



**AGENDA
CITY OF HARRISONVILLE
BOARD OF ALDERMEN
WORK SESSION
CITY HALL
SEPTEMBER 3, 2013
6:00 PM**

- I. Call to Order**
- II. Public Portion**
 - 1. Water Treatment Plant Workshop #3**
- III. Adjourn**

Posted on City Hall Bulletin Board this 29th day of August 2013

Kim Hubbard, City Clerk

The Board of Aldermen meeting is an open meeting but is not a meeting of the public. There is a place on the agenda for comments of citizens under PUBLIC PARTICIPATION. Our rule is that comments by any individual or group shall not exceed (4) minutes. The Board of Aldermen request that concerns be initially addressed at the appropriate action level before coming to the Board of Alderman



STAFF REPORT

TO: Board of Aldermen
FROM: Jerry Gibbs, Director
DATE: August 29, 2013
SUBJECT: Water Treatment Plant Workshop #3

Type of Item: *Presentation*

Background

Staff has been pursuing opportunities to relieve the City of the Kansas City Water obligation. The projects identified in the Water Capital Facilities Plan were developed after the agreement to purchase 5 mgd of water from Kansas City. It was evident the City needed to re-evaluate the priorities and develop a *Facilities Use Plan* consistent with the Board of Alderman's objectives to utilize Lake Harrisonville. A *Facility Use Plan* would be required by MDNR before future improvements could be made to the water treatment facility. Burns and McDonnell was selected to assist the City in developing a facility use plan.

Analysis

Burns and McDonnell was tasked to:

- Evaluate solutions for water quality (taste and odor and manganese),
- Complete a process evaluation,
- Identify risks and best management practices to assure the lake will continue to provide a reliable source of water for the next 40 years,
- Evaluate our current raw water infrastructure to determine usefulness and remaining life to solve water quality, optimization and capacity. Identify costs to rehabilitate or replace segments of the treatment process,
- Evaluate PWD emergency connection adequacy and the former well(s) located north of the old water & electric building as a potential emergency supply,
- Evaluate the use of former wells for a backup water supply.
- And, identify improvements necessary to meet a 3 mgd ultimate demand.

Jeff Klein and Nathan Dunahee of Burns and McDonnell will be presenting their initial findings. Staff would like input on the alternatives to narrow down to a preferred alternative(s).

1. Discussion Item (ID # 1160)

Water Treatment Plant Workshop #3

Attachments:

Workshop 3 Water System Facility Plan (PDF)

Workshop 3 Water System Facility Plan Harrisonville, MO

SEPTEMBER 2, 2013



Agenda

- WSFP Goals
- Existing Water System
- Phase 1 & 2 Scope
- Baseline Improvements
- Lake/Raw Water Supply
- Taste & Odor
- Economics
- Q/A



Water System Facility Plan – Primary Goals

1. Eliminate Taste & Odor Complaints
2. Improve Treatment Process & Assure Future Regulatory Compliance
3. Increase Capacity to 3 MGD (Not 5 MGD)

Water System Facility Plan – Primary & Secondary Goals

Improve WTP Process

- Taste & Odor
- Process Optimization
 - > Use the Right Chemicals & Feed Points = Reduced Costs
 - > Improve Quality
 - > Filter Enhancements
 - > Maximize Capacity
 - > Operator Adjustments

Maximize Life of Existing Facilities

- Reliability
- Redundancy
- Vulnerability
- Improve Life Expectancy
- Source Protection

Phase Approach

- Baseline vs. Demand Driven Improvements
- 3.0 MGD Max Day NOT 5 MGD

Existing Water System

Supply

- Lake Harrisonville
- Yield = 1.4 MGD
- Intake Limitations
- Power Cable in Lake
- Single Raw WM

WTP

- Capacity = 1.8 MGD
- Process Opportunities
- OSHA & Code Issues
- Structural Concerns
- T&O

Distribution

- Solid Network
- Clearwell & Elevated Storage
- Connections to PWSD#4 & 9

**Current Max Day Demand is 1.6 MGD –
Very Close to WTP Capacity!**

Water System Facility Plan – Phase 1 & 2 Approach – Year 1

Phase 1

Process:

