Public Review Draft
Environmental Impact Report

Comprehensive Cleanup Strategy for Chromium in Groundwater, PG&E's Hinkley Compressor Station

Anne Holden
Lisa Dernbach
Lahontan Water Board staff
October 16, 2012

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Meeting Ground Rules

Ground Rules are designed to keep discussions on track, focus on the topic and use our time efficiently.

- Use common courtesy. Do not interrupt another speaker. Listen to each other and respect all views.
- Turn cell phones off. If you must take a call, do so outside of the meeting room.
- Give everyone the opportunity to participate. Time limits may be imposed where needed.

Purpose of Meeting

- In-depth review of Draft EIR
  - ✓ Where to find information in EIR
  - ✓ Details on impacts and mitigation measures
- Questions unrelated to Draft EIR can be discussed (as time allows) at end of meeting

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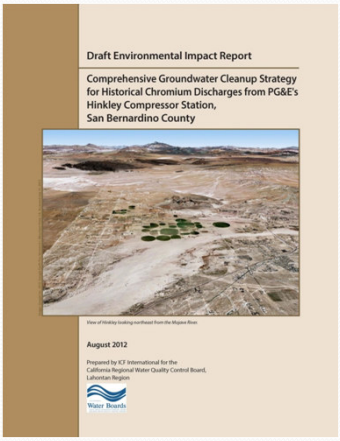
Draft EIR

- Prepared by Water Board staff and consultant for Hinkley groundwater cleanup
  - ✓ 75-day review and comment period - until **November 5**
- Needed because cleanup activities will be over a larger area, longer time period
- Water Board will issue new site-wide General Permit and Cleanup Order to PG&E



Water Boards

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What is the Project?

- Comprehensive remediation plan to clean up chromium-contaminated groundwater in Hinkley area
- Impacts from *existing chromium contamination* are not analyzed (not part of project, but baseline conditions)

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What is the Project Goal?

- Cleaning up chromium-contaminated groundwater in the Hinkley area to background levels.
- Goal is to clean up quickly as possible, balancing speed of cleanup with impacts.

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EIR Alternatives

"No Project"

- No new permit from Water Board, continues current remediation
- Doesn't address full plume
- Required by CEQA for comparison purposes

Five "Action" Alternatives

- 4B and 4C-2, 4C-3, 4C-4, 4C-5
- Developed in 2011-2012, based on public and Water Board input
- All use various combinations/intensities of the four cleanup technologies

Water Boards

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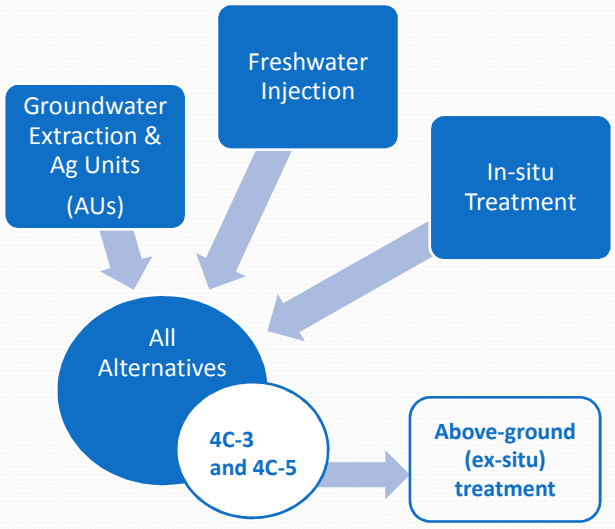
EIR Action Alternatives

- All alternatives have three technologies in common.
- 4C-3 and 4C-5 **add** above-ground treatment to mix
- Difference between alternatives is in scale and intensity of activities



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Why no "preferred alternative"?

