Information Management System for Water Right Mitigation Compliance – City of North Bend

Alyssa M. Neir, *Presenter*
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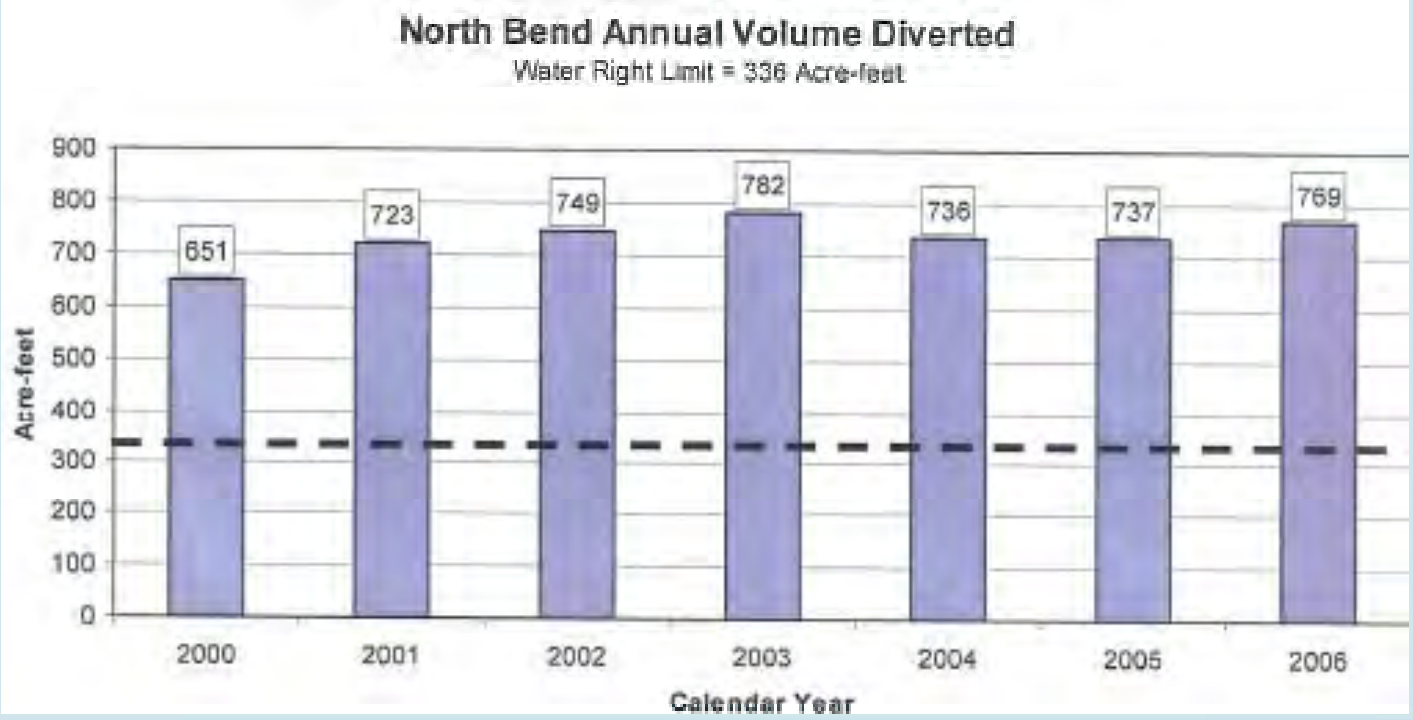
Project Background

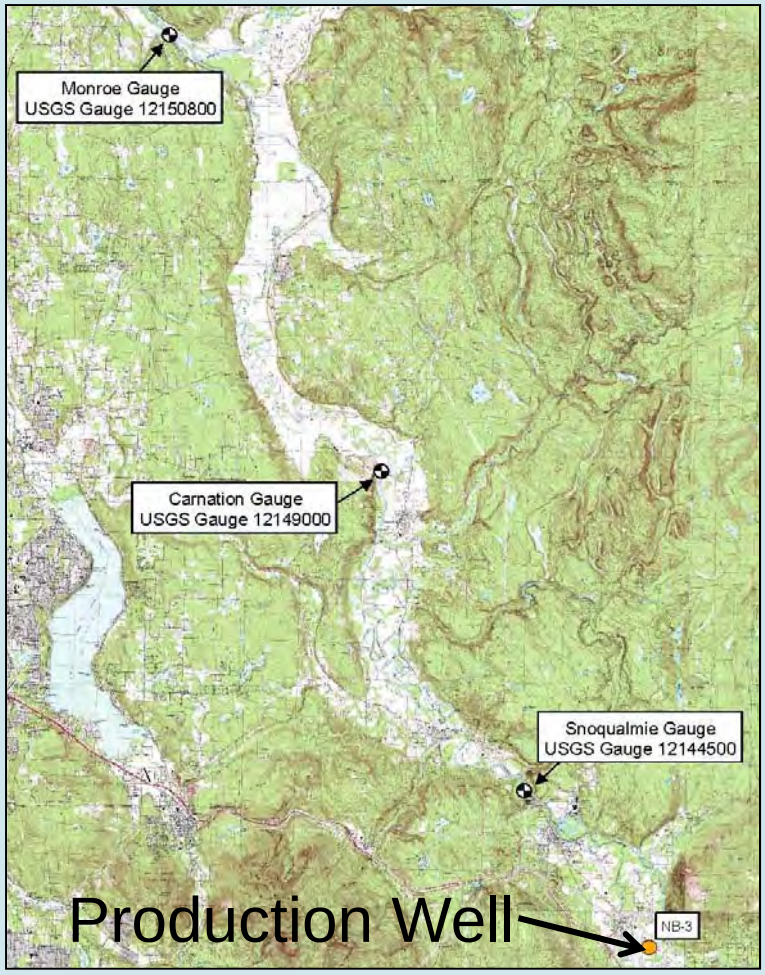
North Bend applied for a new water right in 1992 to meet existing and projected future demand.