- Chlorine Dioxide
- Taste & Odor / DBPs
- Optimization
- Required Improvements

WTP Condition Assessment

Lake:

- RUSLE & RESOP
- Source Protection BMPs
- Intake Assessment & Concept

Well Redevelopment

Connections to 4, 9, 10

Workshop

Phase 2

Process:

- Regulatory
- Hydraulics
- WTP Limitations
- Preliminary Concepts & Comparison
- Rehab / New Improvements for 3 MGD
- Economics

Workshops

Baseline System Improvements

Lake

- Sediment Study
- Bathometric Survey
- Dredging
- Sluice Gates
- Install BMPs
- Landowner Access
- Spillway Barrel Repair

Intake

- Power Supply
- Pump/VFD Replacement
- Sluice Gates

Raw WM

- Booster Pump Station
- Raw 16" WM Routing/Easement
- New 16" WM

Interconnections

- Maximize Ex. PWSD#9
- New PWSD#9 near 291 & Hospital
- Hydraulic Model Update

Baseline WTP Improvements

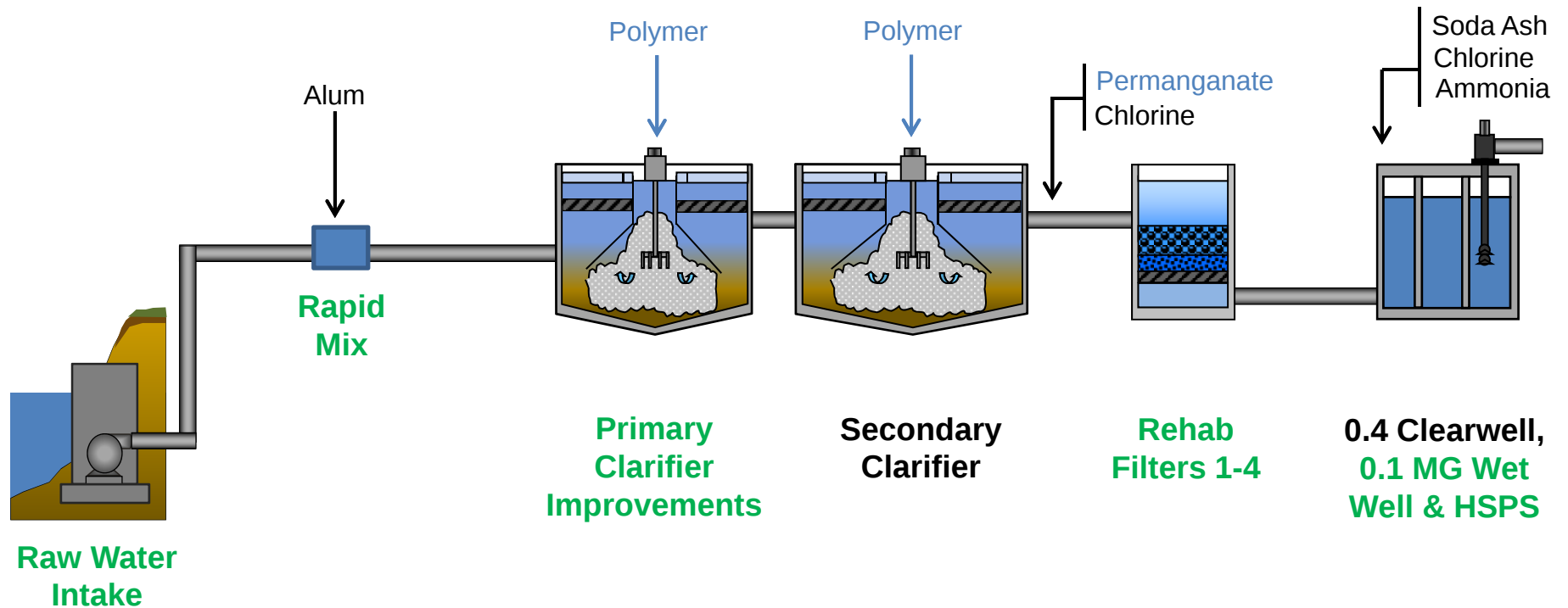


Figure 7-1
Harrisonville, MO
Recommended Improvements

WTP Alternate 1 - PAC

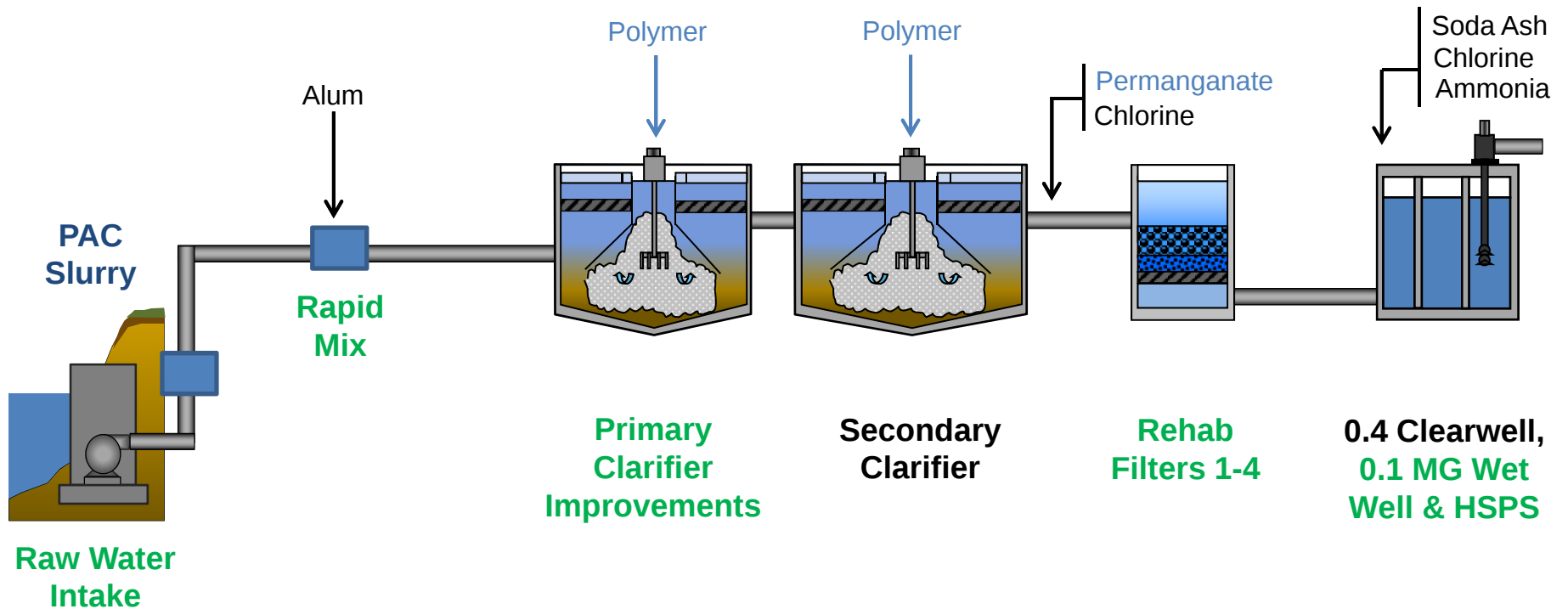


Figure 7-2

Harrisonville, MO

Alternative #1: PAC
Addition at Intake

WTP Alternate 2 – Process Ozone

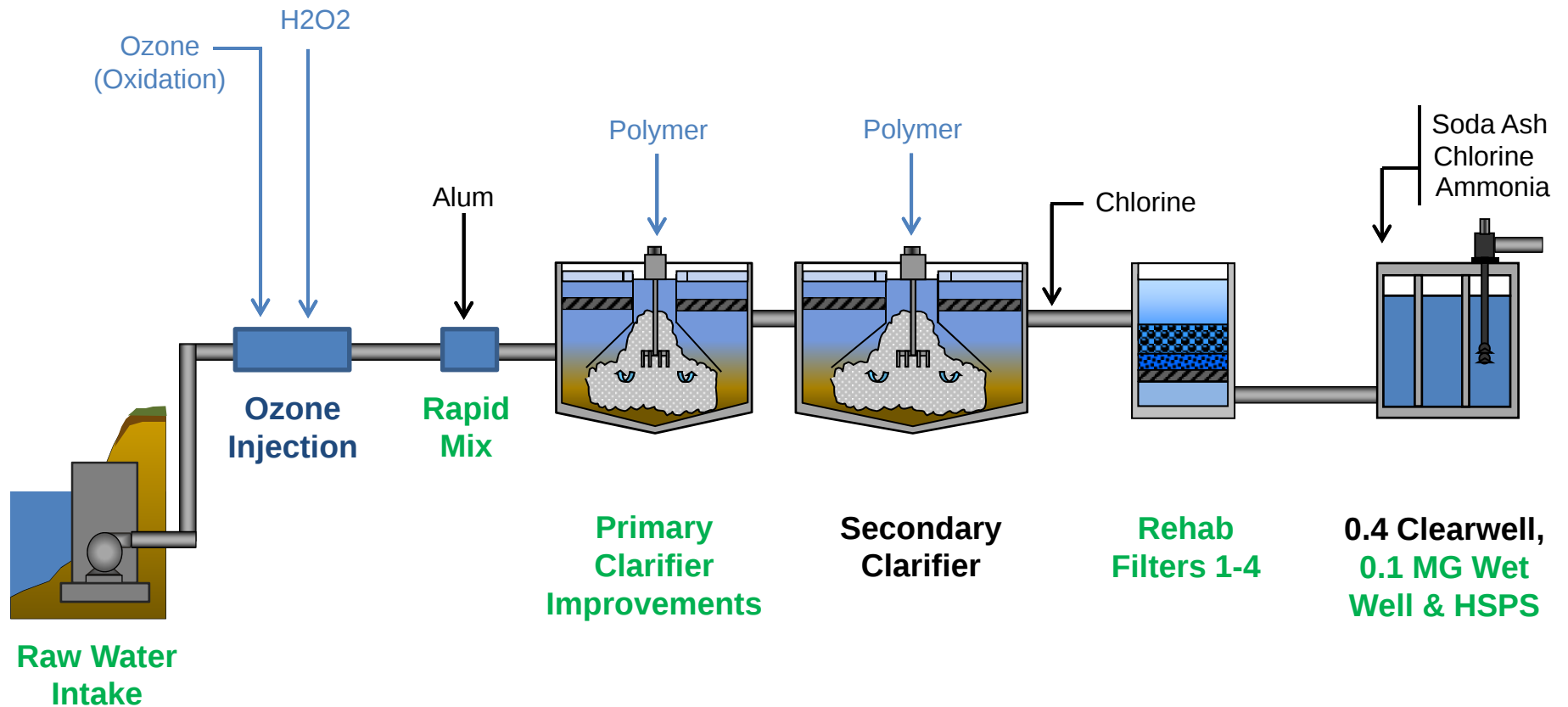


