

Table 1 - Sanitary Survey of Community Water Supply - Review Summary

Water Supply: **Benton Harbor**
 County: Berrien
 Evaluator: Don Brady, Emily Wright

WSSN: MI0000600
 District: D93
 Survey Date: 1/16/25
 WS Notification Date: 3/15/25

Category	Type	Description	Findings*	Requirements (for SDs, Ds, and RAs) and Recommendations**	Due Date**	Regulation/Standard Ref for Deficiencies
Distribution System	Hydrants & Valves	Hydrant flushing and valve turning program needs to be implemented.	SD1	A plan, approved by EGLE, to address this deficiency must be executed within 120 days.	7/13/25	R325.11105 & R325.11108
Distribution System	Cross Connections	Cross connection control program needs to be implemented, revised cross connection control program must be submitted, and schedule for implementation detailing major activities must be provided.	SD2	A plan, approved by EGLE, to address this deficiency must be executed within 120 days.	7/13/25	R325.11404
Management & Operations and Financial	Capacity Development	Gap between revenue and expenses shown in 2023 TMF Capacity Study and subsequent evaluations needs to be addressed. Additional items identified in this survey need to be included in the CIP and accounted for in the capacity evaluation.	SD3	A plan, approved by EGLE, to address this deficiency must be executed within 120 days.	7/13/25	Various
Source	Construction & Maintenance	Chlorine feed (and anti-scalant feed) to intake not operational	D1	Inspect intake and intake pipe annually until hypochlorite and anti-scalant feed operational	12/31/25 and ongoing	RSfWW Sec. 3
Source	Construction & Maintenance	Chlorine feed (and anti-scalant feed) to intake not operational	D1	Submit plan to repair hypochlorite and anti-scalant feed to intake that describes approach and includes a proposed schedule	12/31/25	RSfWW Sec. 3
Treatment	Disinfection	No containment for hypochlorite loading	D2	Submit plan for hypochlorite loading containment and include in CIP	12/31/25	RSfWW Sec. 5
Treatment	Disinfection	WTP includes one hypochlorite transfer pump, spare pump not on-site	D2	Procure spare hypochlorite transfer pump	12/31/25	R 325.10611a
Treatment	Pretreatment	Alum chemical storage system aged and in poor condition, containment for alum loading does not appear adequate	D3	Develop plan for upgrading alum storage, including containment for loading, and include in CIP	12/31/25	R325.10611
Treatment	Pretreatment	Alum chemical storage system aged and in poor condition, containment for alum loading does not appear adequate	D3	Procure spare alum transfer pump to improve reliability of aged system	12/31/25	R325.10611
Treatment	Pretreatment	Raw water piping bypassing pretreatment process exists (valve on bypass piping closed)	D4	Develop plan to eliminate, isolate (with blind flange), or lock out pre-treatment bypass piping and include costs in CIP	12/31/25	R325.11008 & R325.10611
Treatment	Filtration (gravity or membranes)	Filter wash arms not fully operational	D5	Upgrade/replace filter wash arms (part of planned project, 399 permit ACT-370628)	6/30/26	R325.10611
Treatment	Filtration (gravity or membranes)	Filters 1-4 no longer in use and need to be properly abandoned	D5	Properly abandon and/or isolate filter 1-4 piping (media removal part of planned project, 399 permit ACT-370628)	12/31/26	R325.10611 & R325.11403