- Diverted 2.3 times the annual quantity allowed under its water right (336 acre-feet) in 2006.
- 50 year projected demand was 9 times the water right.



Project Background

Instream Flow Control Points



Issue:

- The proposed new groundwater source for North Bend was an aquifer that is hydraulically connected to the Snoqualmie River.
- The river is subject to minimum instream flow requirements in the basin.

There were concerned stakeholders in the basin.

- Washington State Department of Ecology (Ecology)
- Multiple tribes (Snoqualmie, Tulalips)
- Environmental groups (CELP)

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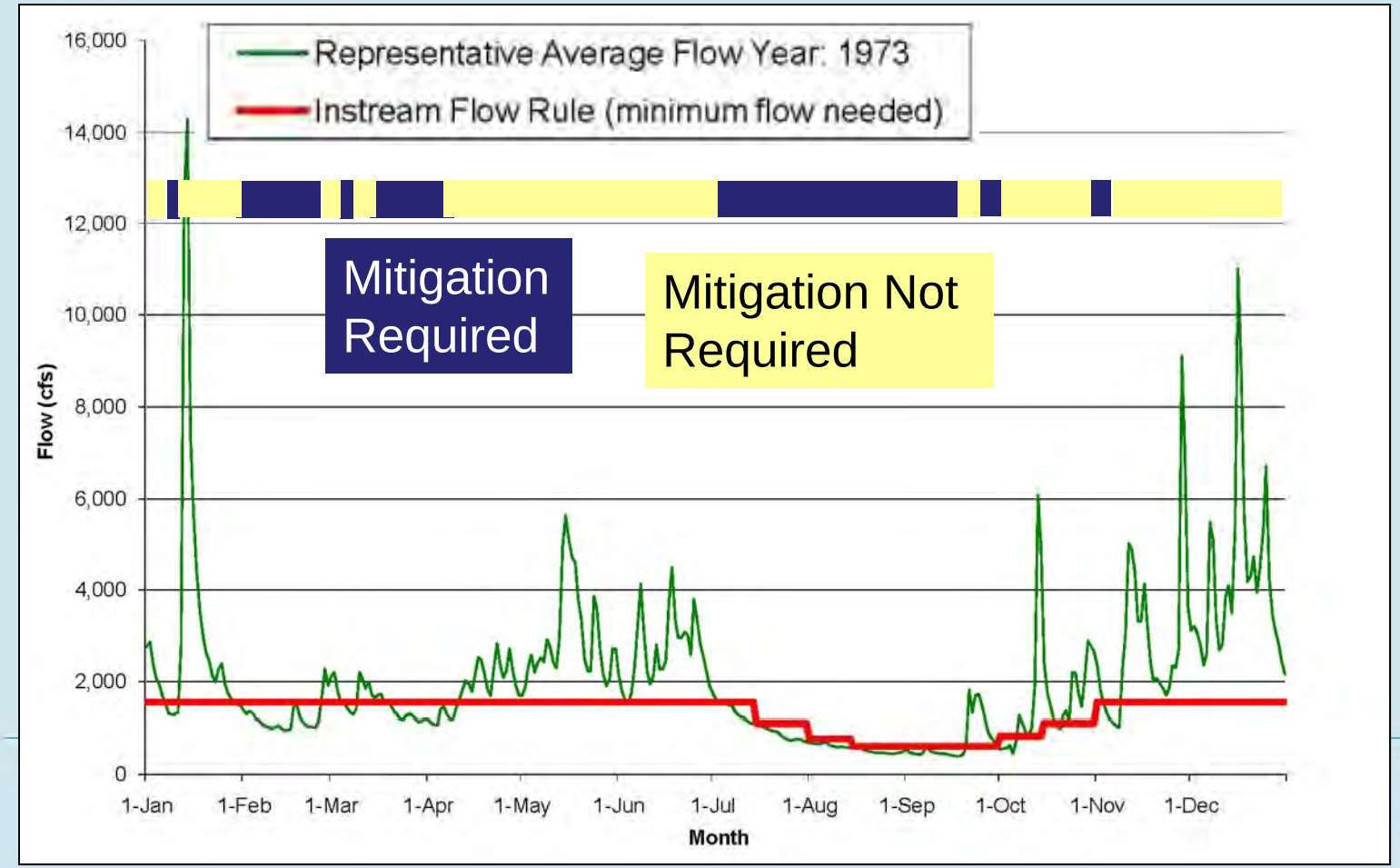
Project Background

Solution: Mitigate (add water to the river from another source) for the impacts to the river from pumping the well on **days** when the minimum instream flow requirements are not met.



