

DRAFT Technical Memorandum



To: Tule Subbasin Technical Advisory Committee

From: Thomas Harder, P.G., C.HG.
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Date: 22-Sep-22

Re: Technical Requirements for Addressing Impact Claims from Groundwater Levels for Tule Subbasin Groundwater Sustainability Agencies

1 Background and Purpose

In response to California Department of Water Resources (CDWR) comments to the Tule Subbasin draft Groundwater Sustainability Plans (GSPs) and Coordination Agreement, the Groundwater Sustainability Agencies (GSAs) each agreed to develop mitigation plans to address significant and unreasonable impacts to beneficial uses of groundwater during the sustainability transition period between 2020 and 2040. The revised Tule Subbasin Coordination Agreement submitted in July 2022 included a Mitigation Program Framework as Attachment 7, which outlined the general standards that each GSA would commit to in developing their respective Mitigation Programs. The GSAs further committed to completing the mitigation claims process for domestic and municipal wells by December 31, 2022 and all other aspects of the Mitigation Programs by June 30, 2023.

The purpose of this document is to provide the minimum technical requirements for use by each Tule Subbasin GSA to address claims of impact from lowered groundwater levels associated with GSP-/GSA-approved or authorized activities. In consideration of the technical information provided herein, and in accordance with the Mitigation Framework in Attachment 7 of the Coordination Agreement, each GSA Mitigation Program will identify the specific criteria and processes for mitigating claims of impact caused by pumping within their respective GSA boundaries. Each Mitigation Program must provide a claim process to address impacts to:

- (i) domestic and municipal wells,
- (ii) agricultural wells, and
- (iii) critical infrastructure.

Impacts may be related to one or more of the three sustainability indicators related to GSP-/GSA-approved or authorized activities:

1. Groundwater level declines
2. Land subsidence, and
3. Groundwater quality.

This TM addresses impacts related to groundwater levels. Decisions to include or exclude impacted users from participation in a GSA's Mitigation Program shall be supported by appropriate written technical data and analysis, as described herein. In addition, this TM includes additional considerations, outside the technical requirements, for developing Mitigation Programs.

Each Mitigation Program will document:

1. Types of Impacts to be Addressed by the Mitigation Program
2. A Process for Responding to Claims of Impact
3. A Process for Investigating Claims
4. Qualifications for Mitigation
5. Types of Mitigation to Address Claims
6. An Outreach Program Prior To and During Mitigation Program Development
7. The Program Adoption Schedule
8. Mitigation Program Funding Source(s)

Mitigation will be applied only to those claims that are shown to be attributable to GSP-/GSA-approved or authorized activities.

2 Process Overview for Claims of Groundwater Level Impacts

The Mitigation Program framework outlined in the Tule Subbasin Coordination Agreement allows for domestic, industrial, municipal, and certain agricultural well owners adversely affected by groundwater level impacts to file a claim with the GSA in which the well is located. The overall process for receiving and investigating claims of groundwater level impact is shown on Figure 1. For groundwater levels, an "impact" is defined as the inability of a well owner to pump groundwater of sufficient quantity to meet their water supply needs due to lowered groundwater levels resulting from Tule Subbasin GSP-/GSA-approved or authorized activities. The impact must be realized after January 2015. Responsibilities of the claimant are shown in green and responsibilities of the GSA are shown in blue on Figure 1. Decision points are shown in orange.

All claims will be investigated and evaluated within 45 days of receipt of the claim.

2.1 Filing a Claim

The claim process starts with the affected party ("Claimant") filing a claim with the GSA in which the party's well is located. The claim will be filed using a form like that provided in



Attachment 1. To process a claim, the Claimant must provide some basic information to enable further investigation of the claim, including:

- The Claimant's name and contact information,
- The type and location of the well,
- Request for interim water supply,
- Well construction information,
- Pump information,
- A description of the issue with the well, and
- The applicant's signature.

If the Claimant is pumping groundwater under a transitional pumping allocation, and thereby contributing to transitional overdraft, the claim will be denied.

