DEPARTMENT OF HEALTH

Large Volume Water Users and Public Water Supply

CONSIDERATIONS FOR EVALUATING NEW LARGE VOLUME USERS IN A COMMUNITY

Introduction

When a large volume water user is considering moving to a community, in addition to the typical city planning (economic development, transportation, land use/zoning), water use/supply should be considered in the early planning stages. There are actions a community, as a water supplier, can take to be proactive relative to potential effects of new large volume water users. Many of the actions and considerations below are especially relevant to groundwater users, but some are relevant to both groundwater and surface water users.

Water sources do not follow political boundaries and typically multiple water users are sharing the same resource. Determining the overall capacity of a water source can be challenging due to the variability of climatic conditions and the complexity of groundwater-surface water interactions. However, there are actions that can be taken to help identify potential changes due to increased water use.

If your community or other level of government has land use authority, but is not a public water supplier, you can still utilize many actions and ideas in this factsheet. The final section, "Considerations for a large volume water user regardless of source", might be particularly useful for things to consider if a large volume water user is considering your community or jurisdiction.

Potential Issues

A new large volume water user could raise issues that local communities will need to face. The following are some of these potential issues relative to a community's role as a public water supplier that delivers drinking water to its residents.

- Large volume water supply needs, if connected to a public water system, could require additions or upgrades to water supply infrastructure.
  - Regulatory requirements and reviews take a significant amount of time and might not align with proposer timelines.
- A new large volume groundwater appropriator in or near the operations of an existing public water system could change local groundwater flow conditions.
  - Such changes could potentially impact existing source water protection efforts. For example, the size or shape of a drinking water supply management area could be influenced.
  - Such changes could impact nearby contamination plumes, potentially changing their shape, direction, or extent.

- A large volume water user could have wastewater disposal needs that require infrastructure enhancements.
- Public trust can be strained because of real or perceived secrecy.
- Independent of water supply issues, a new commercial, light industrial, or agricultural land use associated with the large volume water user could introduce new or additional potential sources of contamination to the public water system's source water. For example:
  - Storage of fuel products, as often required for backup power generators.
  - Hazardous waste generation and disposal.
  - Stormwater management practices.
  - Fertilizer or pesticide applications.
- Large volume water users may have regional impacts and collaboration with other jurisdictions may be required.
- Technological innovation continues to accelerate and proceeds at a pace that is faster than regulation can keep up.

The rest of this document provides some guidance for public water suppliers and other local land use authorities to consider in preparing for potential new water supply needs within or near their jurisdictional boundaries.

What you can do now

Integrate water supply staff into the planning process for development

Ensure your community's water supply staff are integrated into the planning process for new or revised economic development activities. Water supply and associated capacity considerations figure prominently into site selection criteria for developers. Intra-community communication and integration help keep developer water needs and community water supply capacity conversations on the right track.

Foster relationships between departments

Because projects with large volume water use could come up and proceed quickly, it is important to foster relationships between departments (public works, engineering, planning and zoning, administration, etc.) on an ongoing basis, and start these conversations even before a large volume water user approaches the community. Some conversations related to infrastructure needs might also need to be had with other partners such as neighboring communities, state agencies, and other local and regional government units, so that should be taken into consideration when beginning the planning process with a new large volume water user. Infrastructure needs could include items related to potable and non-potable water supply, wastewater treatment, power needs, and transportation needs.

Encourage Transparency

Encourage transparency around the evaluation of resource needs, such as water and power, and possible impacts on regional capacity and resources. The environmental review process is one way to ensure transparency. Avoiding or limiting the scope of non-disclosure agreements is another.

Determine the capacity of your community's water supply system

If you don't know the capacity of your community's water supply system, determine the capacity, as well as the current maintenance needs and schedule. This will help to determine any additional costs that might need to be considered if a new large volume water user prompts changes in system operations or infrastructure needs.

Set up a process to evaluate impacts of a new large water user

Consider setting up a process to evaluate the potential impacts (positive and negative) of having a large volume water user connected to the community's water supply system versus on their own well within your jurisdiction.

Identify vulnerable source water areas

Identify areas within your community where your water source could be especially vulnerable to surface activities. Share the importance of limiting potential contamination in these areas with relevant staff such as city planners, development coordinators, etc. Especially high-risk land uses ideally could be sited elsewhere.

SWP-provided assistance

The Wellhead Protection (WHP)/Source Water Protection (SWP) Planning process can help to identify vulnerable areas within your community. Many of the above actions might be included in WHP and other SWP plans, which creates opportunities for grant funding. Minnesota Department of Health (MDH) SWP staff are also available to assist with identifying vulnerable areas within your community, as well as with many of the other actions listed above.