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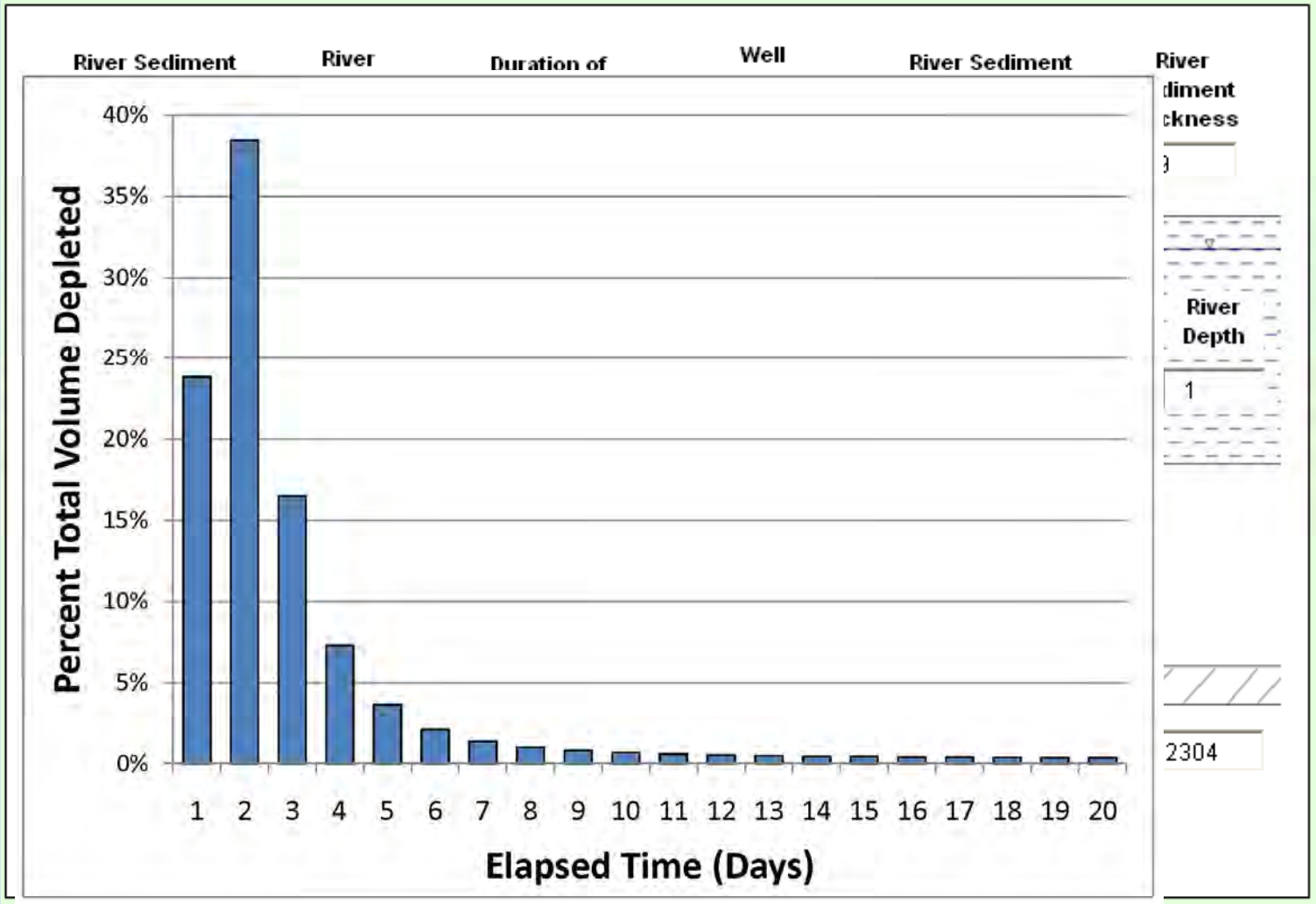
Mitigation Requirement



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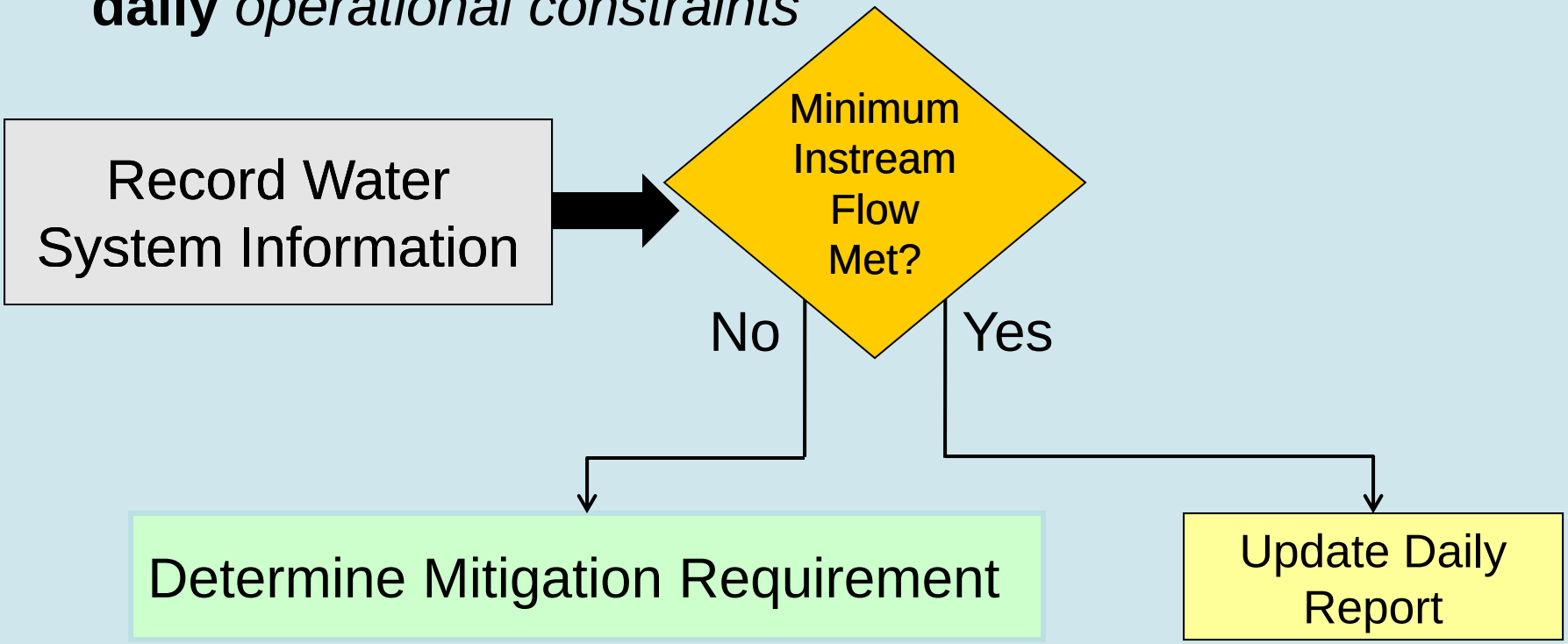
Daily Mitigation Operations Model