- EIR looks at all alternatives in full detail, rather than just one
- Allows maximum flexibility to choose any alternative
- Public input on balance between cleanup time and acceptable impacts needed

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Resources Evaluated in EIR

- Water Supply
- Water Quality
- Land Use, Population, and Housing
- Hazards
- Geology and Soils
- Air Quality and Climate Change
- Noise
- Biological Resources
- Cultural Resources
- Utilities and Public Services
- Traffic
- Aesthetics
- Socioeconomics
- Cumulative and Growth-inducing Impacts

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CEQA Terms

Existing (or Baseline) Conditions:
Pre-project, physical environmental conditions in the project area at the time of EIR analysis (here, fourth quarter 2011). Used as a comparison point to determine environmental impacts of project.

Impact (from Project):
Adverse physical change to the environment due to the project. Determined by comparing anticipated physical changes from project to existing conditions. An impact is *significant* if it causes a *substantial adverse change* to the physical environment in the project area.

Significance Criteria:
Statements or standards used determine if an impact is significant (or substantial). If so, then feasible mitigation measures are triggered.

Mitigate/Mitigation Measures:
Measures or actions taken to *avoid, reduce, restore, or compensate* for significant impacts of a project. Mitigation measures not required for less than significant impacts.

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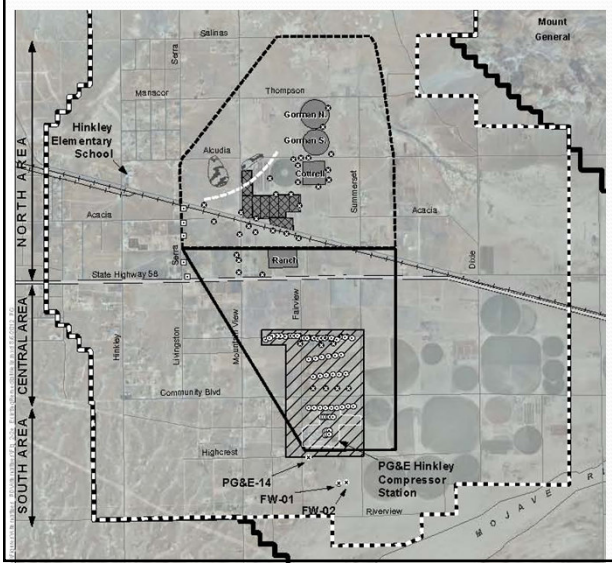
Existing Conditions 4th Q 2011 (Remediation Systems)



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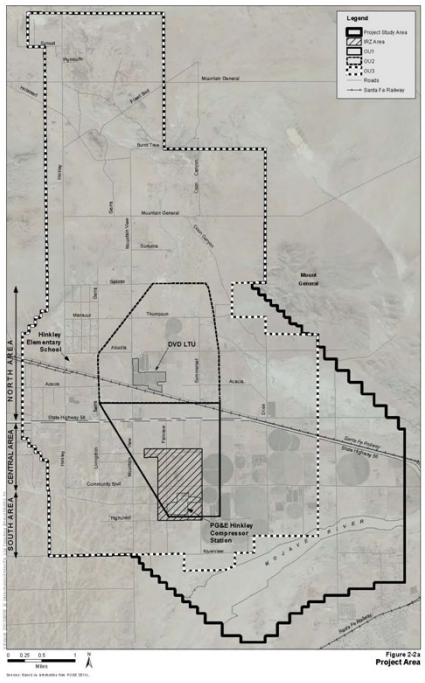

EIR Project Area

Legend

- Project Study Area
- IRZ Area
- OU1
- OU2
- OU3
- Roads
- Santa Fe Railway

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Questions?

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Impacts and Mitigation Measures

- Water Resources
  - **Water Supply**
    - *Groundwater drawdown*
    - *Aquifer compaction*
  - **Water Quality**
    - *Agricultural unit impacts*
    - *In-situ zone impacts*
- Biological Resources
  - *Desert Tortoise*

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Water Resource Impacts

Water Supply and **Water Quality** impacts considered in two ways:

1) Impacts affecting water supply well users

2) Impacts to the aquifer itself
   - ✓ Even is groundwater is not currently supplying wells, it's still affected if impacts due to remediation occur

