

January 7, 2022



Mr. Richard Healey
Enforcement Branch Manager
Arkansas Energy & Environment
Department of Environmental Quality – Office of Water Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

City of Hot Springs
City Manager's Office
Bill Burrough, City Manager
Post Office Box 700
Hot Springs National Park,
Arkansas 71902

VIA EMAIL: HEALEYR@ADEQ.STATE.AR.US
AND CERTIFIED U.S. POSTAL SERVICE

RE: City of Hot Springs, Arkansas, Garland County
LIS 08-099-002, AFIN 26-00145, 26-00444 and Permit No. AR00333880, AR0050148
Proposed Consent Administrative Order Amendment

And

LIS 22-XXX (Gulpha Basin), AFIN 26-00145 and Permit No. AR00333880
Proposed Administrative Order

Dear Mr. Healey:

The City of Hot Springs is in receipt of the reference documents provided on December 21, 2021. The City of Hot Springs Board of Directors convened on January 4, 2022 and voted to accept the Proposed Consent Administrative Order Amendment and the Proposed Administrative Order as presented by the Arkansas Energy and Environment, Division of Environmental Quality. The duly authorized resolutions are attached for your records along with the respective civil penalty for each order.

Outlined below is an updated summary of our efforts to address excursions related to the orders since our last discussion.

LIS-08-099-002 - Davidson WWTP:

1. Plans, Specifications, and NPDES Permit Construction/Modification application will be submitted on or about the first week of February. The scope of work will include increasing the biological capacity from 12 MGD to 16 MGD and increase the hydraulic capacity from 24 MGD to 48 MGD. Improvements will include:
 - a. Aeration system replacement and improvements
 - b. An additional secondary clarifier
 - c. UV Disinfection expansion
 - d. Chemical feed improvements
 - e. New outfall to Lake Catherine
 - f. Misc. yard piping, structures, and instrumentation

Mr. Richard Healey

LIS-08-099-002 & LIS-22-XXX

January 6, 2022

Page 2 of 2

LIS 22-XXX – Gulpha Basin:

1. System wide hydraulic modeling efforts is complete.
2. On November 16, 2021, the City of Hot Springs Board of Directors passed an ordinance to increase wastewater rates for a potential \$45 million revenue bond.
3. The technical memorandum outlining improvements necessary to abate the seven remaining wet weather SSO's (inclusive of MH 1750) is complete. The technical memorandum is attached for your reference. The scope of work is anticipated as follows, although there has not been a definitive decision on the number of construction contracts.
 - a. 27,500 linear feet of gravity collection system capacity improvements from the Upper Basin near the Gulpha Gorge Campground to Gulpha Pump Station.
 - b. Gulpha Pump Station Improvements for a peak capacity of 32 MGD
 - c. 20,200 linear feet of a 36-in. force main from the Gulpha Pump Station to the Davidson Drive WWTP
4. A spend down financial schedule will be developed based upon the recommended projects so that a revenue bond issuance schedule can be developed to meet the timeline identified in the CAO.
5. It is anticipated that professional service contracts will commence in late February for Gulpha Improvements once the spend down schedule and financial schedule is decided.

We sincerely appreciate you and your staff and look forward to working with you as we administer the requirements of the consent administrative orders.

Should you have any questions regarding this correspondence please don't hesitate to contact Monty Ledbetter at 501.651.7730

Sincerely,



Bill Burrough

City Manager

City of Hot Springs

Enclosures: Authorized Resolution No. 9941 – Proposed CAO Amendment No. 2 LIS 08-099-02

Proposed CAO LIS 08-099-02 Civil Penalty Payment of \$2,000

Authorized Resolution No. 9942 – Proposed CAO LIS 22- (Gulpha Basin)

Proposed CAO LIS 22 Civil Penalty Payment of \$12,800

Gulpha Basin Alternative Evaluation Technical Memorandum

Cc: Gary Carnahan, CHS Craig Johnson, Crist
Monty Ledbetter, CHS Todd Piller, CHS Denny McPhate, CHS

RESOLUTION NO. 9941

A RESOLUTION APPROVING AMENDMENT NO. 2 TO CONSENT ADMINISTRATIVE ORDER LIS 08-099 AND AUTHORIZING THE MAYOR TO EXECUTE SAME.

WHEREAS, On August 15, 2008, the Division of Environmental Quality (DEQ) and the City of Hot Springs entered into Consent Administrative Order LIS 08-099; and that

WHEREAS, Pursuant to Order and Agreement Paragraph VIII.2 of CAO LIS 08-099, the City agreed to achieve compliance with all permitted effluent limitations and sanitary sewer overflows no later than January 1, 2018; and that

WHEREAS, the City of Hot Springs has requested an extension of final compliance date which DEQ has accepted subject to terms set forth in Amendment No. 2 of the CAO; and that

WHEREAS, to accept the terms and conditions proposed by DEQ, Amendment No. 2 to COA LIS 08-099 should be approved, executed and returned to DEQ within 20 days.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the City of Hot Springs, Arkansas:

That Amendment No. 2 to Consent Administrative Order LIS 08-099 is hereby approved and the Mayor is authorized and directed to execute the attached Amendment No. 2 to Consent Administrative Order LIS 08-099 with Arkansas Department of Energy And Environment, Division Of Environmental Quality, Provided further, that the City Manager, or his designee, is authorized to act on behalf of the City in the administration of same.