North Bend obtained its new water right in 2008, subject to **daily** *operational constraints*



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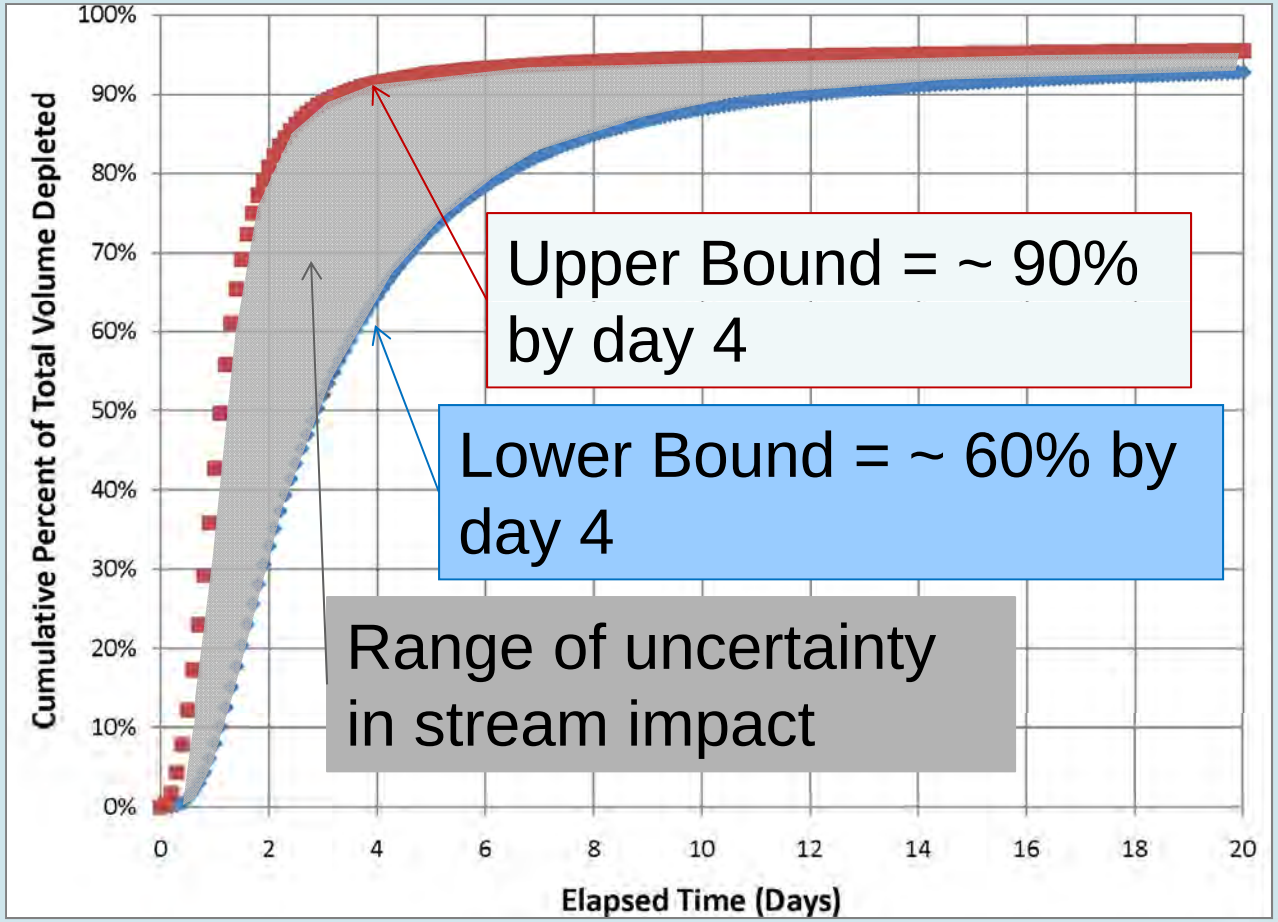
Determine Mitigation Requirement

Maximum impact to the stream from pumping record

Well NB-3 (Production Source)



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Daily Mitigation Operations Model

