

The Future of Groundwater Trading in California

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What I'll focus
on today...

How to ensure that groundwater trading programs are effective and equitable

- Emphasis on groundwater trading programs allowed as part of Sustainable Groundwater Management Act (SGMA) implementation

Key takeaways

Three things I want to emphasize today:

1. Groundwater trading programs need to have **clear objectives** (and be proactively designed to meet them).
2. A groundwater trading program is not a low-information, low-maintenance management option. It needs a **good information base** to be effective.
3. The state has the responsibility—and tools—to provide **effective oversight** to ensure that groundwater trading programs are effective and equitable.



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Trading Sustainably:

CRITICAL CONSIDERATIONS FOR
LOCAL GROUNDWATER MARKETS UNDER
THE SUSTAINABLE GROUNDWATER
MANAGEMENT ACT

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My remarks draw in part on our 2017 report:

- [Trading Sustainably: Critical Considerations for Local Groundwater Markets Under the Sustainable Groundwater Management Act](#)

In that report, we concluded that

- **Carefully designed and implemented groundwater trading programs could potentially contribute to sustainable management in some basins, but success is not a given.**
- Whether a trading program might be a viable tool depends on factors that may vary significantly from basin to basin, as well as within a single basin.
- Developing and implementing a trading program that furthers sustainability will require significant effort.
- Groundwater Sustainability Agencies (GSAs) that allow groundwater trading will need to develop unambiguous rules to prevent unacceptable trading impacts and back them up with effective oversight and enforcement to ensure that the rules are followed.

...and outlined key questions to ask when evaluating a potential groundwater trading program, grouped in the following categories:

Foundational considerations



Measuring extractions



Setting overall pumping limits



Establishing extraction allocations

Trading program considerations



Program goals



Groundwater rights questions



Potential impacts of trades



Trading rules



Trading system + transfer approval process

General considerations



Monitoring



Oversight + enforcement



Evaluation



Modification



Transparency + engagement



Resources



Context for groundwater trading under SGMA

SGMA allows a Groundwater Sustainability Agency (GSA) to

1. Limit pumping by establishing groundwater extraction allocations and
2. Authorize transfers of groundwater extraction allocations within the GSA's boundaries under certain circumstances.

(Cal. Water Code § 10726.4(a)(2)–(4))

SGMA is not the only source of law that imposes constraints on groundwater trading.

- Groundwater rights law
- Area-of-origin statutes
- Local ordinances
- Public trust doctrine (see *ELF v. SWRCB* (Cal. Ct. App. 2018))
- Human-right-to-water statute (Cal. Water Code § 106.3)
- Water quality requirements (e.g., under the CWA, SDWA)
- Wildlife and ecosystem protections (e.g., under the ESA)
- Environmental review requirements (under CEQA, NEPA)

Takeaway #1:



Need for clear objectives

Groundwater trading programs need clear objectives (and to be proactively designed to meet them).

- Primary objective: furthering sustainability
- SGMA defines sustainability as avoiding “undesirable results” —6 categories of significant and unreasonable impacts.
- Trading should not cause or contribute to these undesirable results.



Lowering
GW Levels



Reduction
of Storage



Seawater
Intrusion



Degraded
Quality



Land
Subsidence



Surface Water
Depletion



Key questions related to objectives:

- What is the trading program intended to accomplish (and avoid)?
- How will it complement or reinforce other sustainability programs?
- How will trading program success (and failure) be measured?

Takeaway #2:



Need for good
information

A groundwater trading program is NOT a low-information, low-maintenance management option.

- Groundwater is not fungible.
- Trading changes where, when, and how groundwater is pumped and used.
- This changes the impacts experienced by people and ecosystems.



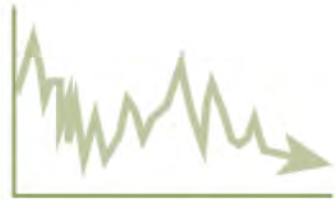


Trading impacts can have many dimensions...