PASSED: January 4, 2022

APPROVED:

PAT McCABE, MAYOR

ATTEST:

HARMONY MORRISSEY, CITY CLERK

ARKANSAS DEPARTMENT OF ENERGY AND ENVIRONMENT
DIVISION OF ENVIRONMENTAL QUALITY

IN THE MATTER OF:

City of Hot Springs
780 Adams Street
Hot Springs, AR 71901

LIS No. 08-099-002

Regional Wastewater Treatment Plant
320 Davidson Drive
Hot Springs, AR 71901

Permit No. AR0033880
AFIN 26-00145

Southwest Wastewater Treatment Plant
365 Winkler Road
Hot Springs, AR 71901

Permit No. AR0050148
AFIN 26-00444

AMENDMENT NO. 002 TO CONSENT ADMINISTRATIVE ORDER

This Amended Consent Administrative Order (“Order”) is issued pursuant to the authority of the Arkansas Water and Air Pollution Control Act, Ark. Code Ann. § 8-4-101 *et seq.*, the Federal Water Pollution Control Act, 33 U.S.C. § 1311 *et seq.*, and rules issued thereunder by Arkansas Pollution Control and Ecology Commission (APC&EC).

By mutual agreement of the City of Hot Springs (Respondent) and the Division of Environmental Quality¹ (DEQ), the Consent Administrative Order (CAO) LIS 08-099, as amended by CAO LIS 08-099-001, is hereby amended as follows:

Respondent and DEQ have agreed to amend the Findings of Fact Section of CAO LIS 08-099, as amended by CAO LIS 08-099-001, with the addition of the following paragraphs:

FINDINGS OF FACT

¹ Pursuant to Act 910 of 2019, the Arkansas Transformation and Efficiencies Act, the former Arkansas Department of Environmental Quality is now the Division of Environmental Quality in the newly created Department of Energy and Environment.

6. Respondent operates a major municipal wastewater treatment facility (“Regional Plant”) located at 320 Davidson Drive, Hot Springs, Garland County, Arkansas.
7. Respondent discharges treated wastewater from the Regional Plant to Lake Catherine, an impoundment of the Ouachita River, in Segment 2F of the Ouachita River Basin.
8. Respondent operates a minor municipal wastewater treatment facility (“Southwest Plant”) located at 365 Winkler Road, Hot Springs, Garland County, Arkansas.
9. Respondent discharges treated wastewater from the Southwest Plant to Little Mazarn Creek, thence to Lake Hamilton, thence to the Ouachita River in Segment 2F of the Ouachita River Basin.
10. Respondent is regulated pursuant to the National Pollutant Discharge Elimination System (NPDES).
11. Pursuant to the federal Clean Water Act, 33 U.S.C. § 1311(a) *et seq.*, the NPDES program prohibits the discharge of pollutants except as in compliance with a permit issued under the NPDES program in accordance with 33 U.S.C. § 1342(a).
12. DEQ is authorized under the Arkansas Water and Air Pollution Control Act (“Act”) to issue NPDES permits in the state of Arkansas and to initiate an enforcement action for any violation of an NPDES permit.
13. Ark. Code Ann. § 8-4-217(a)(1) and (3) provide:
 - (a) It shall be unlawful for any person to:
 - (1) Cause pollution, as defined in 8-4-102, of any of the waters of this state;
 - ...
 - (3) Violate any provisions of this chapter or of any rule or order adopted by the [APC&EC] under this chapter or of a permit issued under this chapter by the [DEQ].

14. Ark. Code Ann. § 8-4-103(c)(1)(A) authorizes DEQ to assess an administrative civil penalty not to exceed ten thousand dollars (\$10,000) per violation for any violation of any provision of the Act and any rule or permit issued pursuant to the Act.

15. Pursuant to Ark. Code Ann. § 8-4-103(c)(1)(B), “[e]ach day of a continuing violation may be deemed a separate violation for purposes of penalty assessment.”

Southwest Plant

16. DEQ issued NPDES Permit Number AR0050148 (“Southwest Permit”) to Respondent for the Southwest Plant on December 8, 2014. The Southwest Permit became effective on February 1, 2015, and expired on January 31, 2020. Respondent submitted a timely renewal application that was administratively complete on June 18, 2019. Pursuant to APC&EC Rule 6.201, Respondents permit continued in effect pending the issuance of a new permit. DEQ renewed Respondent’s Southwest Permit on May 28, 2020. The renewed Southwest Permit became effective on June 1, 2020, and expires on May 31, 2025.

