).*
 - ii. *Pump Efficiency Software: Metro or an equivalent water system management program will be used to provide up-to-date and streamlined methods to analyze KWB's individual pump and total system efficiency.*
- b) **Pump Rehabilitation, Retrofits, and Replacement:** KWBA shall use data from the Pump Efficiency Monitoring component to strategically and actively rehabilitate, retrofit, and/or replace pumps as needed during recovery periods.
- i. *Pump Prioritization and Testing: Pump rehabilitation, retrofit, and replacement shall be prioritized by accounting for the relative efficiency of each pump with respect to the total pump system and water volume pumped through each pump. Data obtained from the Pump Efficiency Monitoring component shall be used to prioritize which pumps will be rehabilitated, retrofitted, and/or replaced. In addition efficiency testing by external entities if available (e.g., pump company, Pacific Gas & Electric Company [PG&E]) or other similar analysis will also be used for the prioritization process.*
 - ii. *Schedule: KWBA shall rehabilitate, retrofit, and/or replace pumps/wells at the earliest possible time without substantially disturbing ongoing O&M activities, but at a minimum will rehabilitate, retrofit, and/or replace at least an annual average of 5 pumps per year during a prolonged recovery period such as occurred between 2013 and 2016.*

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- c) **Reporting:** KWBA will maintain a quarterly and annual reporting program that will be publicly available online. Annual reports will cover calendar years and be posted online by March 30 to cover the previous year. Quarterly reports will be posted online within 30 days of the end of each calendar quarter. The annual and quarterly reports will include, but are not limited to, the following components:
- i. **KWB O&M Totals:** Total quarterly electricity consumption for recovery pumping activities along with total acre-feet recovered shall be provided online. A running total of the annual electricity consumption and acre-feet recovered by quarter shall also be provided.
 - ii. **Pump Efficiency:** A summary of the pump efficiency (kWh/acre-feet) for each of KWB's pumps will be provided quarterly. Similar to the KWB O&M Totals, a running annual average efficiency for each pump shall be provided. These data shall be used to identify the 5 pumps per year that will be rehabilitated, retrofitted, or replaced. If a pump/well is adjusted for depth, notes shall be made within the reports to explain these changes in pump efficiency.
 - iii. **Electricity Efficiency Actions:** Each report should include actions taken in the previous quarter to rehabilitate, retrofit, and/or replace pumps. Any other energy efficiency measures taken will be reported. When information is available from PG&E's Advanced Pumping Efficiency Program or other similar programs, annual electricity savings from these actions shall be included in the quarterly and annual reports to clearly show the electricity savings associated with rehabilitation, retrofit, and/or replacement actions. If annual energy savings cannot be determined through pre- and post-pump improvement testing, KWBA shall report the empirical annual energy savings (kWh/year) from these improvements in its annual reports.
 - iv. **Identifying Next Steps:** Each annual report will include the list of 5 or more pumps planned to be evaluated for potential rehabilitation, retrofit, or replacement during that year. If all five of the least efficient pumps are not scheduled for rehabilitation, retrofit, and/or replacement in the coming year, the annual report shall explain what KWB operation requires the pump to remain in service that year.
- d) **Pump Compliance:** KWBA will only purchase new pumps that comply with United States Department of Energy pump efficiency regulations (10 CFR Part 429 and 431) when those regulations become effective in the marketplace in 2020.
- e) **Future Increases in Technology and Emissions Standards:** KWBA shall actively consider replacing older pumps with new pumps with increased efficiency technology. All future requirements for pumps at the federal, state, and/or local level shall be complied with.