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Distribution System	Construction & Maintenance	Grand Blvd. pump station not used	D6	Isolate pump station from active system with closed and locked-out valves	12/31/25	R325.11403
Finished Water Storage	Construction & Maintenance	High-service suction well overflow not equipped with screen or check valve, also potential risk of cross connection	D7	Develop plan and 399 application for protecting overflow	12/31/25	R325.11112 R325.11403
Finished Water Storage	Construction & Maintenance	High-service suction well hatch not equipped with gaskets	D7	Install gaskets on the high-service suction well hatch (part of planned project)	12/31/26	R325.11112
Finished Water Storage	Construction & Maintenance	Reservoir overflow protection unknown	D7	Evaluate reservoir overflow protection during planned inspection, develop plan to add protection (screen or duckbill) as needed	12/31/25	R325.11112
Finished Water Storage	Construction & Maintenance	Reservoir overflow protected unknown	D7	Install reservoir overflow protection	12/31/26	R325.11112
Finished Water Storage	Construction & Maintenance	Reservoir access hatches do not meet RSfWW standards	D7	Upgrade finished water reservoir hatches to meet standards (work planned, 399 permit ACT-370628)	6/30/26	RSfWW Sec. 7
Management & Operations and Financial	Owner Responsibility	Accurate estimates of unaccounted water not available	D8	Estimate accurate and complete records of unbilled water including what is used by fire department (flushing, firefighting, etc.), develop standard operating procedure for tracking unaccounted water, and provide estimate of unaccounted water to EGLF	12/31/25	R325.11111
Source	Construction & Maintenance	Raw water wet well needs to be cleaned	RA1	Clean raw water wet well during reservoir inspection project (planned)	12/31/25	
Source	Construction & Maintenance	Interconnect conditions unknown	RA2	Assess condition of interconnects (12) and include costs for repair in CIP	12/31/25	
Source	Construction & Maintenance	Hydraulic capacity of interconnects unknown	RA2	Include costs for modeling interconnect capacity and evaluating need for all interconnects in CIP	12/31/25	
Treatment	Disinfection	Bulk hypochlorite sump alarm not functional	RA3	Reinstall or move sump sensor so alarm provides reliable notice of spill	12/31/25	
Treatment	Disinfection	Chlorine tank connections corroded	RA3	Develop plan to address corrosion and include in CIP	12/31/25	
Treatment	Disinfection	Chlorine bulk storage gas detector needs to be tested/calibrated	RA3	Test or calibrate gas detector	12/31/25	
Treatment	Disinfection	Hypochlorite day tank site tube needs to be cleaned	RA3	Clean or replace hypochlorite day tank site tube	12/31/25	
Treatment	Disinfection	Spare hypochlorite dosing pump needed (only two pumps present for two feed locations)	RA3	Procure spare hypochlorite dosing pump	12/31/25	
Treatment	Fluoride	Fluoride not being fed	RA4	Start feeding fluoride in accordance with City council decision or direction	6/30/25	
Treatment	Phosphate Addition	Phosphate pump flow paced with HSPs, however, SCADA only shows phosphate scale	RA5	Integrate phosphate pump status and flow into SCADA	12/31/26	

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Treatment	Phosphate Addition	Phosphate drums not contained	RA5	Develop plan for phosphate system with containment and include in CIP	12/31/25	
Treatment	Pretreatment	Spare alum feed pump needed	RA6	Procure spare alum feed pump	12/31/25	
Treatment	Filtration (gravity or membranes)	Filter flow limited by plant hydraulics to slightly above 2 gpm/ft2 (max approved filter rate) but not by plant controls	RA7	Develop SOP that addresses maintaining filter operation equal or below 2 gpm/ft2	6/30/25	
Treatment	Filtration (gravity or membranes)	Filters in need of upgrade due to condition	RA7	Complete filter upgrade (planned project, ACT-370628)	6/30/26	
Treatment	Filtration (gravity or membranes)	Backwash effectiveness not evaluated due to filter condition	RA7	Once filter upgrade project complete, evaluate backwash effectiveness	12/31/26	
Treatment	Filtration (gravity or membranes)	SCADA upgrades will automate backwash sequence	RA7	Revise backwash procedure after SCADA upgrade, provide guidelines for manual adjustment to backwash duration and ensure operator observation of backwash	12/31/26	
Treatment	C*T	CT calculations do not account for reservoir, this can be calculated now sample tap upstream of high-service suction well operational	RA8	Modify CT calculations to account for reservoir (in progress)	6/30/25	
Treatment	Other	Fluoride system (sodium fluoride) and hypochlorite day tanks in separate but adjacent containment in same room	RA9	Minimize storage of sodium fluoride in hypochlorite day tank room, keep sodium fluoride salt bags in room in storage containers shielded from leaks, develop SOP for handling sodium fluoride that addresses PPE	6/30/25	
Treatment	Other	Fluoride/hypochlorite day tank room is not equipped with liquid leak detection	RA9	Develop plan for fluoride and hypochlorite leak detection and include in CIP	12/31/25	
Treatment	Other	Pipe corrosion present throughout plant, floc/sed building heaters corroded	RA10	Develop plan to address/repair pipe and heater corrosion and include in the CIP (filter gallery pipe coating part of planned project ACT-370628)	12/31/25	
Treatment	Other	Pipe corrosion present throughout plant, some plant rooms very humid/wet (e.g. venturi room)	RA10	Evaluate HVAC throughout the plant and the need for additional humidity control, include in CIP as needed	12/31/25	
Treatment	Other	Unused chemical feed piping located throughout plant	RA11	Develop plan to remove piping that is not needed and not required, include in CIP	12/31/25	
Treatment	Other	Additional WTP SOPs needed	RA12	Develop SOPs for pretreatment operational control	12/31/25	
Treatment	Other	Lagoon upgrades needed for easier solids cleanup	RA13	Develop plan for lagoon upgrades and include in CIP	12/31/25	