17. On November 8, 2018, Respondent submitted a Technical Memorandum. The memorandum provided a post-rehabilitation study of numerous wastewater rehabilitation projects involving improvements to all aspects of Respondent’s wastewater system and treatment facilities.

18. On June 29, 2021, DEQ conducted a review of certified Discharge Monitoring Reports (DMRs) submitted by Respondent in accordance with the Southwest Permit.

19. The review revealed that Respondent reported the following violations of the permitted effluent discharge limits detailed in Part I, Section A of the Southwest Permit from January 1, 2018, through May 31, 2021:

- a. Two (2) violations of Ammonia Nitrogen; and

b. One (1) violation of pH.

20. Each of the three (3) discharge limitation violations listed in Paragraph 19 above constitutes a separate permit violation for a total of three (3) separate violations of Ark. Code Ann. § 8-4-217(a)(3).

21. DEQ conducted a review of the Sanitary Sewer Overflows (SSOs) reported by Respondent in accordance with the Southwest Permit for the period of January 1, 2018, through June 30, 2021. The review revealed that Respondent reported 102 SSOs totaling approximately 425,000 gallons. Respondent is permitted to discharge treated municipal wastewater from the Southwest Plant. Respondent is not permitted to discharge untreated wastewater from its collection system. Each SSO constituted an unpermitted discharge. Each unpermitted discharge violated Ark. Code Ann. § 8-4-217(b)(1)(E) and therefore violated Ark. Code Ann. § 8-4-217(a)(3).

Regional Plant

22. DEQ issued NPDES Permit Number AR0033880 (“Regional Permit”) to Respondent on August 22, 2018. The Permit became effective on September 1, 2018, and expires on August 31, 2023.

23. On January 24, 2018, Respondent submitted a request to DEQ to close CAO LIS 08-099. The request detailed the corrective actions Respondent had made towards compliance.

24. On May 17, 2018, DEQ sent an email to Respondent requesting additional information regarding the CAO LIS 08-099 closure request. On June 19, 2018, Respondent submitted the additional information.

25. On November 8, 2018, Respondent submitted a Technical Memorandum. The memorandum provided a post-rehabilitation study of numerous wastewater rehabilitation projects involving improvements to all aspects of Respondent's wastewater system and treatment facilities.
26. DEQ received complaints of recurring SSOs on the following dates:
- a. 2018: February 21, 2018, March 1, 2018, March 2, 2018, April 14, 2018, May 30, 2018, June 19, 2018, August 27, 2018, and November 1, 2018;
 - b. 2019: November 27, 2019;
 - c. 2020: March 3, 2020, April 28, 2020, and August 17, 2020; and
 - d. 2021: January 12, 2021, May 17, 2021, June 11, 2021, June 18, 2021, June 22, 2021, and June 24, 2021.
27. On May 15 and 23, 2019, DEQ conducted routine compliance evaluation inspections of the Regional Plant. DEQ documented the following violations during the inspections:
- a. Respondent did not demonstrate proper operation and maintenance of the Regional Plant as documented by the following:
 - i. A diffuser line in the middle aeration basin was in need of repair;
 - ii. Excessive algae were present in the secondary clarifiers;
 - iii. The staff gauge at the Parshall flume was not readable;
 - iv. The pump at the Rockefeller pump station would not start; and
 - v. The visual alarm at the Mid-America pump station was not operable.These failures are a violation of Part III, Section B, Condition 1.A of the Permit and therefore are a violation of Ark. Code Ann. § 8-4-217(a)(3).
 - b. The March 4, 2019, Carbonaceous Biochemical Oxygen Demand lab analysis sheet did not document the volume of seed added per bottle. This is a violation of

Part III, Section C, Condition 3 of the Permit and therefore is a violation of Ark.

Code Ann. § 8-4-217(a)(3).

28. On June 27, 2019, DEQ notified Respondent of the inspection results.
29. On July 8, 2019, DEQ received Respondent's response to the violations documented in the May 15 and 23, 2019 inspections.
30. On August 29, 2019, DEQ notified Respondent that the inspection response dated July 8, 2019, was sufficient to address the violations.
31. On December 31, 2020, Respondent submitted a report to DEQ that included an updated System Evaluation and Capacity Assurance Plan (SECAP) detailing the projects to be completed for the reduction of SSOs in the collection system, the corrective actions to be completed at the wastewater treatment plant to increase the design capacity, and set a new final compliance date of September 2024.
32. On April 24, 2018, August 21, 2018, April 24, 2020, August 17, 2020, and May 18, 2021, DEQ sent effluent violation warning letters to Respondent.
33. On May 21, 2021, Respondent submitted a response to the May 18, 2021 effluent violations letter.
34. On June 7, 2021, Respondent submitted a request to DEQ to extend the date of final compliance of CAO LIS 08-009 to December 31, 2024, for the wastewater treatment plant improvements, and December 31, 2030, for reduction of SSOs in the collection system.
35. On June 28, 2021, DEQ conducted a review of certified DMRS submitted by Respondent in accordance with the Regional Permit.