2.2 Provision for Interim Water Supply

For claims not denied in Section 2.1, the claim process allows for the provision of an interim water supply should the Claimant request it. The interim water supply is meant to provide water to the applicant while the claim is investigated and prior to arranging a more permanent mitigation. Potential sources of interim water supply include (but are not limited to):

- Trucking water
- Connecting to the water supply of a neighboring landowner
- Obtaining a temporary/permanent connection to the municipal water supply system

Considerations for each GSA Mitigation Program include:

- Who will pay for the interim water?
- If the GSA funds it, is the cost subject to reimbursement by the Claimant if the investigation finds that the issue is not associated with transitional overdraft pumping.

2.3 Evaluation of Potential for Municipal Water Supply Connection

In some urban areas of the Tule Subbasin (e.g. Porterville), impacted domestic or industrial wells may be in close proximity to existing municipal water supply infrastructure. If so, the GSA will contact the local municipality, on behalf of the Claimant, to determine the feasibility of connecting the Claimant to the existing municipal water supply system. If a connection is feasible, the Claimant will be provided a contact person at the municipality to arrange the connection to the municipal system. For those claims that can be satisfied through a municipal water supply connection, the GSA will waive all well inspection requirements. However, the Claimant must agree to allow the GSA to destroy or properly abandon the impacted well, in accordance with California Department of Water Resources requirements and County of Tulare regulations.



Considerations for each GSA Mitigation Program include:

- Will the GSA continue the interim water supply to the Claimant, free of cost, until the connection to the municipal system is complete?
- Who will fund the cost to connect the Claimant to the municipal water system (GSA, municipality, Claimant)?
- Who will fund the cost to destroy the impacted well?

If the Claimant refuses to connect to the municipal water system, the Claimant will be required to allow the GSA to inspect the well in accordance with Sections 2.4, 2.5, and 2.6, herein.

2.4 Provision of Access to the Well for Inspection by the GSA

Mitigation of any claim of impact from transitional pumping overdraft not rejected in Section 2.1 and not mitigated in Section 2.3 herein, will require that the Claimant provide access to the well to verify the claim. In signing the impact claim form (Attachment 1), the Claimant agrees to release all data associated with the well and provide access to the well for inspection by a GSA technical representative. Denial of access to the well for inspection by the GSA will result in denial of mitigation.

2.5 Preliminary Well Assessment Based on Existing Data

A GSA technical representative will review all available information provided by the Claimant for the affected well prior to inspection in the field. Data to be reviewed will include:

- The CDWR driller's log,
- Information on date the well was constructed,
- Well construction information (casing diameter, casing depth, perforation interval),
- Available downhole video surveys,
- Historical groundwater levels,
- Pump type and intake depth,
- Motor size,
- Pump age,
- Typical discharge rate,
- Last pump test date,
- Last service date,
- Last static and pumping groundwater levels, and
- Information on the nature of the problem.

Based on a review of the available data provided by the Claimant, the GSA will determine whether the claim can be verified based on the data. Criteria for the determination will include:



- Completeness of the dataset relative to the requested information,
- Reliability of the data provided,
- Nature and status of the issue,
- Evidence of well impact due to GSP-/GSA-approved or authorized activities.

If the claim can be verified based on available information, then the GSA technical representative will issue a recommendation for appropriate mitigation. If not, the GSA will conduct additional investigation to verify the claim as described in Section 2.6.

2.6 As-Needed Supplemental Well Inspection and Data Collection

To verify a claim that cannot be confirmed from existing information provided by the Claimant, a GSA technical representative will need to inspect the well and collect supplemental information. The types of information to be collected will depend on the data available from the Claimant. Determination of the extent of additional data collection necessary to verify the claim will be at the sole discretion of the GSA.

In general, the minimum data to be collected in the field will include:

- Well name
- Pump size (horsepower)
- Casing type and diameter
- Static groundwater level
- Discharge rate
- Pumping groundwater level

The owner or owner's representative authorized to operate the pump will be asked to be onsite at the time of inspection to operate the pump. The GSA technical representative will record observations from the inspection on a form like that provided in Attachment 2.