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Water Supply Impacts

Groundwater Drawdown

- Regional and local impacts
  - *Regional* means Centro subarea of Mojave River groundwater basin (orange shaded area)
  - *Local* means supply wells in Hinkley Valley

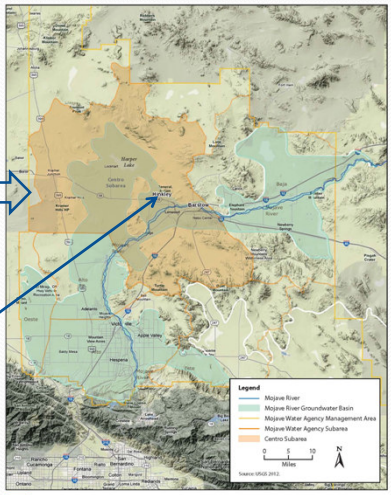

Figure 3.1-1
Mojave River Groundwater Basin

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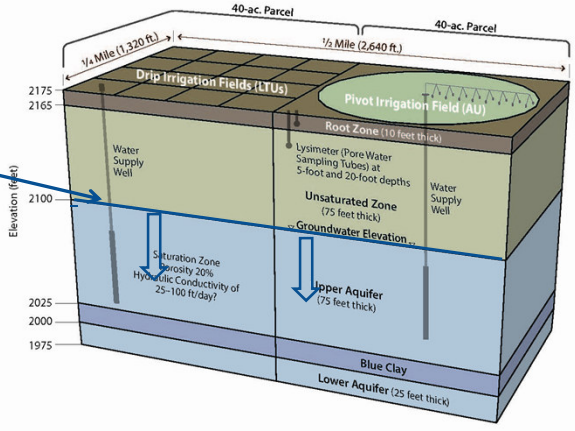
Drawdown Cartoon

Groundwater elevation in aquifer before pumping

Over time, as extraction well pumps, the groundwater elevation lowers.



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Water Supply Impacts

Regional supply

- Compare extraction amounts to water rights held by PG&E
- If extraction exceeds water rights, then **impact is significant**
  - For all action alternatives, extraction would exceed PG&E's existing rights

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Water Supply Mitigation

Regional supply

- EIR evaluated if Centro subarea surplus water rights available to implement all alternatives
- Surplus available, so PG&E required to obtain water rights to avoid regional exceedances
- Requirements described in mitigation measure WTR-MM-1

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Water Supply Impacts

Local supply

- Evaluated by comparing supply well screen depths to estimated groundwater drawdown amounts for each alternative
  - If drawdown greater than 25% of screen depth occurs, impact is significant
- Modeled estimates used
  - Model assumed continuous pumping rates over long time (not reality)
- Not likely to occur as wide-spread as shown, but need to disclose worst-case