Category	Type	Description	Findings*	Requirements (for SDs, Ds, and RAs) and Recommendations**	Due Date**	Regulation/Standard Ref for Deficiencies
Treatment	Other	WTP meters need calibration or replacement	RA14	Replace raw water meters (2) (part of planned project, ACT-370628), develop schedule for calibrating all WTP water and chemical flow meters	6/30/26	
Treatment	Other	Chemical day tank scales need to be regularly calibrated	RA15	Develop and implement SOP and schedule for chemical day tank scale calibration	12/31/25	
Treatment	Other	WTP building exterior needs repair	RA16	Develop plan to fix building exterior where water/snow enters interior and fix/remove loose building elements, include costs in CIP	12/31/25	
Treatment	Other	Former clarifiers and related piping and structures not properly abandoned	RA17	Develop plan for abandoning/removing former clarifiers, related structures, piping, and conduits, include in CIP	12/31/25	
Treatment	Other	Piping to abandoned clarifiers still connected to raw water piping (through two apparently closed valves)	RA17	Develop plan for disconnecting active piping from piping to old clarifiers, include costs in CIP, complete disconnection	12/31/26	
Treatment	Other	A chemical delivery SOP is needed	RA18	Develop and implement chemical delivery SOP	12/31/25	
Treatment	Other	Raw sample pump needs to be replaced	RA19	Replace raw sample pump	12/31/25	
Distribution System	Hydrants & Valves	List of critical valves needed	RA20	Develop list of critical valves and plan to exercise these valves annually	7/13/25	
Distribution System	Construction & Maintenance	Water age and flushing program need to be evaluated	RA21	Evaluate system water age and develop flushing program to address areas of system with high water age	12/31/25	
Finished Water Storage	Construction & Maintenance	Reservoir needs to be inspected	RA22	Inspect reservoir, including reservoir chamber isolation valve condition (planned project)	12/31/25	
Finished Water Storage	Construction & Maintenance	Tower is not equipped with a functioning drain	RA23	Develop plan and 399 application to equip tower with a functional drain (hydrant)	12/31/25	
Finished Water Storage	Construction & Maintenance	Tower is not equipped with a functioning drain	RA23	Install/construct tower drain (hydrant)	12/31/26	
Pumps	Construction & Maintenance	All low service pumps not operational	RA24	Upgrade LSPs (part of planned project, 399 permit ACT-370628)	6/30/26	
Monitoring & Reporting	Chemical Monitoring	WTP not tracking TOC compliance	RA25	Begin tracking TOC removal and compliance with requirements	6/30/25	
Management & Operations	Operations Oversight	Work order system needed to track maintenance and capital improvement work.	RA26	Implement digital work order system for the distribution system and WTP that is capable of interfacing with the City's GIS and asset management programs	12/31/26	
Security	Emergency Response Plan	ERP needs update	RA27	Update ERP to address WTP chemical spill response (including Part 5 requirements) and updated contacts	12/31/25	
Security	Site Security (Fences, Alarms...)	Fence along northern boundary falling down/apart	RA28	Repair or replace damaged fence section	6/30/25	