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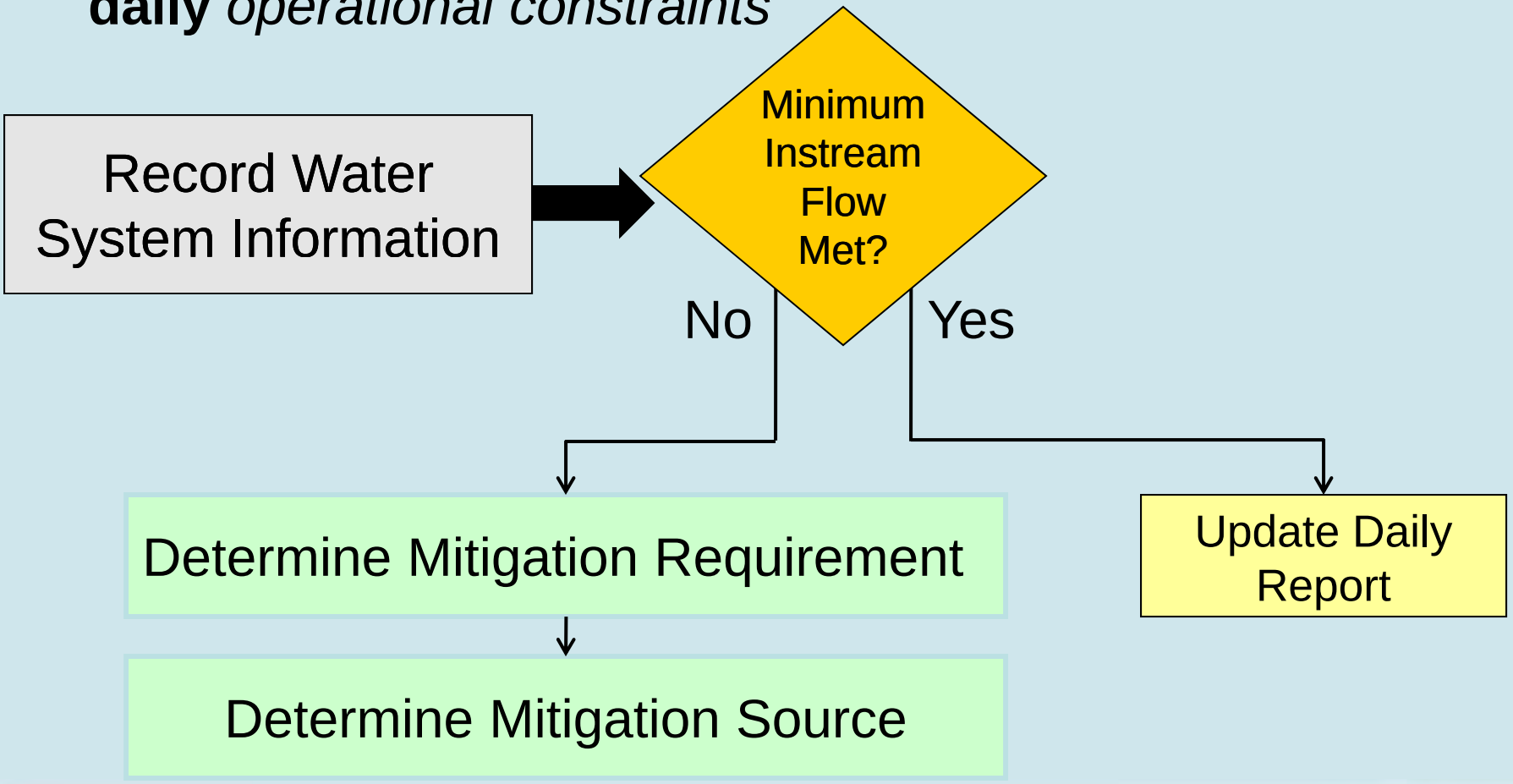