36. The review revealed that Respondent reported the following violations of the permitted effluent discharge limits detailed in Part I, Section A of the Regional Permit from January 1, 2018, through May 31, 2021:

- a. Thirty-two (32) violations of Total Suspended Solids;
- b. Twenty-one (21) violations of Carbonaceous Biochemical Oxygen Demand;
- c. Seven (7) violations of Ammonia Nitrogen;
- d. Six (6) violations of Total Phosphorus; and
- e. Two (2) violations of Fecal Coliform Bacteria.

37. Each of the sixty-eight (68) discharge limitation violations listed in Paragraph 36 above constitutes a separate permit violation for a total of sixty-eight (68) separate violations of Ark. Code Ann. § 8-4-217(a)(3).

38. DEQ conducted a review of the SSOs reported by Respondent in accordance with the Regional Permit for the period of January 1, 2018, through June 30, 2021. The review revealed that Respondent reported 310 SSOs totaling approximately 156,000,000 gallons². Respondent is permitted to discharge treated municipal wastewater from its Regional Plant. Respondent is not permitted to discharge untreated wastewater from its collection system. Each SSO constituted an unpermitted discharge. Each unpermitted discharge violated Ark. Code Ann. § 8-4-217(b)(1)(E) and therefore violated Ark. Code Ann. § 8-4-217(a)(3).

39. On July 14, 2021, DEQ and Respondent met to discuss the proposed timeline submitted on June 7, 2021.

ORDER AND AGREEMENT

² The total number of 310 SSOs totaling approximately 156,000,000 gallons does not include reported SSOs that discharged to Gulpha Creek.

Respondent and DEQ have further agreed to amend the Order and Agreement Section of CAO LIS 08-099, as amended by CAO LIS 08-099-001, by deleting Paragraphs I-X and replacing those paragraphs with the following:

1. Respondent shall comply with the terms, milestone schedule, and final compliance date contained in the updated milestone schedule submitted on June 7, 2021:
 - a. Respondent shall complete the Regional Plant improvements to address effluent limitation exceedances by December 31, 2024. The final compliance report shall be submitted by December 31, 2024; and
 - b. Respondent shall complete all collection system improvements to address all SSOs by December 31, 2030. The final compliance report shall be submitted by December 31, 2030.

The milestone schedule and final compliance dates shall be fully enforceable as terms of this Order.

2. Within six (6) months of the effective date of this Order, Respondent shall submit to DEQ a progress report detailing the actions that have been taken to achieve compliance. At a minimum, the report shall include a list of the corrective actions initiated and completed, and a statement of the overall progress towards achieving final compliance. Respondent shall submit semi-annual progress reports thereafter until the Order is closed.

3. In compromise and full settlement of the violations specified in the Findings of Fact, Respondent agrees to pay a civil penalty of Ten Thousand Two Hundred Dollars (\$10,200.00), of which Eight Thousand Two Hundred Dollars (\$8200.00) shall be conditionally SUSPENDED by DEQ. The allowance of a conditional suspension is based upon DEQ's primary goal of regulatory compliance and Respondent's current efforts to obtain compliance. If Respondent

fully complies with this Order, the suspended civil penalty of Eight Thousand Two Hundred Dollars (\$8200.00) shall be DISMISSED by DEQ. The suspension and dismissal of civil penalties is contingent upon Respondent complying with the terms of this Order. If Respondent violates any term of this Order, the full balance of Ten Thousand Two Hundred Dollars (\$10,200.00) shall become due and payable immediately to DEQ. Payment of the civil penalty in the amount of Two Thousand Dollars (\$2000.00) is due within thirty (30) calendar days of the effective date of this Order. Payment of the penalty shall be made payable to the Division of Environmental Quality, and mailed to the attention of:

DEQ, Fiscal Division
5301 Northshore Drive
North Little Rock, AR 72118

In the event that Respondent fails to pay the civil penalty within the prescribed time, DEQ shall be entitled to attorneys' fees and costs of collection.

4. Failure to meet any requirement or deadline of this Order constitutes a violation of this Order. If Respondent should fail to meet any such requirements or deadlines, Respondent consents and agrees to pay on demand to DEQ stipulated penalties according to the following schedule:

- | | |
|---|-------------------|
| a. First day through fourteenth day: | \$100.00 per day |
| b. Fifteenth day through the thirtieth day: | \$500.00 per day |
| c. Each day beyond the thirtieth day: | \$1000.00 per day |

These stipulated penalties for delay in performance shall be in addition to any other remedies or sanctions that may be available to DEQ by reason of failure by Respondent to comply with the requirements of this Order.

5. If any event, including but not limited to an act of nature, occurs that causes or may cause a delay in the achievement of compliance by Respondent with the requirements or deadlines of

this Order, Respondent shall so notify DEQ, in writing, as soon as reasonably possible after it is apparent that a delay will result, but in no case after the due dates specified in this Order. The notification shall describe in detail the anticipated length of the delay, the precise cause of the delay, the measures being taken and to be taken to minimize the delay, and the timetable by which those measures will be implemented.