Spatial
dimensions



Temporal
dimensions



Method and
purpose of use
dimensions



Social
dimensions

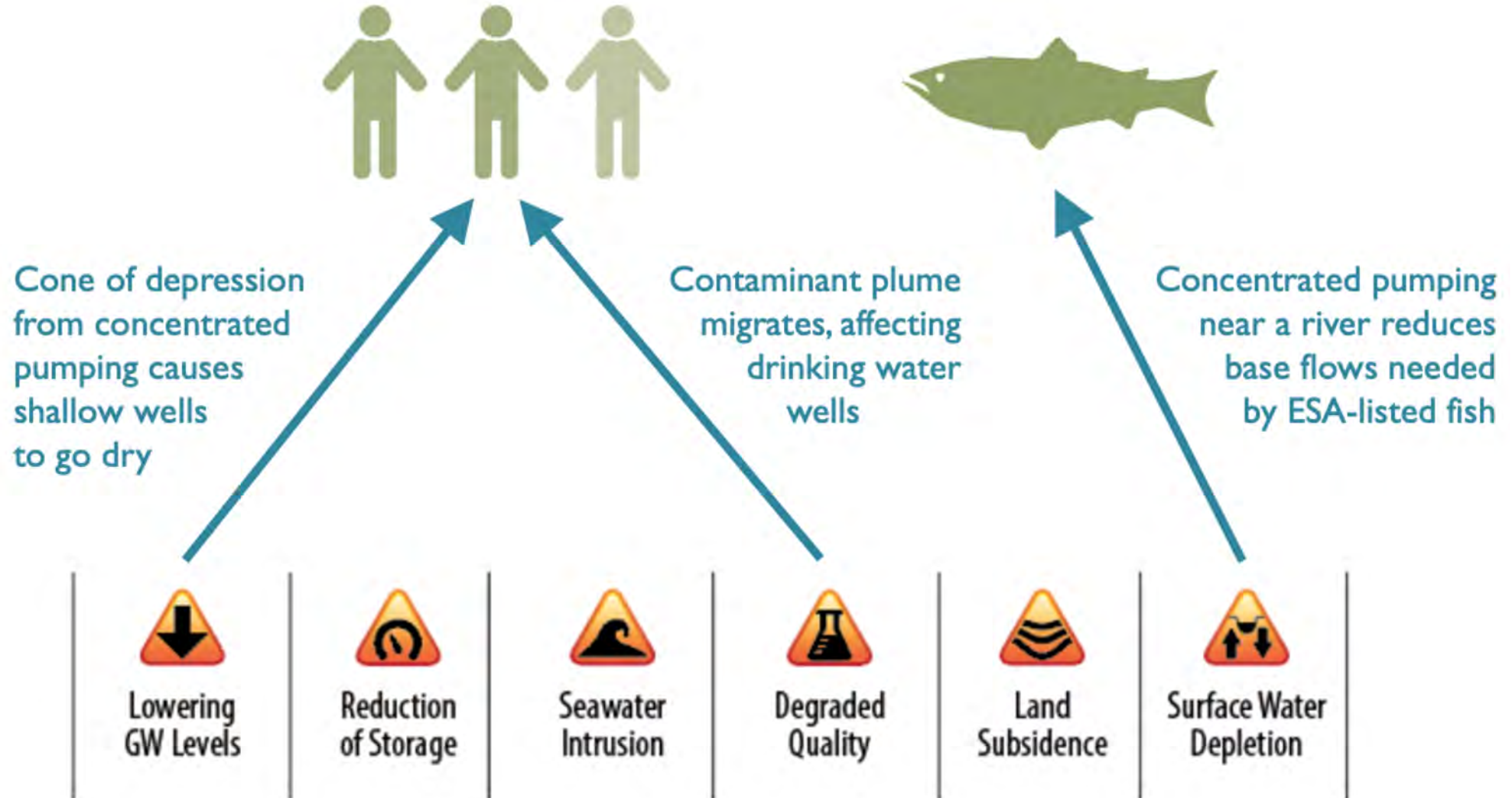


Environmental
dimensions





Examples of trading impacts relevant to small farmers, community drinking water, and ecosystems:





- **Who / what will benefit or be harmed under different scenarios?**
- **Thoughtfully designed trading rules** will be needed to avoid significant and unreasonable impacts.





Examples of trading rules that could help minimize impacts to small farmers, community drinking water, and ecosystems:

Impacts	Trading rules
<p>Cone of depression causes shallow drinking water or agricultural wells to go dry</p>	<ul style="list-style-type: none">• Spatial concentration limits• Pumping schedules
<p>Contaminant plume migration makes water from drinking water wells unsafe to drink</p>	<ul style="list-style-type: none">• Pumping restrictions to prevent migration• Requirements to provide substitute water
<p>Excessive pumping near a river drops its level too low, imperiling fish</p>	<ul style="list-style-type: none">• Directional restrictions (“sell-only” zone)• Closure dates
<p>Landowners selling extraction allocations out from under tenant farmers</p>	<ul style="list-style-type: none">• Notice requirements• Consent requirements
<p>Various</p>	<ul style="list-style-type: none">• Mitigation / compensation requirements



- **Information must be developed up front or through an incremental, adaptive process that starts very small.**
- Ongoing input and feedback from potentially affected stakeholders, monitoring, and frequent adjustment and improvement will be critical.



Takeaway #3:



Need for
effective state
oversight

The state has the responsibility—and tools—to ensure that groundwater trading programs are effective and equitable.

- Authority and responsibility under SGMA, e.g.:
 - Conducting robust review of groundwater sustainability plans (GSPs)
 - Intervening in a timely and effective way when GSPs, or their implementation, are inadequate



However, GSAs, basin stakeholders, and state agencies themselves might benefit from clearer guidance

- In the form of
 - Statutory changes
 - Regulatory changes
 - Policy guidance
- E.g.,
 - More detailed requirements for groundwater trading programs
 - Require GSPs to include more detail on key management actions and projects
 - Produce a Best Management Practices (BMP) document for groundwater trading



Key takeaways (revisited)

In summary, the keys to successful groundwater trading programs include:

1. Clear objectives that center sustainability and guide program design
2. A good information base for understanding and addressing the impacts of trading
3. Effective state oversight

The stakes are high for California water management—especially for vulnerable stakeholders.

Thank you!