Category	Type	Description	Findings*	Requirements (for SDs, Ds, and RAs) and Recommendations**	Due Date**	Regulation/Standard Ref for Deficiencies
Financial	Budget & Capital Imp. Plan	CIP needs to include additional projects	RA29	Include work identified in 2025 survey in CIP	12/31/25	
Source	Construction & Maintenance	Interconnect agreements and SOPs needs to be executed/developed with other supplies	R1	Negotiate interconnect agreements and/or SOPs w/St. Joseph and Benton Twp.		
Source	Construction & Maintenance	Paint is peeling from raw water piping well ceiling	R2	Remove/repair peeling paint during reservoir inspection project		
Source	Source Water Protection	Surface water intake protection plan (SWIPP) needed	R3	Develop SWIPP		
Treatment	Disinfection	Condition of hypochlorite feed to flocculation/settling basins questioned during prior survey	R4	Assess condition of hypochlorite feed to flocculation/settling basins		
Treatment	Disinfection	Hypochlorite degradation has caused problems in past	R5	Monitor strength of hypochlorite over time, evaluate climate controls for hypochlorite building, include climate controls in CIP		
Treatment	Pretreatment	Settled water turbidity increases above 1 NTU during colder months, jar testing completed was not conducted at colder temperatures	R6	Conduct additional jar testing to evaluate optimal coagulant dose and coagulation/flocculation mixing speeds at winter water temperatures		
Treatment	Pretreatment	Operational control during cold weather could be improved	R7	Consider additional monitoring of pretreatment UV254, settling tests, etc.		
Treatment	Filtration (gravity or membranes)	Regular filter evaluation recommended	R8	Develop SOP and schedule for filter evaluation		
Treatment	Other	Fluoride system (sodium fluoride) and hypochlorite day tanks in separate but adjacent containment in same room	R9	Ask local code authorities for input on storage and safety precautions and room ventilation		
Treatment	Other	All chemical storage room doors not equipped with panic bars	R10	Equip all chemical storage room doors with panic bars		
Treatment	Other	Valve to drain trap water feed closed	R11	Evaluate the need to operate this system and system effectiveness, add to CIP as needed		
Distribution System	Hydrants & Valves	Hydrants w/weep holes plugged need to be entered into GIS system	R12	Record what hydrants have weep holes plugged in GIS		
Distribution System	Cross Connections	New construction needs to be evaluated for cross connections	R13	Verify local code authority reviews cross connection control in new construction		
Distribution System	Construction & Maintenance	Boil water SOP needed	R14	Develop SOP for water main breaks and boil water advisories, including guidance and examples for notifications, when to issue an advisory and procedures for testing/lifting an advisory		
Pumps	Construction & Maintenance	Annual pump maintenance includes packing adjustment, evaluation of current draw, and flow test	R15	Consider adding temperature and vibration evaluation to annual pump maintenance		
Monitoring & Reporting	Chemical Monitoring	Additional SOPs needed for sampling	R16	Develop SOPs for LCR and DBP sampling		

Category	Type	Description	Findings*	Requirements (for SDs, Ds, and RAs) and Recommendations**	Due Date**	Regulation/Standard Ref for Deficiencies
Monitoring & Reporting	MOR or Annual Pumpage Report	MOR updates needed	R17	Modify MOR to account for revised CT calculation and include maximum approved filter rate (2 gpm/ft ²) on cover page		
Management & Operations	Operations Oversight	Records maintained since F&V started working on operations	R18	Continue to maintain records moving forward per retention requirements of MI SDWA		
Management & Operations	Operations Oversight	System needed to track complaints received about distribution system	R19	Implement digital system to record complaints received and document resolutions		
Management & Operations	Permits	Discharge from lagoon regulated by NPDES permit	R20	Develop SOP for lagoon discharge incorporating NPDES permit requirements		
Security	Site Security (Fences, Alarms...)	Vegetation growing on fence	R21	Remove vegetation from fence		
Security	Site Security (Fences, Alarms...)	No security camera at Tower	R22	Add security camera for Tower		
Security	Site Security (Fences, Alarms...)	Security cameras viewed at City Hall	R23	Provide viewing of security cameras at WTP		
Security	Site Security (Fences, Alarms...)	SCADA physically separated from internet, digital security assessment would still be worthwhile, a physical security assessment would also be worthwhile	R24	Consider taking advantage of free security assessments from CISA and MSP		
Other	Asset Management Plan	WTP component condition/criticality needed	R25	Incorporate WTP into AMP		
Source	Standby Power		No D/R			
Source	Isolation		No D/R			
Source	Capacity		No D/R			
Distribution System	Service Lines & Metering		No D/R			
Distribution System	General Plan		No D/R			
Distribution System	Capacity		No D/R			
Finished Water Storage	Controls		No D/R			
Finished Water Storage	Capacity		No D/R			
Pumps	Controls		No D/R			
Pumps	Capacity	Three high service pumps operational, HSP-1, 4 & 5 (firm capacity 4.8 MGD)	No D/R	Plant capacity to be re-rated		
Monitoring & Reporting	Consumer Confidence Report		No D/R			
Monitoring & Reporting	Analytical Capabilities		No D/R			
Management & Operations	Reliability Study		No D/R			

Category	Type	Description	Findings*	Requirements (for SDs, Ds, and RAs) and Recommendations**	Due Date**	Regulation/Standard Ref for Deficiencies
Operator Compliance	Operator Certification		No D/R			
Operator Compliance	Technical Knowledge & Training		No D/R			
Treatment	Softening		N/A			
Treatment	Iron/Manganese Removal		N/A			
Treatment	Arsenic Removal		N/A			
Distribution System	Interconnections w/ Other WS	See findings under "Source"				
Financial	Rates	See findings under "System Management & Operations"				