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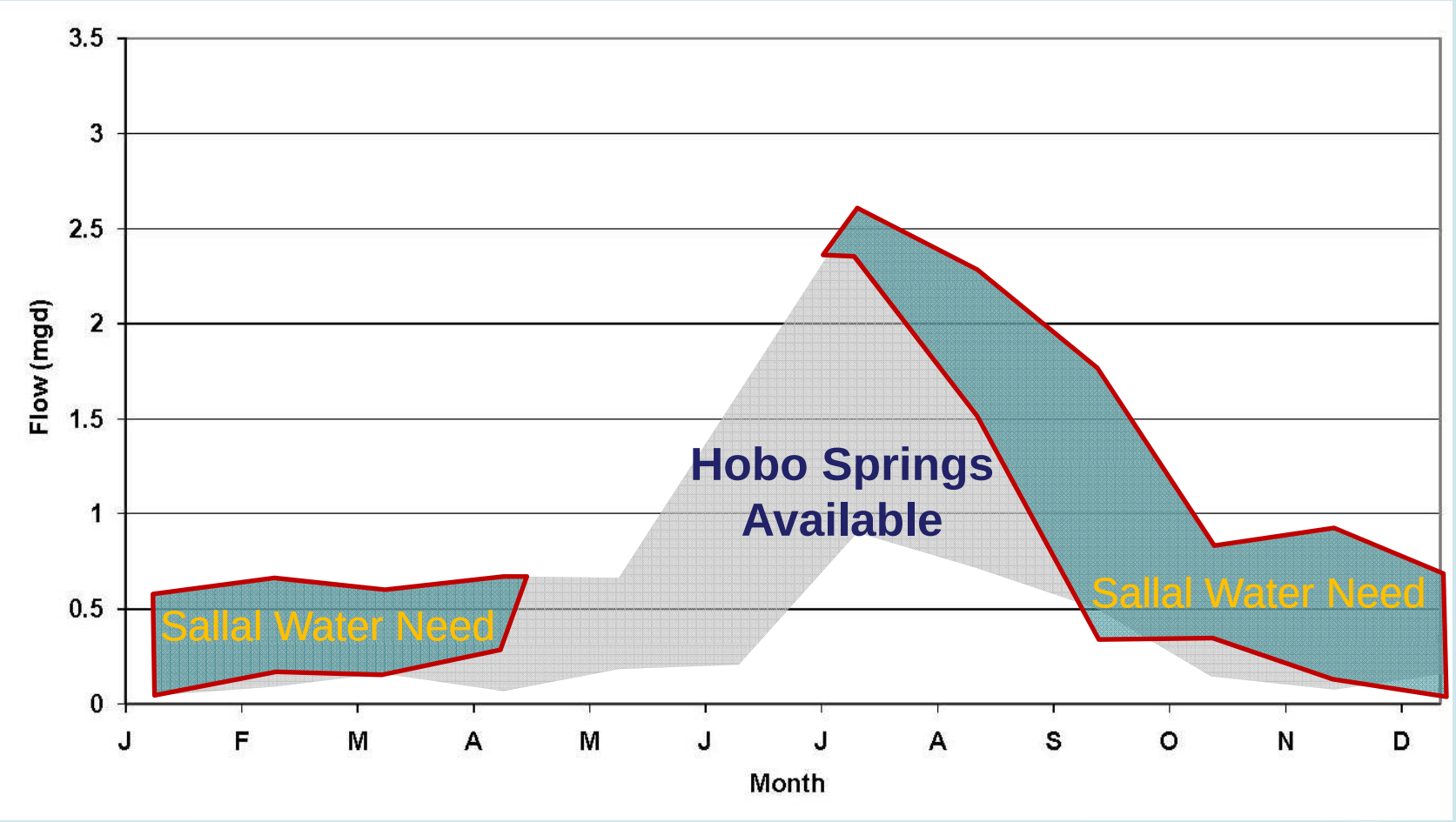
Determine Mitigation Source

Hobo Springs



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Daily Mitigation Operations Model