If a CDWR driller's log or other information is not available to confirm the total depth and condition of the well and if the pump intake depth cannot be confirmed from available information, it may be necessary to have the pump removed from the well and conduct a downhole video survey. Removing the pump will enable the GSA technical representative to measure the column pipe and thus confirm the pump intake depth and inspect the condition of the pump. The video log will enable inspection of the condition of the casing and perforations and confirm the perforation interval, total depth, and static groundwater level of the well. Upon completion of the investigation, the contractor will be required to reinstall the pump and reestablish all connections. If the pump was operating prior to removal, the contractor will be required to demonstrate that the pump is functioning properly after reinstallation. A sounding port or flow meter may also be installed to collect pumping water level data or discharge rate data, respectively.



Considerations for each GSA Mitigation Program include:

- Who will fund the contractor to remove the pump and conduct the video survey?
- If the GSA funds it, is the cost subject to reimbursement by the Claimant if the investigation finds that the issue is not associated with transitional overdraft pumping.
- Will the GSA require the well owner to sign a release of liability for any damage to the pump, pump column, or well resulting from removal of the pump and conducting the video log?

3 Evaluation of Claims of Groundwater Level Impacts

The foundational premise of the Mitigation Program, as it relates to groundwater levels, is to address impacts to domestic, municipal, industrial and agricultural wells from GSP-/GSA-approved or authorized activities. As SGMA does not require the GSAs to address impacts prior to January 2015, only impacts associated with groundwater level declines after this time will be considered.

The graphic on Figure 2 provides a basis for evaluating claims based on the data provided by the Claimant or collected by the GSA. As shown, Examples 1 and 2 illustrate groundwater level impacts that would qualify for mitigation. Example 1 is a case where the static groundwater level is below the 2015 groundwater level and the pumping groundwater level, at the historical discharge rate, is within 10 feet of the bottom of the well. In Example 2, the static groundwater level is measured below the 2015 groundwater level and the pumping groundwater level, at the historical discharge rate, has dropped to within 20 feet of the pump intake. In both cases, the lowered groundwater levels can be attributed to transitional pumping overdraft and there is no option to restore the water supply without mitigation. The evaluation should consider whether there is adequate separation between the pump intake and the bottom of the well (e.g., 10 feet) and whether there is adequate pump submergence (e.g., 20 feet).

Examples 3 through 6 on Figure 2 illustrate cases where the well impact is not associated with lowered groundwater levels from GSP-/GSA-approved or authorized activities. In these cases:

- The pumping groundwater level would have already been below the bottom of the well before January 2015 (Example 3),
- The pumping groundwater level would have already been below the bottom of the pump intake before January 2015 (Example 4),
- The static groundwater level would have been below the pump intake prior to January 2015 (Example 5),
- The pump is not functioning for reasons other than groundwater level decline (e.g. mechanical failure)(Example 6).



In many cases, it is anticipated that a static groundwater level measured in the impacted well from January 2015 will not be available. For those cases, the reference January 2015 static groundwater level will be inferred from a groundwater level contour map generated based on available data from other wells measured at that time. Separate groundwater contour maps will be generated for the Upper and Lower Aquifers. The reference static groundwater level will be assigned from the contour map of the aquifer in which the well is predominantly perforated.

There are other factors, independent of lowered groundwater levels, that can cause a well to stop functioning, such as pump mechanical failure due to age or malfunction, holes in the well casing allowing sand into the pump intake, holes in the pump column associated with corrosion and wear, excessive plugging of screens due to lack of maintenance (e.g. well rehabilitation), and others. All these factors will need to be taken into consideration when assessing the need for mitigation.

Based on the analysis of data for the impacted well, the GSA technical representative will provide a recommendation to the GSA Board of Directors whether the well qualifies for mitigation.