* N/A - Not Applicable, NotEv - Not Evaluated, No D/R - No Deficiencies/Recommendations Made, R - Recommendation Made,

* RA - Required Action Identified, D - Deficiency (Minor) Identified, SD - Significant Deficiency Identified

** Required Actions (RA), Deficiencies (D), and Significant Deficiencies (SD) require correction action by Due Date specified

Table 2 - Sanitary Survey of Community Water Supply - Improvements Since Last Survey

Finding #	Description	Status	Comments	Survey Element
2021 Survey Significant Deficiencies Addressed				
21SD5	Finished water reservoirs missing vent screens, less than 24-inches above grade. The water plant reservoir vents require corrective action to ensure sanitary condition.	Completed	Visually verified as completed during 2025 survey	Storage Tanks
21SD7	MOR has various inaccuracies, and pre-filled answers to questions on first page. A thorough review of the MOR and the City's process for developing the MOR resulted in several areas of concern requiring corrective action.	EGLE approved template used Jan 2022 forward	Complete	MOR
21SD8	CL17 broken during site inspection, not doing 4 hour grabs, no maintenance or SOP. Minimum levels must be recorded daily and reported to EGLE and must be trended on SCADA with callout alarms in the event of low residual. Furthermore, an SOP for the maintenance and verification of the instrument must be developed and implemented.	Completed	Inspected chlorine analyzers during 2025 survey	Operational Monitoring
21SD9	Turbidimeter calibration records not formally kept, staff not trained & no SOP. A comprehensive calibration schedule and recordkeeping system must be implemented to reflect calibrations that are conducted according to manufacturer specifications.	Completed	Confirmed during 2025 survey	Operational Monitoring
21SD11	Evidence of unprotected opening of suction well, on floor of venturi room (plywood w/ tar). The water plant high service suction well ceiling and access hatch require corrective action to ensure sanitary condition.	Investigation completed, significant deficiency closed, plywood tar spot determined to not be opening per 2/24/22 email on T drive	Complete	Pumping Stations
21SD12	Verify treatment chemicals are approved under ANSI/NSF standard 60. EGLE could not verify the certificate for Sodium Fluoride, packaged by Solvay Fluorides LLC. The City must obtain verification of this chemical's certification, and if a certification cannot be verified the current product must be discontinued until such time a certified product can be approved.	Complete (documentation submitted, NSF approval), 1/31/22 email and NSF documentation on T drive	Complete	General Treatment
2021 Survey Minor Deficiencies Addressed				
21MD1	Finish water meter is not used to report finished water flow and calculate phosphate dose	Completed with MOR revisions	Confirmed during 2025 survey	Corrosion Control
21MD5	Raw water screen fed w/ potable water, no protection (cross connection)	EGLE investigation found no risk of a submerged inlet.	Screen water supply protected with RPZ	SW Source
21MD7	Notification of LSL homes not being done	Completed - potholing letters sent for sites with verified LSL	Complete all LSL removed	LCR
21MD8	Eye wash stations not checked (next to chemical spills), fire extinguishers need checking	Eyewash station checked weekly Extinguishers checked monthly and inspected annually	Inspected during 2025 survey, included up to date inspection tags	Security
21MD9	Very old, nearly imploded polymer barrels are a safety hazard	EGLE inspection found old chemical had been removed	Verified removed during 2025 survey	General Treatment
21MD10	RPZ not tested: chlorine feed water, fluoride, surface wash. Note, surface wash RPZ also feeds valve actuators for older filters, creating a limitation on the length of time it can be down for repairs. A test was attempted, but possibly due to age the test was not able to be completed.	All RPZs at plant (~ 5) tested on 3/18/24	Confirmed during 2025 survey, surface wash supply piping and RPZ replaced/repared	Cross Connection
21MD11	Benchtop turbidimeter tested w/ Stablcal, not regularly recorded, standards expiring Nov 21 - Jan 22	EGLE verified benchtop turbidimeter calibration records and standards are adequate.	Verified primary standards up to date during 2025 survey	Lab
21MD13	WQP on plant tap not being monitored at least every two weeks for SO4, conductivity	System returned to compliance Oct 2021	Daily readings on MOR	Corrosion Control
21MD17	Filter to waste - not following SOP to meet ACO, shift operator unaware/unwilling	All filters in use now can waste (including 5-12)	Verified filter to waste piping and backwash procedure during 2025 survey	Gravity Filtration
21MD18	No chlorination point immediately following filters (Rule 1008 (5))	2024 construction project, completed	Confirmed during 2025 survey	Disinfection
21MD22	Filter flow meters need to be maintained and calibrated, displays not working	Completed, EGLE verified onsite	Verified during 2025 survey	Gravity Filtration