6. DEQ may grant an extension of any provision of this Order if Respondent requests such an extension in writing, and the delay or anticipated delay has or will be caused by circumstances beyond the control of and without the fault of Respondent. The time for performance may be extended for a reasonable period, but in no event longer than the period of delay resulting from such circumstances. Respondent has the burden of proving that any delay is caused by circumstances beyond the control and without the fault of Respondent, as well as the length of the delay attributable to such circumstances. Failure to notify DEQ promptly, as provided in the preceding paragraph of this Section, shall be grounds for a denial of an extension.

7. All requirements by the Order and Agreement are subject to approval by DEQ. Unless otherwise specified herein, in the event of any deficiencies, Respondent shall, within the timeframe specified by DEQ, submit any additional information or changes requested, or take additional actions specified by DEQ to correct any such deficiencies. Failure to respond adequately to such Notice of Deficiency within the timeframe specified in writing by DEQ constitutes a failure to meet the requirements established by this Order.

8. This Order is subject to public review and comment in accordance with Ark. Code Ann. § 8-4-103(d) and APC&EC Rule 8 and shall not be effective until thirty (30) calendar days after public notice is given. DEQ retains the right to rescind this Order based upon the comments received within the thirty (30) day public comment period. Notwithstanding the public notice

requirements, the corrective actions necessary to achieve compliance shall be taken immediately.

The publication of this Order shall occur on or about the 10th or 25th day of the month following the date this Order is executed. As provided by APC&EC Rule 8, this matter is subject to being reopened upon Commission initiative, or in the event a petition to set aside this Order is granted by the Commission.

9. Nothing in this Order shall be construed as a waiver by DEQ of its enforcement authority over alleged violations not specifically addressed herein. Also, this Order does not exonerate Respondent from any past, present, or future conduct that is not expressly addressed herein, nor does it relieve Respondent of its responsibilities for obtaining any necessary permits.

10. This Order has been reviewed and approved by the City Council of Respondent in a duly convened meeting with a quorum present. See copy of [meeting minutes or resolution] attached as Exhibit A.

11. The City Council of Respondent has authorized the undersigned representative to sign this Order on behalf of Respondent. See Exhibit A.

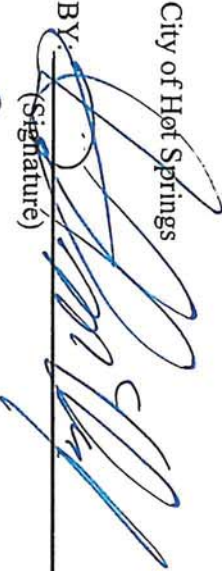
12. The City Council of Respondent has authorized the undersigned representative to expend funds for compliance activities required by this Order including but not limited to the payment of a civil penalty as set forth in this Order. See Exhibit A.

SO ORDERED THIS _____ DAY OF _____, 2022.

JULIE LINCK, CHIEF ADMINISTRATOR, ENVIRONMENT

APPROVED AS TO FORM AND CONTENT:

City of Hot Springs

BY: 
(Signature)

Pat McCabe
(Typed or printed name)

TITLE: Mayor

DATE: January 4, 2022

RESOLUTION NO. 09412

A RESOLUTION APPROVING CONSENT ADMINISTRATIVE ORDER LIS 22- (GULPHA BASIN) AND AUTHORIZING THE MAYOR TO EXECUTE SAME.

WHEREAS, On December 21, 2021, the Arkansas Department Of Energy And Environment, Division of Environmental Quality (DEQ) sent notice to the City of Hot Springs of a proposed Consent Administrative Order (CAO) for violations of the Arkansas Water and Air Pollution Control Act at the Davidson Drive site; and that

WHEREAS, the attached CAO enumerates the violations in the "Finding of Fact" section, and outlines the step required to achieve compliance in the "Order and Agreement" section, and that

WHEREAS, to accept the terms and conditions set forth by DEQ, the attached COA LIS 22- should be approved, executed and returned to DEQ within 20 days.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the City of Hot Springs, Arkansas:

That Consent Administrative Order LIS 22- is hereby approved and the Mayor is authorized and directed to execute the attached Consent Administrative Order LIS 22- with Arkansas Department of Energy And Environment, Division Of Environmental Quality, Provided further, that the City Manager, or his designee, is authorized to act on behalf of the City in the administration of same.

PASSED: January 4, 2022

APPROVED:

PAT McCABE, MAYOR

ATTEST:

HARMONY MORRISSEY, CITY CLERK

ARKANSAS DEPARTMENT OF ENERGY AND ENVIRONMENT
DIVISION OF ENVIRONMENTAL QUALITY

IN THE MATTER OF:

City of Hot Springs
780 Adams Street
Hot Springs, AR 71901

LIS No. 22-
Permit No. AR0033880
AFIN 26-00145

CONSENT ADMINISTRATIVE ORDER

This Consent Administrative Order (“Order”) is issued pursuant to the authority of the Arkansas Water and Air Pollution Control Act, Ark. Code Ann. § 8-4-101 *et seq.*, the Federal Water Pollution Control Act, 33 U.S.C. § 1311 *et seq.*, and rules issued thereunder by Arkansas Pollution Control and Ecology Commission (APC&EC).