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Local Groundwater Drawdown

Maximum for 4B

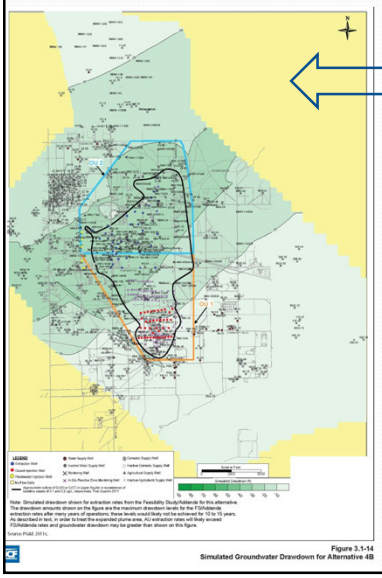

Figure 3.1-14
Simulated Groundwater Drawdown for Alternative 4B

4B estimate
96 private
wells affected

4C-4 estimate
146 private
wells affected

Maximum for 4C-4

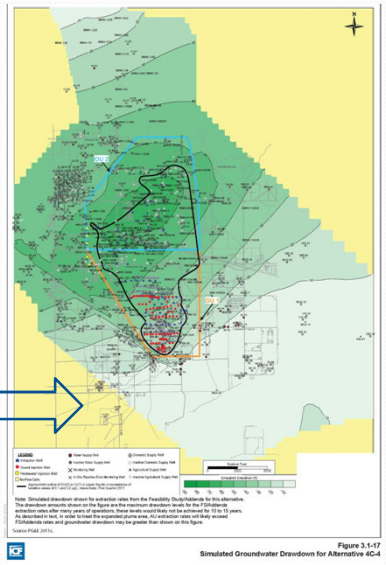

Figure 3.1-17
Simulated Groundwater Drawdown for Alternative 4C-4

Water Supply Mitigation

Local supply

- Modeling shows 10-25 years to reach these maximum drawdown estimates
- Gives time to react (e.g., modify pumping to avoid impact to wells)
- Monitoring/modeling requirements provide advance warning
- Impacts to local water supply wells potentially significant for all action alternatives, so **mitigation is required**
  - Affected well users get alternate water supplies
  - Deeper well or pump if feasible, alternate source (water system or storage tank if acceptable to user)
  - Described in WTR-MM-2 and 2c

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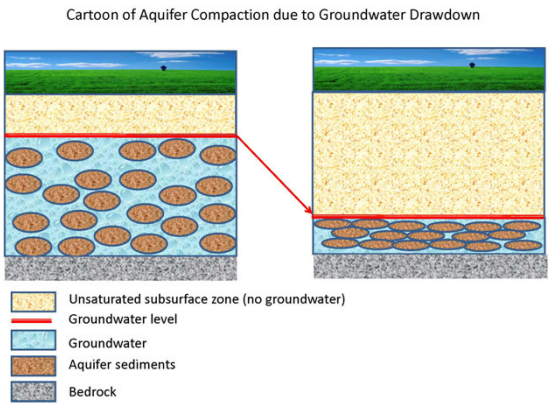
Water Supply Impacts

Aquifer compaction

- Results from drawdown, as water is removed from spaces between aquifer sediments, the spaces can collapse.



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Water Supply Impacts

Aquifer compaction

- Can be irreversible, so aquifer cannot store as much water in future.
  - No evidence that this has happened in Hinkley historically
  - Prior drawdown (1930s to 1990s) to around 90 feet in Hinkley Valley, and aquifer still productive *today.*

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Water Supply Impacts

Aquifer Compaction

- Evaluated by comparing project drawdown levels to historic drawdown
- If alternative's groundwater extraction results in drawdown greater than historic levels, then impact considered significant
- Actual risk considered **low**
  - Aquifer material makeup (lots of coarse material)
  - Prior drawdown, especially in south/central project area
  - Better data on northern projects impacts for final EIR
    - (more detail on historic drawdown in Hinkley Valley)

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Water Supply Mitigation

Aquifer compaction

- Impact potentially significant for all action alternatives in northern project area (north of Hwy 58)
  - If occurs, impact to aquifer **can't** be mitigated or restored
- Impact on supply wells can be mitigated (WTR-MM-2c)
  - Same mitigation as drawdown impact to local supply

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Questions?

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Water Quality Impacts

Agricultural Unit impacts

- Total Dissolved Solids (TDS)
- Uranium/Radionuclides
- Nitrate (benefit, decreases)

In-situ zone (IRZ) remediation impacts

- Iron (Fe)
- Arsenic (As)
- Manganese (Mn)

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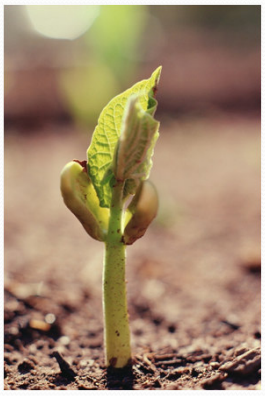
Water Quality Impacts

Agricultural Unit (AU) impacts

- Overall decrease in nitrate in aquifer (plants take up N as fertilizer
- Increased TDS in aquifer
- Possibly affect uranium (research needed)
  - Data on AU affects on uranium limited, but impact considered potentially significant