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21MD23	Alum & Chlorine day tanks have no overflow. Both have evidence of spilled/leaking chemical	Completed 2023	Day tanks in good working order during 2025 survey, filling with deadman switches, overflow does not appear required by RSfWW	Disinfection/Various
21MD27	Complete requested revisions to turbidimeter and chlorine analyzer SOP's, finalize, and implement	Complete	Confirmed during 2025 survey	Operational Monitoring
2021 Survey Required Actions Addressed				
21RA3	Verify lagoon discharge location, and any direct connection of WTP discharge piping must be corrected	Complete (EPA inspection, 11/10/2021)	Complete	Various
21RA4	Update General plan and Reliability Study, including model recalibration and updated Asset Management Program. <i>This is due within 6 months of the date of the Survey, or May 2, 2022.</i>	Submitted 2023	AMP provided during 2025 survey	Sustainability
21RA7	Filters 9 & 10 - waste valve actuator needs replacement to bring filters into operation	Completed	Verified during 2025 survey	Gravity Filtration
21RA8	Review contract agreement with F&V Ops to ensure necessary supervisory controls	F&V contract approved, dated 1/1/25, 2-year term	Complete	Various
21RA9	Standard Operating Procedure needed for each lab analysis/method	Completed	Verified during 2025 survey	Lab
21RA10	Update Sample Siting Plans for total coliform sampling, DBP, WQP to be representative of distribution system extent	Discussed onsite on 5/3/22. City needs to submit a plan to install by 7/13/2022. Plan submitted 7/10, reviewed and accepted	RTCR plan updated 2023 LCR plan updated 2024 DBP plan unchanged	Various
21RA11	Install head loss gages on the filters (design requirement per Ten States Standards)	Completed, level transducers to be calibrated during planned WTP project	Confirmed during 2025 survey	Gravity Filtration
21RA13	Open polymer feed on raw water feed line (room behind raw screen)	DWEHD could not determine what this item actually is during 3/18/24 site visit	Also, could not find during 2025 survey	General Treatment
21RA14	Reservoir Sensors not working	Completed, EGLE verified onsite	Verified during 2025 survey	Storage Tanks
21RA15	Complete Lead service line replacement at rate of 7% per year	LSL replacement complete	Complete	LCR
21RA16	Submit a completed DSMI to EGLE by January 1, 2025 following available guidance	Completed, DWEHD to explain ongoing/future requirements	DWEHD to explain future requirements	LCR
21RA17	Continue to update the Lead and Copper sample siting plan and conduct monitoring	Being completed	Completed	LCR
21RA18	Complete required public education and outreach for any continued action level exceedances	No ALEs since 2021	Completed	LCR
2021 Survey Recommendations Addressed				
21R2	Negotiate higher wages for certified water system operators for better retention	City contracted F&V for operations	Complete	Various
21R3	Investigate inactive accounts to ensure water use is metered	Completed, resolved during line replacement	Confirmed during 2025 survey	Distribution/Various
21R4	Complete customer meter changeout (500 remain)	Completed	Confirmed during 2025 survey	Distribution
21R7	Floor drain flooding next to alum room	Completed	No flooding observed during 2025 survey	Pretreatment
21R8	Sump in basement flooded, inlet pipe is also leaking	Completed	SAA	Various
21R14	Lagoon management of vegetation is needed	Completed	Lagoon condition acceptable during 2025 survey	Various