A consideration for each GSA Mitigation Program includes:

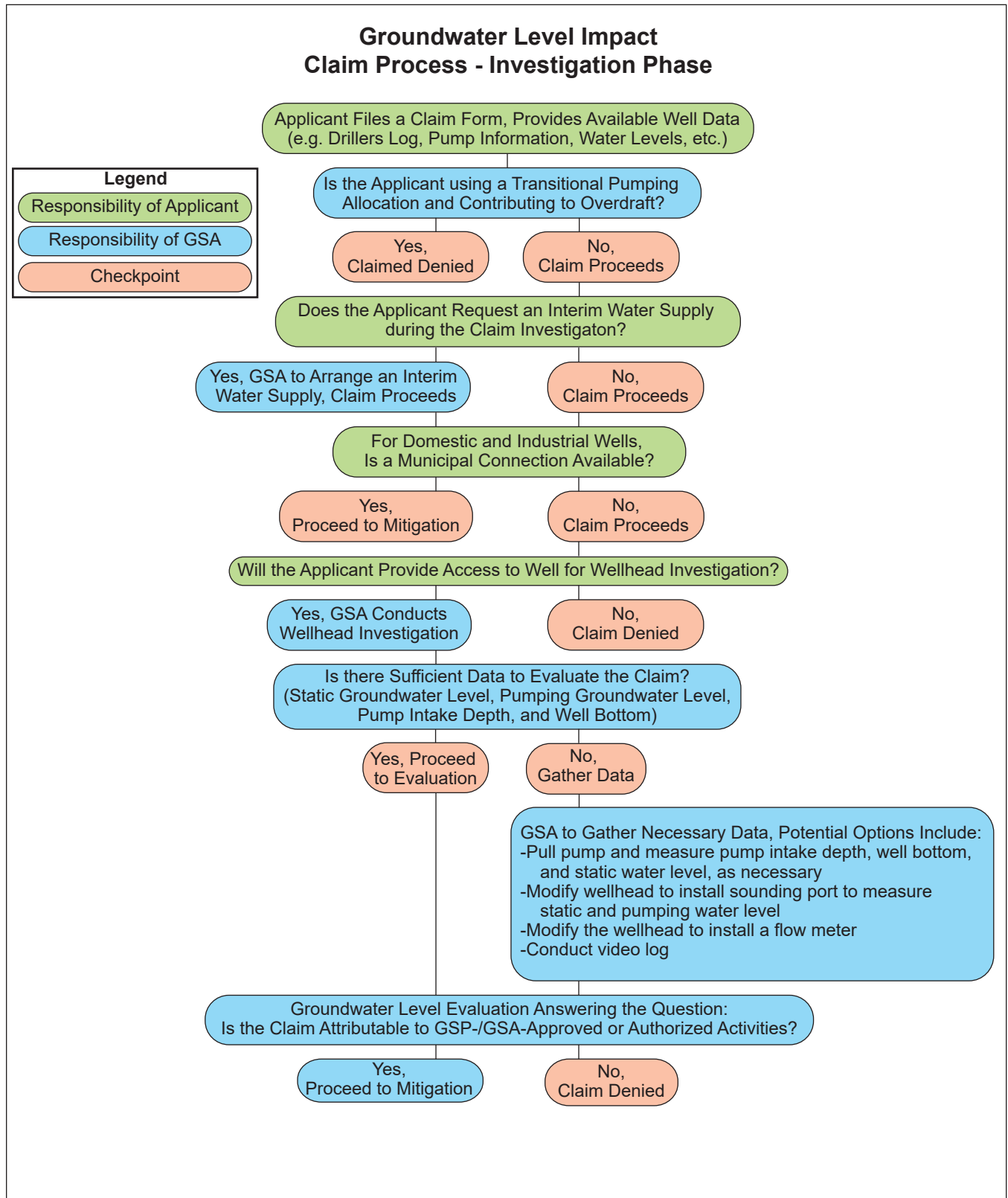
- Will there be an appeal process available to the Claimant and, if so, what will that process consist of?

4 Potential Options for Mitigation

Mitigation measures, if approved, could include one or more of the following:

- Providing a short-term emergency water supply to domestic well owners. Short-term emergency supplies shall be provided as soon as reasonably possible, but in all cases within 14 days of notification to the GSA of such needs;
- Providing funds to lower a well pump;
- Providing funds to complete a connection to an M&I water provider;
- Supplying an equivalent water supply from an alternate source;
- Providing funds to replace the affected well with a deeper well that meets state and local requirements; or
- With the consent of the affected landowner, providing other acceptable mitigation.