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Water Quality Impacts

Agricultural Unit (AU) impacts

- For supply wells, impacts can be mitigated by alternate water supply requirement
- Requirement to establish baseline levels of TDS, N, and U in areas of new AUs
- For the aquifer, impact significant during remediation, but requirement to restore aquifer water quality after remediation is complete

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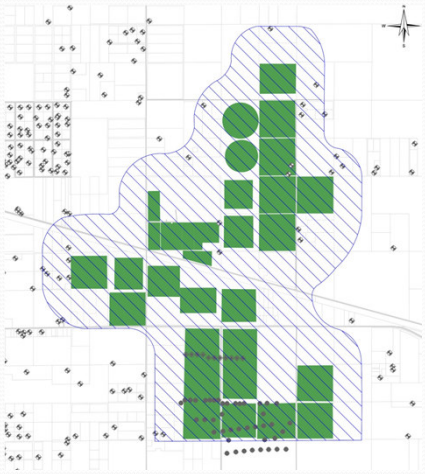
AU Potential Impacts Maps

4B (least AUs)



4-C4 (most AUs)

Area of potential impact

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Agricultural Units Mitigation

Supply well mitigation

- Monitor AUs & manage to avoid increases (MM-5)
- Alternate Water Supply (examples)
  - Deeper Well
  - Storage Tank and Hauled Water
  - Wellhead Treatment
  - Well Modification (lower the pump)
  - Community water supply
- Restore baseline water quality for aquifer to be implemented before project end (WTR-MM-4)

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In-Situ Remediation Zone Impacts

Water quality impacts

- Increase in arsenic, iron, manganese
- Metals naturally in soil material
  - Pre-IRZ concentrations known
- Metals dissolve into groundwater from reducing conditions cause by ethanol injections
- Impact limited to IRZ areas

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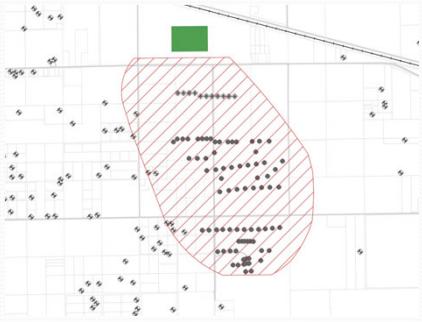
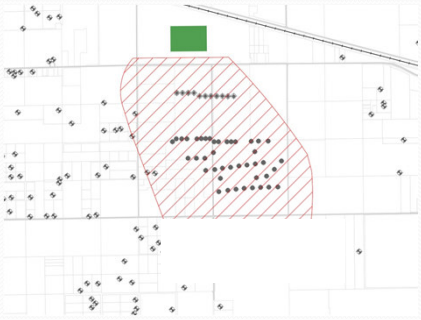
IRZ Potential Impact Maps



4B, 4C-2, 3, & 4



4C-5
Above-ground treatment at source area instead of in-situ.

Area of potential impact

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IRZ Mitigation

Supply well mitigation

- Mitigation measure WTR-MM-7
  - Monitor byproducts
  - If significance criteria exceeded, more extraction wells to intercept byproducts
- Mitigation Measure WTR-MM-2
  - Alternate water for supply well threatened by byproducts (same as for AUs)
- Aquifer water quality must be restored following remediation (WTR-MM-4)

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IRZ Mitigation

Aquifer mitigation

- Near injection points, impacts will occur in aquifer during remediation
- Aquifer water quality must be restored following remediation (WTR-MM-4)
- Alternative 4C-5 reduces IRZ impact
- Ex-situ treatment in source area at Compressor station
  - Chromium removed off-site for disposal
  - In-situ treatment in central area only
    - So, less by-products than other alternatives
- Alternative 4C-3 reduces impact somewhat
  - Ex-situ treatment at source area and Desert View Dairy (but winter only)

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PG&E's Ex-situ Groundwater Treatment Facility Topock, CA