Figure 7-3

Harrisonville, MO

Alternative #2: Ozone at Raw Water

WTP Alternate 3 – Process & Disinfection Ozone

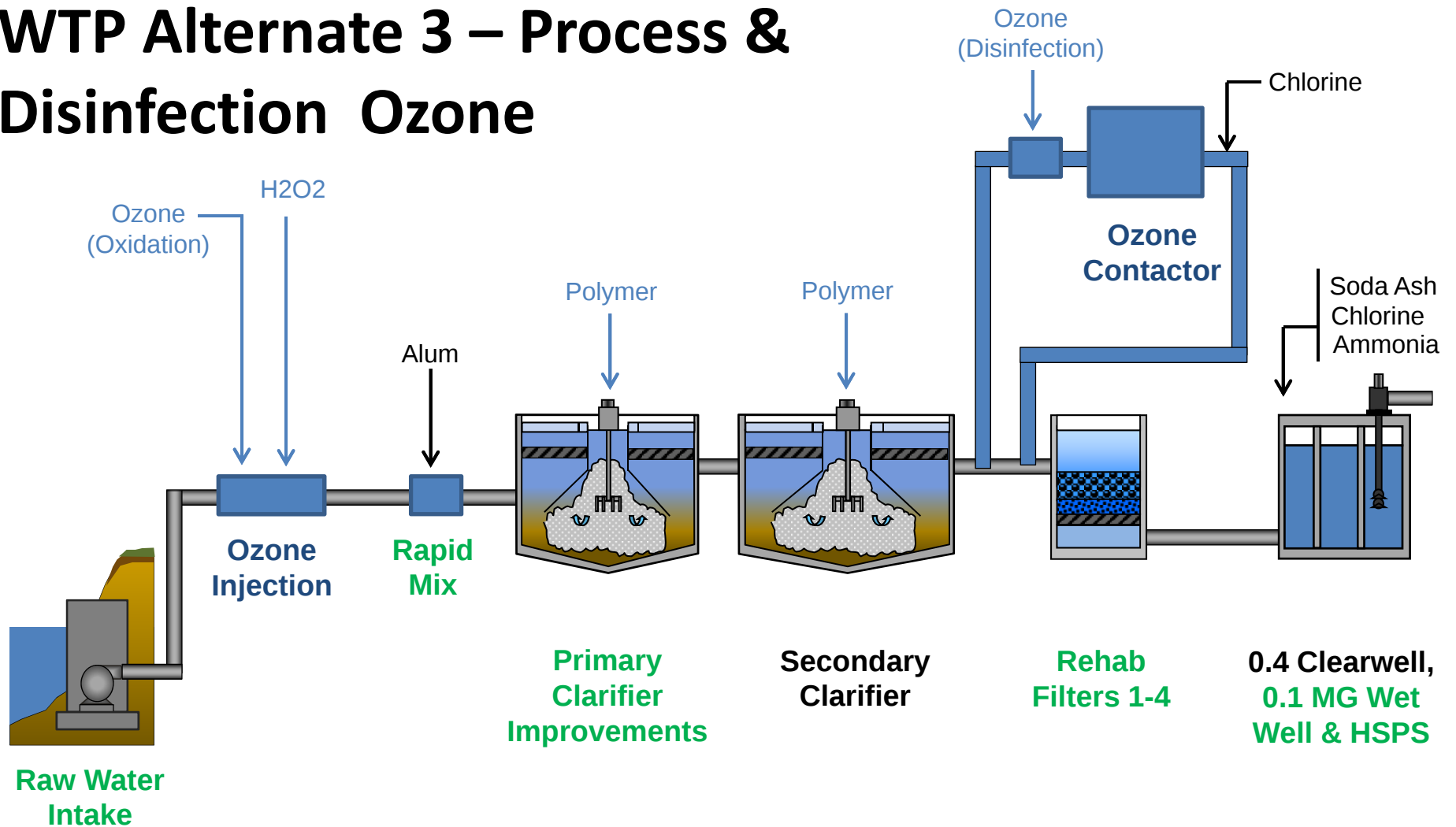


Figure 7-4

Harrisonville, MO

Alternative #3: Ozone at Raw and Settled Water

WTP Alternate 4 – UV Peroxide

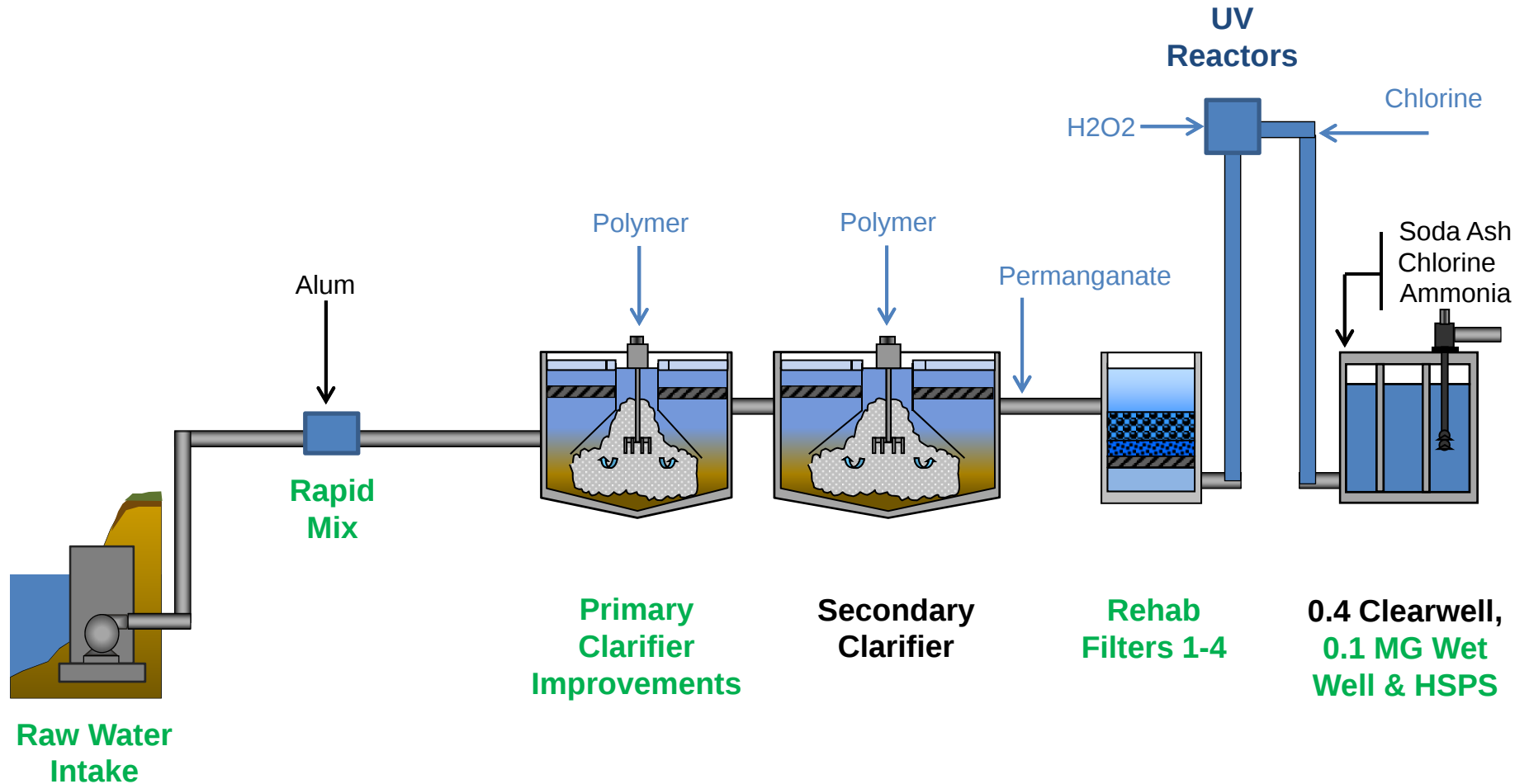


Figure 7-5

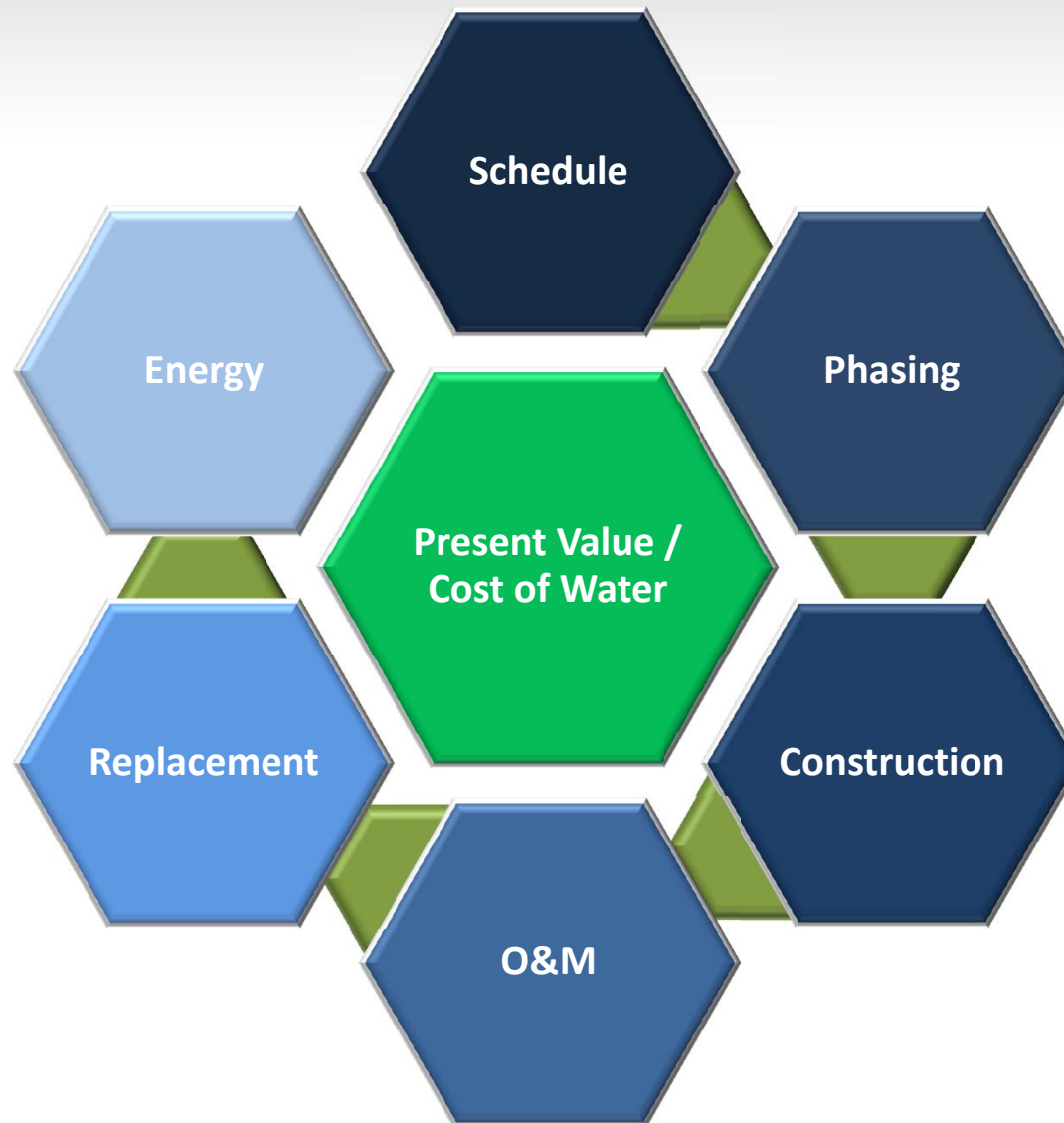
Harrisonville, MO

Alternative #4: UV/H₂O₂ at
Filter Effluent

Ozone & UV Peroxide Intangibles

- Top 10% Metro WQ
- Minimize T&O Complaints
- Protection from Future Regs

Economics



Economics

- Cost Summaries Pending

Next Step – Priority 1 Improvements/Evaluations

Lake

- Sediment Study
- Bathometric Survey
- Sluice Gates Eval.
- BMPs
- Landowner Access
- Spillway Barrel Repair
- Dredge Lake

Intake

- Power Supply
- **Pump/VFD**
- **Sluice Gates**
- Raw WM Routing/Easement

WTP

- Chemical Building
- New Rapid Mix
- Basin 1 Equipment & Concrete Repair
- Basin 2 Concrete Repair
- **Filter Evaluation**
- Wet Well/HSPS
- PAC or Ozone
- **Filter Building Rehab**

Interconnections

- Maximize Ex. PWSD#9
- New PWSD#9 near 291 & Hospital
- **Model Update**

Questions