What you can do when a large volume water user is considering your community

Determine water quality and quantity needs of the user

Determine the water needs of the business, both potable and non-potable, and if the water needs change on a predictable basis (seasonal, time of day, etc.). Once needs are approximated, determine if there are ways to reduce the water needs. Some examples include water reuse, multiple pass or closed-loop cooling, other heat sink options, advanced thermal

management, process efficiencies, etc. The Minnesota Technical Assistance Program (http://www.mntap.umn.edu/), often referred to as MnTAP, might be able to offer assistance or ideas of how to reduce water and energy needs.

Identify potential alternative water sources

Determine alternative water sources. Connecting to the public water system and groundwater wells are typically the water sources considered, but are there other options? Could stormwater or treated wastewater meet water needs? Are there existing pump and treat systems that could meet remediation needs and supply water needs? These alternative water sources could be used to reduce the overall water needs.

- If alternative options are not obviously suitable, determine the impacts of adding the large volume water user to the public water system, having the water user on their own well, or a combination.

Considerations for adding a large volume water user to a public water system

- Consider impacts to the public water system, both in terms of additional infrastructure and operations and maintenance. Would the existing infrastructure meet the needs of the user? Would the additional water use accelerate plans for expansion? How would operations and maintenance needs change, both in terms of staff time and material costs?
  - Regulatory requirements for review of new system infrastructure will add time to the buildout.
    - Consider the financial and technical resources needed for new infrastructure.
  - Other regulatory requirements might not slow the buildout of new infrastructure but could add cost. New wells, for example, could require amendments to WHP plans.
  - Keep in mind any engineering considerations of meeting average vs. peak demand (examples: water pressure, running treatment at a significantly reduced capacity).
- How could additional pumping from existing wells impact the system? Additional water use could increase drawdown in the wells, in turn increasing power consumption and costs. Could the additional pumping impact other wells in the area, leading to increased costs for the community?
- How could the additional pumping or wells change the Drinking Water Supply Management Area (DWSMA)? Would the addition of a new well or wells prompt a regulatorily required amendment to the wellhead protection plan?
- Are there any DWSMAs for other public water systems that extend into or near your community's jurisdiction? How could additional pumping or wells change those DWSMAs?
- How long will the public water system need to recoup the investment in the additional water use?

  - Consider affordability for residential water users, regarding both the initial investment and long-term operating costs.
- Could additional pumping change the local groundwater flow conditions, impacting any ongoing remediation efforts or altering any nearby contamination plumes?
- What are the large volume water user's expectations during a water emergency, including both drought and lost capacity? Can the public water supplier meet those expectations and how do they align with state water allocation priorities (https://www.revisor.mn.gov/statutes/cite/103G.261)?
  - Consider including actions within the contingency plan component of your WHP plan to reduce water deliveries to ensure domestic users have adequate supply in case of an emergency.

Considerations for having the large volume water user on their own source

- Is the water source the same as the community's source?
- How could the added pumping alter groundwater flow, potentially impacting the community's DWSMA and/or DWSMAs for other nearby public water systems? Could these changes reduce the effectiveness of existing drinking water protection investments?
- Are there nearby sources of contamination and/or plumes that could be altered by additional pumping?
- If the user has their own source for most purposes but also a connection to the public water system for potable use, how will the community ensure there are no cross-connections? Are existing controls adequate to safeguard the community's water supply?

SWP-provided assistance

MDH SWP staff can run existing groundwater flow models to evaluate potential changes to the DWSMA and emergency response areas (ERAs). Additionally, models created for DWSMA delineations can be provided back to the public water supplier and identified partners.

Considerations for a large volume water user regardless of source

- Identify water quality and quantity concerns if they exist. Are there existing issues with manganese or arsenic that could be impacted by oxidation? Is there existing contamination or remediation work that could be impacted by increased pumping or the addition of a new well?
- Is the user within a vulnerable DWSMA? If so, what kinds of potential contaminants could be on-site? Examples could include generators, fuel/oil storage, hazardous waste, etc. What strategies could limit risk to the drinking water source?

- Are there indications of limited water supply? These could include declining water levels, documented well interferences, shrinking surface water features, etc.

SWP-provided assistance and resources

- Source Water Protection Web Map Viewer (https://www.health.state.mn.us/communities/environment/water/swp/mapviewer.html)
- Resources for Source Water Protection Implementation Source Water Protection (https://www.health.state.mn.us/communities/environment/water/swp/resources.html)
- Arsenic in Drinking Water (https://www.health.state.mn.us/communities/environment/water/contaminants/arsenic.html)
- Memo: Initial Assessment of Manganese in Minnesota Groundwater (https://www.health.state.mn.us/communities/environment/water/docs/swp/mnreport.pdf)
- Manganese in Drinking Water (https://www.health.state.mn.us/communities/environment/water/contaminants/manganese.html)

Other sources of helpful information:

- Minnesota Groundwater Contamination Atlas (https://www.pca.state.mn.us/about-mpca/minnesota-groundwater-contamination-atlas)
- What's in My Neighborhood (https://www.pca.state.mn.us/about-mpca/whats-in-my-neighborhood)

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