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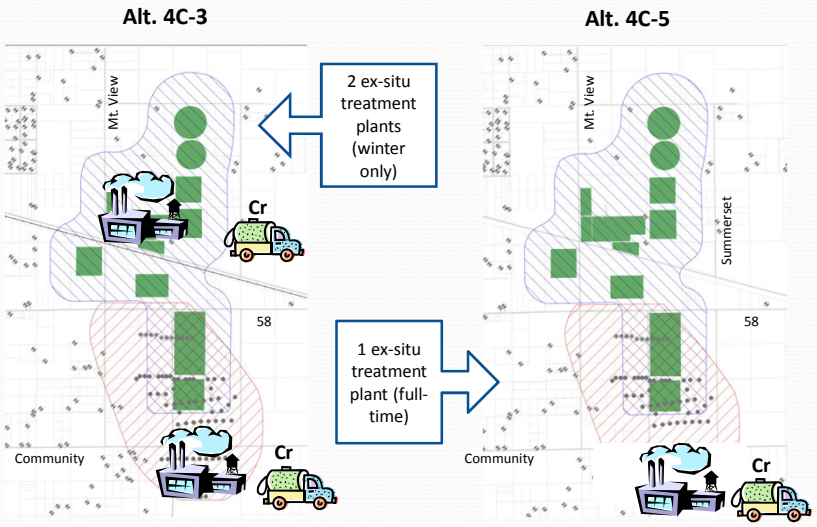
Differences Between Alternatives 4C-3 and 5



Questions?

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Biological Resources Impacts

Biological Resources

- Loss of habitat – due to more AUs, treatment facilities
- Restricted tortoise movement - AUs may limit desert tortoise movement through valley
- Loss of wildlife - could be disturbed or killed during construction or operation

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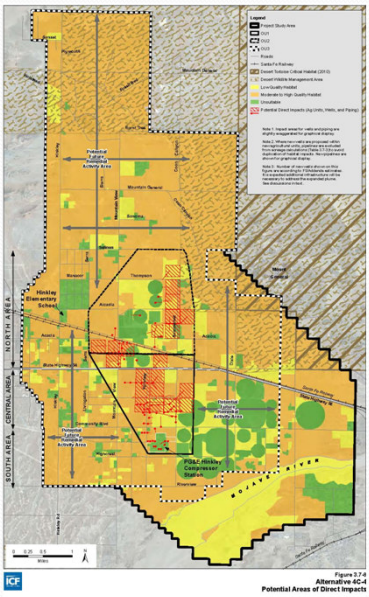
Desert Tortoise Habitat Impacts



- 4C-4 has most impacts (most AUs)
- No new AUs planned for high quality habitat in north
- Use former fields for AUs to lessen impact

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Mitigation Measures

Biological Resources:

- Clearance surveys, training, relocation protocols to limit impacts to wildlife
- Set aside habitat off-site to compensate for loss (typical: 3 to 5 acres for each acre lost)
- **Tortoise movement** may be restricted by AUs, difficult to mitigate this
- May be significant and unavoidable impact depending on number and layout of AUs

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Questions?

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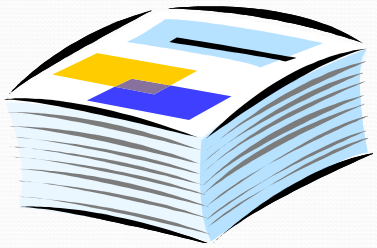
Commenting on the DEIR

- Are the potential impacts due to project fully described?
- Additional clarification or description needed? (be specific)
- Are there feasible mitigation measures we didn't include?
- What impacts are you willing to accept or not? (even with mitigation)
  - Groundwater drawdown
  - Cr3 in aquifer
  - Byproducts
  - Wildlife habitat
  - Others?



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Send comments by **November 5** to:

Anne Holden

Lahontan Water Board

2501 Lake Tahoe Boulevard

South Lake Tahoe, CA 96150

- Email: aholden@waterboards.ca.gov
- Fax: 530-544-2271

More project information:
http://www.waterboards.ca.gov/lahontan/

*Contact info is on **EIR Fact Sheet,** available at this meeting*

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