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21R17	Hydraulic oil leaking from door lever on bathroom, safety hazard	Completed	Verified during 2025 survey	Security
21R18	Air gap drain lines for turbidimeters	Completed	Acceptable per 2025 survey	Operational Monitoring
21R20	Lab sink - very dirty, and labels of raw/tap not legible	Completed, entire lab upgraded 2024	Verified during 2025 survey	Lab
21R23	Filter flow meters lines are plugged and rusted - need to be replumbed	Completed	Verified during 2025 survey	Gravity Filtration
21R27	Investigate low chlorine residual at distribution sample sites, consider sampling stations	Completed	Addressed based on MOR review	Various
21R29	SOP needed for lab daily sheets (variability among operators)	Completed	Verified during 2025 survey	Lab
21R30	Need secondary checks for all colorimetric equip. (SO4, PO4, etc.)	Completed	Confirmed during 2025 survey	Lab
21R31	Need laboratory Quality Assurance Manual updated	Completed	Verified during 2025 survey	Lab
21R32	Need a sample location in the south area of town (neighborhood)	Completed	Confirmed during 2025 survey	Various
21R33	MOR updates needed. Finished water flow, column headings, etc.	Completed	Addressed based on MOR review	MOR
21R36	Verification of online turbidimeters should be conducted at least monthly	Completed	Confirmed during 2025 survey	Operational Monitoring
21R38	Turbidimeters should be upgraded. Obsolete, plugged line, very long lines delay readings	Complete	Verified completed during 2025 survey	Gravity Filtration
21R39	Replace FAS titration for fluoride with ion selective electrode for more accurate testing	Completed	Confirmed during 2025 survey	Lab
21R40	Floc/Sed building instrumentation needs to be integrated into SCADA	Completed per Aug-24 mtg	Confirmed during 2025 survey	Pretreatment
21R44	VFD on one HSP needed	Completed	Confirmed during 2025 survey	Pumping Stations
21R45	Power management equipment is in need of upgrade (4160), NEED VFD for high service	Completed	Confirmed during 2025 survey	Pumping Stations
21R46	Dark testing of emergency generator needed to confirm functionality of WTP.	Completed	Confirmed during 2025 survey	General Treatment
21R48	Alarms on SCADA needed: WTP pressure, cl17, need list	Completed	Confirmed during 2025 survey	Various
21R51	Recently added raw turbidimeter - not varying treatment to raw water	Completed	Verified during 2025 survey	Pretreatment
21R53	Alum bulk tank sensors not working	Completed	Confirmed during 2025 survey	Pretreatment
21R54	Interlock alum pumps w/ raw water flow meter	Completed	Confirmed during 2025 survey	Pretreatment
21R55	Verify fluoride pump is tied to raw water flow meter	Completed	Confirmed during 2025 survey	Fluoride
21R56	Filter actuator upgrades or maintenance	Completed	Verified during 2025 survey	Gravity Filtration

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21R58	Turbidity displays in filter gallery need to be calibrated (4-20mA)	Completed	Verified during 2025 survey	Gravity Filtration
21R60	Chlorine pump not on SCADA for overfeed protection, leak detection	Completed per Aug-24 mtg	Confirmed during 2025 survey	Disinfection
21R61	Ensure adequate inventory of treatment chemicals and laboratory chemicals	Completed	Confirmed during 2025 survey	Lab
21R63	Follow up on low chlorine sample sites in distribution - new service line?	Completed	Addressed	Distribution/RTCR
21R66	Need backup po4 pumps - integrate to flow meter	Completed	Had backup during 2025 survey	Corrosion Control
21R70	DR300 only measures up to 3.0 mg/L PO4	Completed	Confirmed during 2025 survey	Corrosion Control
21R72	Emergency call-out system upgrades to enable multiple callouts and more inputs	Completed	Confirmed during 2025 survey	Various
21R74	Replace security fencing around elevated tank site.	Completed	Verified during 2025 survey	Storage Tanks
21R76	Unknown drain line observed to be discharging into raw water suction well during inspection	EGLE staff looked in the raw water suction well during 3/24 visit and did not see this line	Could not find during 2025 survey	SW Source
21R77	Sludge drain valve for south settling basin out of service	Completed	Verified working during 2025 survey	Pretreatment