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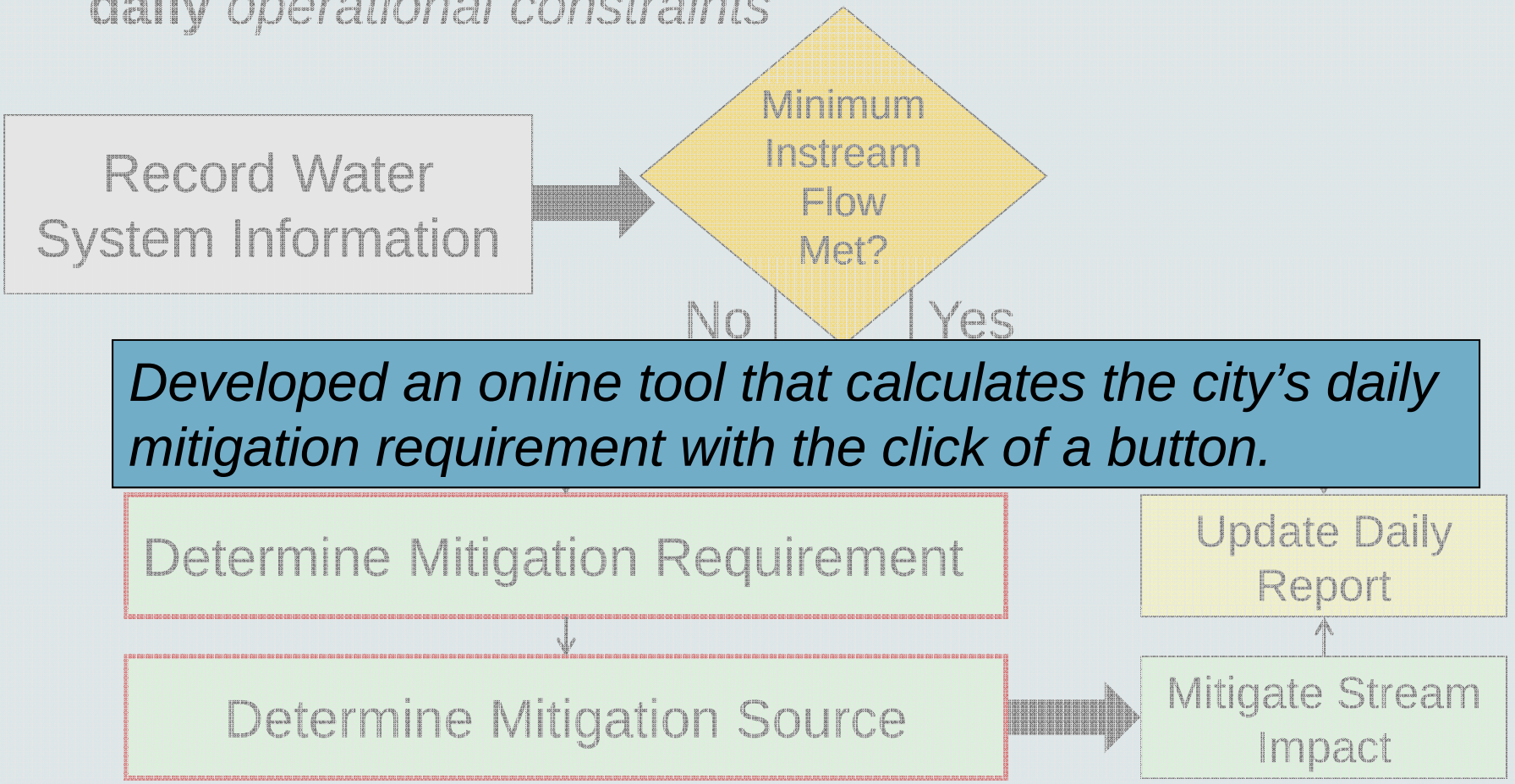
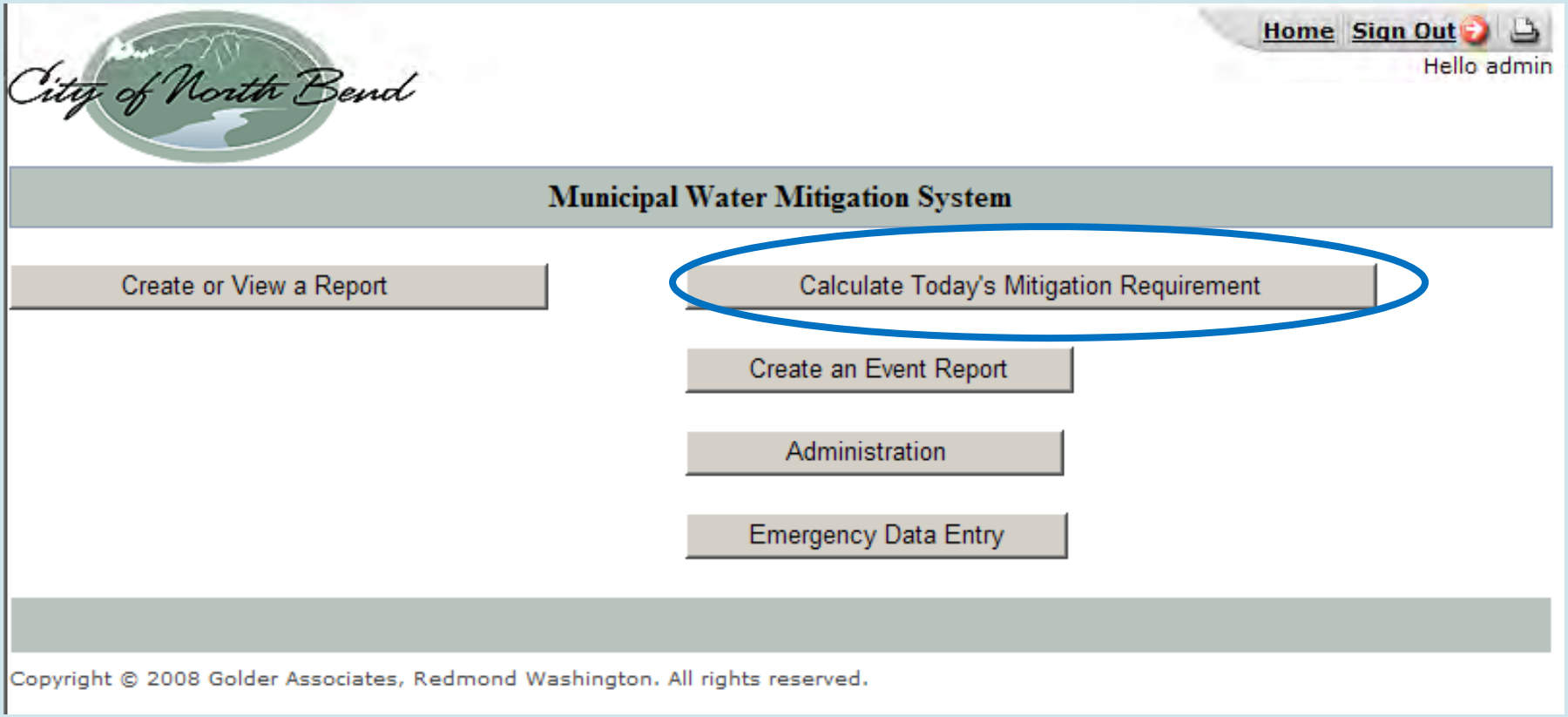


Developed an online tool that calculates the city's daily mitigation requirement with the click of a button.

Municipal Water Mitigation System (MWMS)



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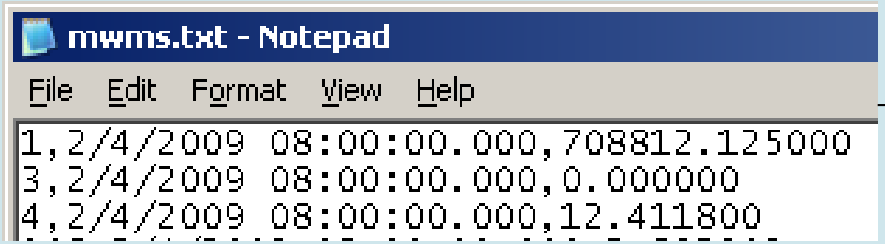
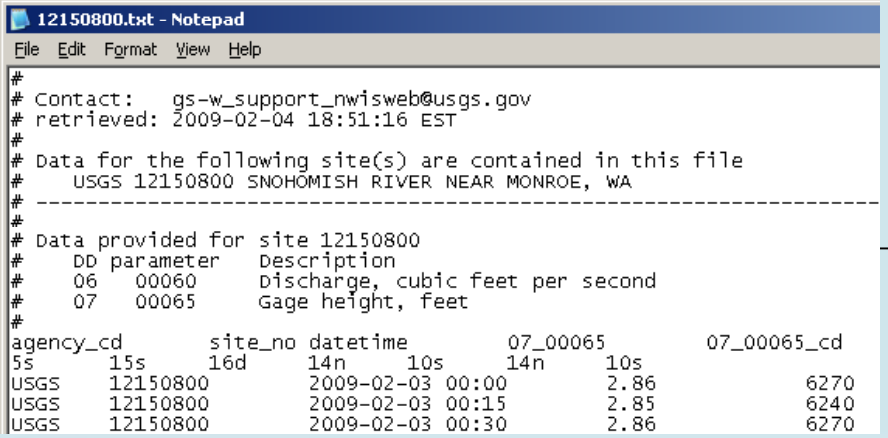
Operator clicks…