**Groundwater Level Impact
Claim Process - Evaluation Examples**

**Attributable to GSP-/GSA-
Approved or Authorized Activity**

**Not Attributable to GSP-/GSA-
Approved or Authorized Activity**

Example 1 - Well and pump was operational in 2015. Pumping Water Level is currently at or below the bottom of the well

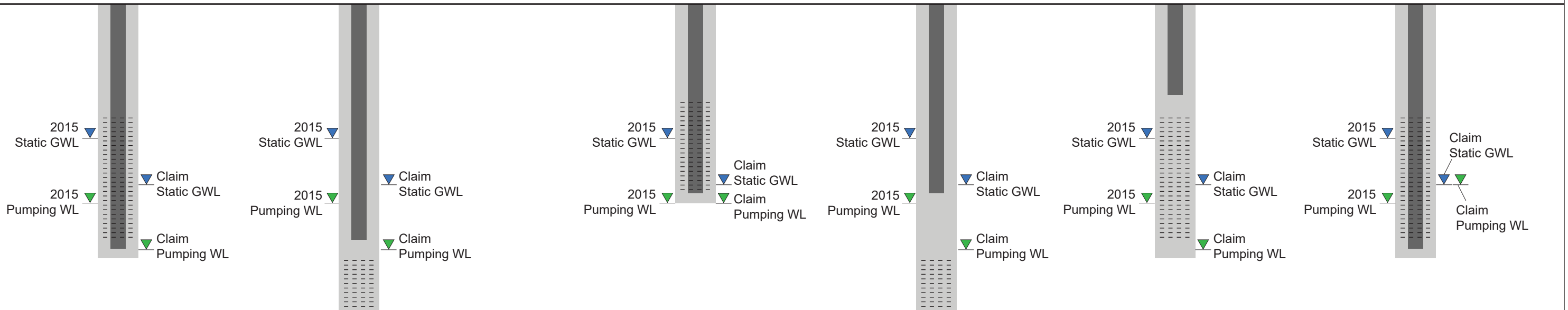
Example 2 - Well and pump was operational in 2015. Pumping Water Level is currently at or below the pump intake

Example 3 - Static Groundwater Level was above the pump intake, but the Pumping Water Level was at or below the bottom of the well before 2015

Example 4 - Static Groundwater Level was above the pump intake, but the Pumping Water Level was at or below the pump intake before 2015

Example 5 - Static Groundwater Level was at or below the pump intake before 2015

Example 6 - Pumping Water Level may be at or below the bottom of the Pump or Well but the Pump is Not Functioning



Note: Examples provided are for illustrative purposes only and do not constitute a decision. Groundwater level evaluations will be conducted on a case-by-case basis using the best available data. Additional data and analysis may be required.

Other Potential Issues Not Arributable to GSP-/GSA-Approved or Authorized Activity:
 Pump damage
 Well casing damage
 Sanding
 Staining
 Odor
 Mechanical Failure/Issues

Legend and Notes

All Depths not to Scale.
"2015" = January 1, 2015.

2015 Static Groundwater Level (GWL)
Measured or Based on Best Available Data
(e.g. Subbasin Groundwater Flow Model,
or Nearby Measured Data)

2015 Pumping Water Level (WL)
Documented or Inferred based on Best Available Data
(e.g. well efficiency test, pump installation documents)

Tule Subbasin Technical Advisory Committee
 Example Groundwater Sustainability Agency
 Groundwater Level Impact Claim Form

DRAFT
Attachment 1

| Claimant Information | |
|---|-----------------------|
| Contact Name: | Well Location Sketch: |
| Phone Number: | |
| Mailing Address: | |
| Well Name: | |
| Well Location (Address/Description): | |
| Well Type: <input type="checkbox"/> Domestic <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input type="checkbox"/> Other (Specify): | |

| Interim Water Supply | |
|--|---|
| Does the Claimant Request an Interim Water Supply? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Number of Residences/Business Served (If Applicable): | |
| Number of Cropped Acres and Crop Type (If Applicable): | |
| Estimated Daily Water Use (Gallons, Cubic Feet, or Acre-Ft): | |