The issues herein having been settled by the agreement of the City of Hot Springs (Respondent) and the Division of Environmental Quality¹ (DEQ), it is hereby agreed and stipulated that the following FINDINGS OF FACT and ORDER AND AGREEMENT be entered.

FINDINGS OF FACT

1. Respondent operates a major municipal wastewater treatment facility (“Regional Plant”) located at 320 Davidson Drive, Hot Springs, Garland County, Arkansas.
2. Respondent discharges treated wastewater from the Regional Plant to Lake Catherine, an impoundment of the Ouachita River, in Segment 2F of the Ouachita River Basin.

¹ Pursuant to Act 910 of 2019, the Arkansas Transformation and Efficiencies Act, the former Arkansas Department of Environmental Quality is now the Division of Environmental Quality in the newly created Department of Energy and Environment.

3. Respondent is regulated pursuant to the National Pollutant Discharge Elimination System (NPDES).
4. DEQ issued NPDES Permit Number AR0033880 ("Permit") to Respondent for the Regional Plant on January 31, 2013. The Permit became effective on February 1, 2013, and expired on January 31, 2018. Respondent's permit coverage was administratively continued until DEQ renewed Respondent's Permit on August 22, 2018. The renewal Permit became effective on September 1, 2018, and expires on August 31, 2023.
5. Pursuant to the federal Clean Water Act, 33 U.S.C. § 1311(a) *et seq.*, the NPDES program prohibits the discharge of pollutants except as in compliance with a permit issued under the NPDES program in accordance with 33 U.S.C. § 1342(a).
6. DEQ is authorized under the Arkansas Water and Air Pollution Control Act ("Act") to issue NPDES permits in the state of Arkansas and to initiate an enforcement action for any violation of an NPDES permit.
7. Ark. Code Ann. § 8-4-217(a)(1) and (3) provide:
 - (a) It shall be unlawful for any person to:
 - (1) Cause pollution, as defined in § 8-4-102, of any of the waters of this state;
 - ...
 - (3) Violate any provisions of this chapter or of any rule or order adopted by the [APC&EC] under this chapter or of a permit issued under this chapter by the [DEQ].
8. Ark. Code Ann. § 8-4-103(c)(1)(A) authorizes DEQ to assess an administrative civil penalty not to exceed ten thousand dollars (\$10,000) per violation for any violation of any provision of the Act and any rule or permit issued pursuant to the Act.

9. Pursuant to Ark. Code Ann. § 8-4-103(c)(1)(B), “[e]ach day of a continuing violation may be deemed a separate violation for purposes of penalty assessment.”
10. Respondent operates a collection system (“system”) that routes wastewater to its Regional Plant for treatment. Part of that system is located along Gulpha Creek, Hot Springs, Garland County, Arkansas.
11. Respondent is authorized by its Permit to discharge treated wastewater from the Regional Plant to Lake Catherine, an impoundment of the Ouachita River, in Segment 2F of the Ouachita River Basin. Respondent is not authorized to discharge wastewater from its system.
12. When the manholes of the system overflow, Respondent discharges untreated wastewater to Gulpha Creek, thence to Spencer Bay of Lake Catherine, an impoundment of the Ouachita River, in Segment 2F of the Ouachita River Basin.
13. DEQ has received numerous complaints of recurring Sanitary Sewer Overflows (SSOs) from the system along Gulpha Creek from January 1, 2018, through July 31, 2021.
14. DEQ conducted a review of the SSOs reported by Respondent in accordance with the Permit for the period of January 1, 2018, through June 30, 2021. The review revealed that Respondent reported 140 SSOs that entered Gulpha Creek, totaling approximately 4,000,000 gallons. Respondent is permitted to discharge treated municipal wastewater from its facility. Respondent is not permitted to discharge untreated wastewater from its collection system. Each SSO constituted an unpermitted discharge. Each unpermitted discharge violated Ark. Code Ann. § 8-4-217(b)(1)(E) and Ark. Code Ann. § 8-4-217(a)(1) and therefore violated Ark. Code Ann. § 8-4-217(a)(3).
15. On July 2, 2021, DEQ sent a letter to Respondent requesting that Respondent do the following:

- a. Perform a Water Quality Assessment (WQA) in Gulpha Creek upstream and downstream of manhole #1750, and at the location where the overflow from manhole #1750 enters Gulpha Creek. The WQA should be performed after each overflow occurring from the manhole #1750 and within twelve (12) hours of when the overflow ceases. The results should be submitted to DEQ.
 - b. Submit an interim operating plan to include measures to stop the overflows occurring from manhole #1750. The plan should be submitted to DEQ by July 15, 2021.
 - c. Submit a revised timeline for the repair and remediation of the collection system line that is connected to manhole #1750 by August 1, 2021, making the repairs of this line a priority.
 - d. Contact DEQ to schedule a meeting to discuss the proposed timeline submitted on June 7, 2021.
16. On July 14, 2021, DEQ and Respondent met to discuss the proposed timeline dated June 7, 2021.
 17. On July 15, 2021, Respondent submitted an extension request to submit the WQA plan, Interim Operating Plan, and revised timeline by August 16, 2021. On July 20, 2021, DEQ notified Respondent the extension request had been granted.
 18. On July 20, 2021, DEQ sent a letter to Respondent requesting the following:
 - a. Upon discovery of any SSO at manhole #1750 or any other manhole or pump station that discharges into Gulpha Creek, Respondent shall immediately sample the unpermitted discharge before confluence with the receiving stream for Fecal

Coliform Bacteria and *E. coli*. Respondent shall submit the results and supporting information to DEQ within three (3) days of the event sampled.

- b. Respondent shall submit a Communication Plan by July 23, 2021, that establishes a method to be used to notify the public of the water quality issues in Gulpha Creek and Spencer Bay of Lake Catherine, and provide a schedule for keeping the public informed about improvements or degradation of water quality in the water bodies mentioned above.
- c. Respondent shall submit an Interim Plan, by July 23, 2021, that describes the operational and best management practices that Respondent will immediately implement to mitigate the impact of the continued SSOs.

19. On July 23, 2021, Respondent submitted the Communication Plan and Bacteria Sampling Plan.

20. On August 3, 2021, DEQ provided specific suggestions for Respondent's Communication Plan and Bacteria Sampling Plan.

21. On August 16, 2021, Respondent submitted a response to DEQ's August 3, 2021 correspondence, including its WQA Plan and drawings and photographs of the containment structure installed around manhole 1750, and responses to DEQ specific suggestions.

ORDER AND AGREEMENT

WHEREFORE, the parties stipulate and agree as follows:

1. Respondent shall submit the WQAs to DEQ for review within three (3) calendar days of the completion of the assessment, but no later than ten (10) calendar days following each overflow occurrence. The WQAs shall include the analysis of pH, Dissolved Oxygen, Conductivity, Temperature, Turbidity, Total Dissolved Solids, Total Suspended Solids, Alkalinity, *E. coli*, Chloride, Sulfate, Carbonaceous Biochemical Oxygen Demand-5 day,

Ammonia as Nitrogen, Nitrate+Nitrite as Nitrogen, Kjeldahl Nitrogen as Nitrogen, Ortho-phosphorus as phosphorus, Total Phosphorus as phosphorus, and Chlorophyll a.

2. Respondent shall immediately implement the updated standard operating procedures contained in Respondent's August 16, 2021 response.
3. Respondent shall immediately implement the Communication Plan, dated July 23, 2021.
4. Upon review and approval by DEQ, Respondent shall comply with the terms, timeline, and final compliance date contained in the revised timeline for the repair and remediation of the collection system line along Gulpha Creek submitted on August 16, 2021. The revised timeline and final compliance date shall be fully enforceable as terms of this Order.
5. Respondent shall submit to DEQ monthly progress report detailing the actions that have been taken to achieve compliance. At a minimum, the reports shall include a list of the corrective actions initiated and completed since the previous report, the number of SSOs that occurred during the reporting period, and a statement of the overall progress towards achieving final compliance. Respondent shall submit monthly progress reports thereafter until the Order is closed.
6. In compromise and full settlement of the violations specified in the Findings of Fact Respondent agrees to pay a civil penalty of Sixty-Four Thousand Dollars (\$64,000.00), of which Fifty-One Thousand Two Hundred Dollars (\$51,200.00) shall be conditionally SUSPENDED by DEQ. The allowance of a conditional suspension is based upon DEQ's primary goal of regulatory compliance and Respondent's current efforts to obtain compliance. If Respondent fully complies with this Order, the suspended civil penalty of Fifty-One Thousand Two Hundred Dollars (\$51,200.00) shall be DISMISSED by DEQ. The suspension and dismissal of civil penalties is contingent upon Respondent complying with the terms of this Order. If Respondent

violates any term of this Order, the full balance of Sixty-Four Thousand Dollars (\$64,000.00) shall be payable immediately to DEQ. Payment of the penalty shall be made payable to the Division of Environmental Quality, and mailed to the attention of:

DEQ, Fiscal Division
5301 Northshore Drive
North Little Rock, AR 72118

In the event that Respondent fails to pay the civil penalty within the prescribed time, DEQ shall be entitled to attorneys' fees and costs of collection.