"Calculate today's mitigation requirement"

SCADA System
20 inputs



USGS Website
3 gages; 24 hrs of 15-min flows



MWMS
Over 50 output variables

1. Is mitigation needed?

- Use of water from the new water right
- Are minimum instream flows met at each of the 3 gauges?

2. If mitigation is needed…

- Is there adequate Hobo Springs flow?
- If needed, is there adequate Sallal water?

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Operator reviews results, edits if necessary and recalculates, accepts today's report, and prints the report.

Source: http://global.wonderware.com/EN/Success%20Stories/2008_07_Cairns_Water.pdf

Operator goes to the SCADA system and sets the Hobo Springs Valve and the Sallal Wells Intertie to the rates identified in the daily report.

DAILY MITIGATION REPORT

Please review the results of today's mitigation requirement. If there are no data errors, select "Accept Today's Report" below to save and print today's daily mitigation report. If there is a data error, select "Edit Today's Data" below to review and modify the daily data used in the calculations.

Date-Time of the Calculation: 4/1/2009 11:47 AM

Mitigation Requirement (Not accounting for previous shortfalls)	0.4310	mgd	
Mitigation Requirement (Accounting for previous shortfalls)	0.4310	mgd	*If this number is greater than the Mitigation Requirement (Not accounting for previous shortfalls) number, then refer to user manual.*
Mitigation Requirement Rate	356.0	gpm	
Hobo Springs Mitigation Requirement	**0.0**	**gpm**	**SET THE HOBO SPRINGS VALVE AT THIS RATE.**
Sallal Mitigation Requirement	**356.0**	**gpm**	**SET THE SALLAL WELLS INTERTIE AT THIS RATE.**
Unavailable Mitigation Water Needed	0.0000	mgd	

OK | Accept Today's Report | Edit Today's Data

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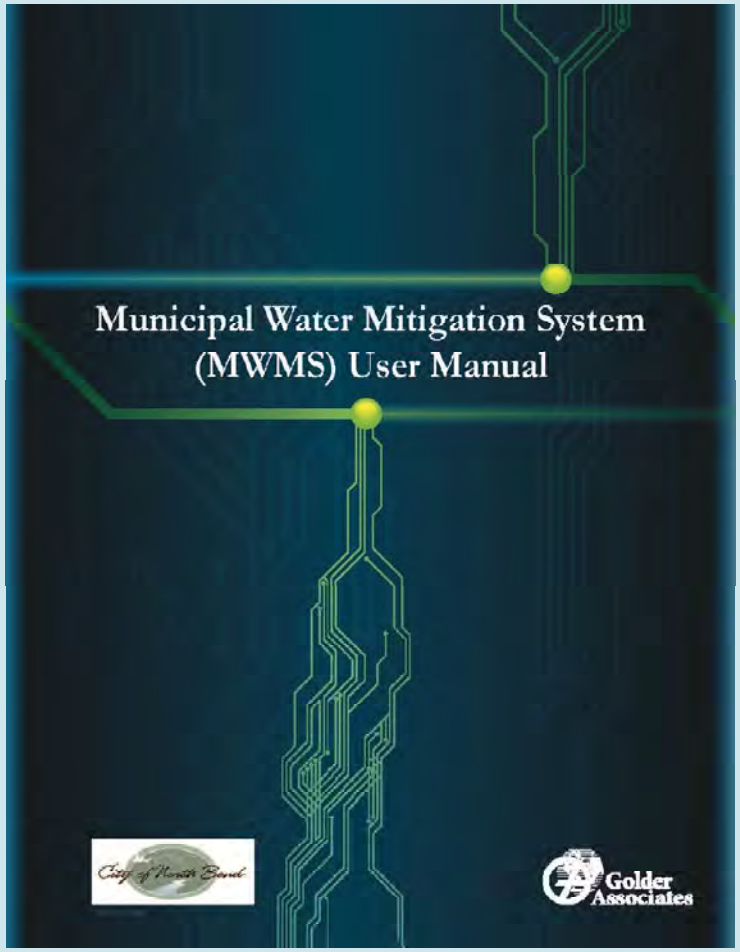
Deployment



- MWMS database is on North Bend's server, behind the city's firewalls
- Subject to City's internal back-up procedures
- Accessible from any computer with an Internet connection
- User training manual
- Training session
- Golder staff provide support as needed

Applicability and Benefits

TECHNOLOGY TRANSFER

- Decision tool
  - Dynamic/real-time
  - Management decisions on daily, monthly, yearly time-frame
  - Review and edit data (audit trail)
- Data management and storage tool
  - Automate routine report generation
  - Automate retrieval of data from outside sources
  - Stakeholder access to data
- Benefits
  - Quickly integrates multiple data streams
  - Streamlined compliance with regulatory requirements
  - Cost-effective in the long-term

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