| Well Construction Information | |
|---|---|
| Is a Department of Water Resources Well Completion Report (i.e. Driller's Log) Available? | <input type="checkbox"/> Yes (Attach if Available) <input type="checkbox"/> No |
| Casing/Well Depth (ft): | |
| Perforation Interval(s) (ft): | |
| Casing Material: | Casing Diameter (inches): |
| Date Constructed (If Known) and/or Well Age (Estimated): | |
| Date of Last Video Survey (If Available): | |
| Well Photos Attached: | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Tule Subbasin Technical Advisory Committee
 Example Groundwater Sustainability Agency
 Groundwater Level Impact Claim Form

**DRAFT
 Attachment 1**

| Pump Information | |
|---|---|
| Type: <input type="checkbox"/> Submersible | <input type="checkbox"/> Vertical Turbine |
| Intake Depth (ft): | Motor Size (horsepower): |
| Age (Known or Estimated): | Typical Discharge Rate (gpm): |
| Last Pump Test Date (Attach Record if Available): | |
| Last Service Date (Attach Record if Available): | |

| Issue Status | |
|---|---------------------------|
| Date Issue Arose: | |
| Issue: <input type="checkbox"/> No flow <input type="checkbox"/> Reduced Flow <input type="checkbox"/> Breaking Suction <input type="checkbox"/> Future Concern | |
| Comments/Description: | |
| Static Water Level (ft): | Pumping Water Level (ft): |
| Status: <input type="checkbox"/> Not Resolved, Contractor not Contacted (Note: Contacting a Contractor Not Required) <input type="checkbox"/> Not Resolved, Contractor Provided Estimate (attach estimate if applicable) <input type="checkbox"/> Resolved (attached records if applicable) | |
| Contractor Company Name: | |
| Contractor Contact Name: | Contact Phone Number: |
| Contractor Address: | |

| Applicant | |
|--|-------|
| By signing this Groundwater Level Impact Claim Form, the applicant agrees to provide the GSA with access to the well for the Wellhead Investigation. | |
| Print Name: | Date: |
| Signature: | |

| GSA Use Only | |
|--------------|-------|
| Received By: | Date: |

Tule Subbasin Technical Advisory Committee
 Example Groundwater Sustainability Agency
 Groundwater Level Impact Well Inspection Form

**DRAFT
 Attachment 2**

| Inspector | |
|---|--------------|
| Inspector Name: | Date: |
| Representing (e.g. Irrigation District, Consultant, etc.): | |

| Owner Information |
|---|
| Owner's Name: |
| Field Contact Name (If Different): |
| Address: |
| Phone Number: |

| Well Information |
|----------------------------------|
| Well Name: |
| Date Constructed: |
| Casing/Well Depth: |
| Casing Material: |
| Casing Diameter (inches): |
| Perforation Interval(s): |

| Pump Information: | |
|---|---------------------------------|
| Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Vertical Turbine | |
| Electrical Power (kW): | Motor Size (horsepower): |
| Intake Depth (ft): | |
| Equipped with Flow Meter: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| Flow Meter Description (Attach Photo): | |
| Discharge Rate (gpm) and Source: | |
| Discharge Line Diameter (Inches): | |

Tule Subbasin Technical Advisory Committee
 Example Groundwater Sustainability Agency
 Groundwater Level Impact Well Inspection Form

DRAFT
Attachment 2

| Site Inspection | |
|---|---|
| Sounder Access Port Description and Opening Diameter (in): | |
| Reference Point Description and Stick Up (ft): | |
| Time Since Last Pumped: | Time Since Pumping Started: |
| Measured Static Water Level (ft): | Measured Pumping Water Level (ft): |
| Observed Pumping Description (e.g., working, won't turn on, dry after 5 minutes, pumping air, cavitating, etc.): | |
| Observed Pumping Rate (gpm) and Description (e.g., flow meter, bucket test, etc.): | |
| Distribution System Description (e.g., pressure tank, storage tank, residence, etc.) | |

| Location Sketch | | |
|--------------------------|------------------|-------------------|
| | | |
| Well Coordinates: | | |
| Survey Method: | Latitude: | Longitude: |