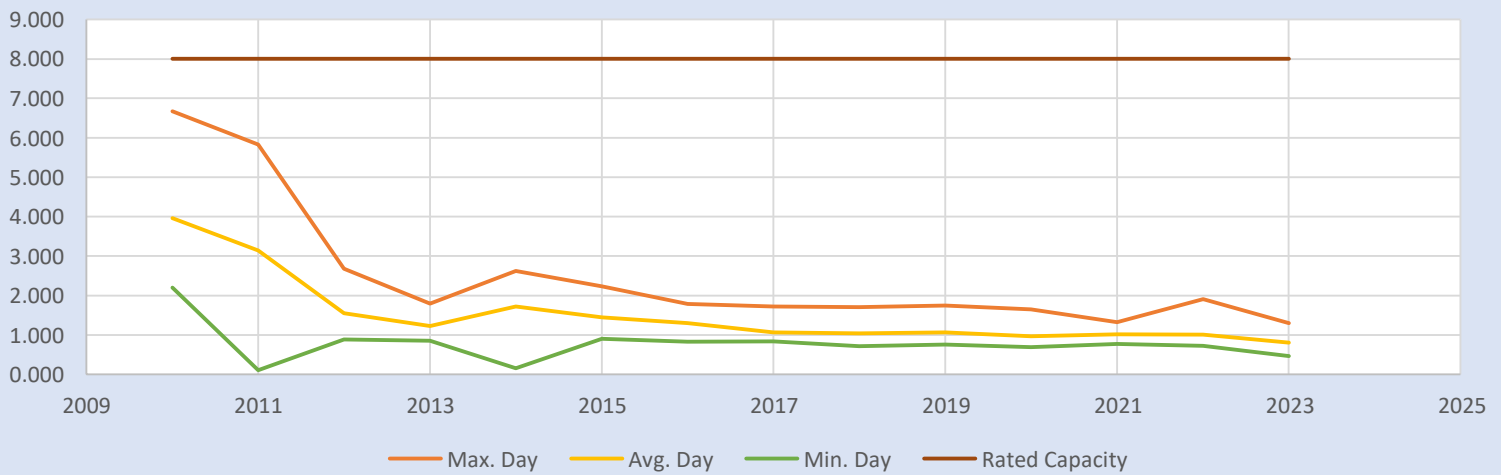
Table 3 - Additional Capital Improvements and Repairs identified in the 2025 Survey

- 1 Inspection, repair, and replacement work for the interconnects with Benton Township and St. Joseph
- 2 Evaluation of interconnect hydraulic capacity
- 3 Repair of the plant bulk hypochlorite tanks
- 4 Improvement or reconstruction of the plant phosphate system to include containment
- 5 Installation of leak detection in the fluoride and hypochlorite day tank room
- 6 Repair of pipe corrosion throughout the plant and repair of heater corrosion in the flocculation/sedimentation building
- 7 Removal of unused chemical feed piping throughout the plant
- 8 Lagoon upgrades to allow for sediment removal
- 9 Plant building exterior repairs
- 10 Evaluation and installation of additional plant humidity controls
- 11 Proper demolition of the former plant clarifier process and piping
- 12 Evaluation and installation of additional temperature control for the plant hypochlorite storage room/building
- 13 Evaluation and repair of the plant building trap drain water supply system
- 14 Installation of containment for the hypochlorite bulk tank loading
- 15 Bulk alum system replacement and/or upgrade and installation of containment for alum loading
- 16 Address the plant raw water piping bypassing pretreatment

Demand & Capacity - City of Benton Harbor

Year	Pumpage (MGD)					
	Avg. Day	Date of Max.	Max. Day	Date of Min.	Min. Day	# of Services
2010	3.960		6.670		2.200	
2011	3.140		5.830		0.110	
2012	1.550		2.680		0.890	
2013	1.230		1.800		0.860	
2014	1.720		2.620		0.150	
2015	1.450		2.230		0.905	
2016	1.300		1.790		0.834	
2017	1.070		1.720		0.840	
2018	1.040		1.710		0.710	
2019	1.070		1.744		0.755	
2020	0.967		1.650		0.690	
2021	1.016		1.327		0.768	
2022	1.012		1.909		0.718	
2023	0.804		1.297		0.458	

Finished Water & Rated Capacity



5-Year Max. Day	<u>1.909</u> MGD	
10-Year Max. Day	<u>2.620</u> MGD	(includes previous wholesale cust.)
5-Year Avg. Day	<u>1.021</u> MGD	
Baseline Capacity	<u>0</u> gpm	<u>0.0</u> MGD
Rated Capacity	<u>3,350</u> gpm	<u>4.8</u> MGD
Firm Well Capacity	<u> </u> gpm	<u> </u> MGD
Max. Day/Rated Capacity	40%	

Comments/References:

- Finished water pumping has not been reported based on meter readings, but rather an estimate of water distributed based on changes in the finished water reservoir levels.
- Downward trend in demands is representative of loss of wholesale customer.
- Rated Capacity assumes working filters: 5-6, 7-8, 9-10, 11-12
- Plant Capacity re-rated during 2025 survey as HSP-1 (1,650 GPM), HSP-4 (3,000 GPM), and HSP-5 (1,700 GPM) were the only high-service pumps operational and the City did not plan to place additional high-service pumps in operation