7. Failure to meet any requirement or deadline of this Order constitutes a violation of this Order. If Respondent should fail to meet any such requirements or deadlines, Respondent consents and agrees to pay on demand to DEQ stipulated penalties according to the following schedule:

- | | |
|---|-------------------|
| a. First day through fourteenth day: | \$100.00 per day |
| b. Fifteenth day through the thirtieth day: | \$500.00 per day |
| c. Each day beyond the thirtieth day: | \$1000.00 per day |

These stipulated penalties for delay in performance shall be in addition to any other remedies or sanctions that may be available to DEQ by reason of failure by Respondent to comply with the requirements of this Order.

8. If any event, including but not limited to an act of nature, occurs that causes or may cause a delay in the achievement of compliance by Respondent with the requirements or deadlines of this Order, Respondent shall so notify DEQ, in writing, as soon as reasonably possible after it is apparent that a delay will result, but in no case after the due dates specified in this Order. The notification shall describe in detail the anticipated length of the delay, the precise cause of the delay, the measures being taken and to be taken to minimize the delay, and the timetable by which those measures will be implemented.

9. DEQ may grant an extension of any provision of this Order if Respondent requests such an extension in writing, and the delay or anticipated delay has or will be caused by circumstances beyond the control of and without the fault of Respondent. The time for performance may be extended for a reasonable period, but in no event longer than the period of delay resulting from such circumstances. Respondent has the burden of proving that any delay is caused by circumstances beyond the control and without the fault of Respondent, as well as the length of the delay attributable to such circumstances. Failure to notify DEQ promptly, as provided in the preceding paragraph of this Section, shall be grounds for a denial of an extension.

10. All requirements by the Order and Agreement are subject to approval by DEQ. Unless otherwise specified herein, in the event of any deficiencies, Respondent shall, within the timeframe specified by DEQ, submit any additional information or changes requested, or take additional actions specified by DEQ to correct any such deficiencies. Failure to respond adequately to such Notice of Deficiency within the timeframe specified in writing by DEQ constitutes a failure to meet the requirements established by this Order.

11. This Order is subject to public review and comment in accordance with Ark. Code Ann. § 8-4-103(d) and APC&EC Rule 8 and shall not be effective until thirty (30) calendar days after public notice is given. DEQ retains the right to rescind this Order based upon the comments received within the thirty (30) day public comment period. Notwithstanding the public notice requirements, the corrective actions necessary to achieve compliance shall be taken immediately. The publication of this Order shall occur on or about the 10th or 25th day of the month following the date this Order is executed. As provided by APC&EC Rule 8, this matter is subject to being reopened upon Commission initiative, or in the event a petition to set aside this Order is granted by the Commission.

12. Nothing in this Order shall be construed as a waiver by DEQ of its enforcement authority over alleged violations not specifically addressed herein. Also, this Order does not exonerate Respondent from any past, present, or future conduct that is not expressly addressed herein, nor does it relieve Respondent of its responsibilities for obtaining any necessary permits.
13. This Order has been reviewed and approved by the City Council of Respondent in a duly convened meeting with a quorum present. See copy of [meeting minutes or resolution] attached as Exhibit A.
14. The City Council of Respondent has authorized the Mayor and City Clerk/Treasurer to sign this Order on behalf of Respondent. See Exhibit A.

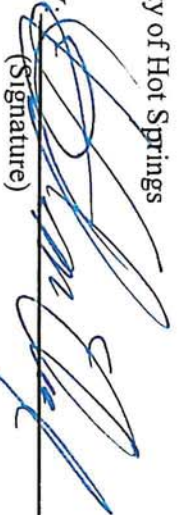
15. The City Council of Respondent has authorized the Mayor and City Clerk/Treasurer to expend funds for compliance activities required by this Order including but not limited to the payment of a civil penalty as set forth in this Order. See Exhibit A.

SO ORDERED THIS _____ DAY OF _____, 2022.

JULIE LINCK, ADMINISTRATOR OF ENVIRONMENT

APPROVED AS TO FORM AND CONTENT:

City of Hot Springs

BY: 
(Signature)

Pat McCabe
(Typed or printed name)

TITLE: Mayor

DATE: January 4, 2022

December 30, 2021

Craig Johnson, P.E.
Crist Engineers Inc.
205 Executive Ct.
Little Rock, AR 72205

Subject: Gulpha Basin Alternative Evaluation TM

Dear Mr. Johnson:

In accordance with the February 2021 Subconsultant Agreement with Crist Engineers and September 29th meeting, RJN Group, Inc. (RJN) is pleased to submit the Gulpha Basin Alternative Evaluation TM. The activities included utilizing the recalibrated Gulpha basin hydraulic model to evaluate options to eliminate “chronic” SSOs. The three alternatives evaluated are as follows:

Option 1. Gulpha Storage Tank: 11-million-gallon (MG) storage tank with odor control equipment at the Heller property east of Lakeside School District. Includes a five-million-gallon per day (MGD) pump station to empty the storage tank. Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the storage tank (MH 1742). Also includes 11.5-MGD pumping capacity at the Gulpha pump station and new 24-inch force main on the proposed alignment discharging into gravity main segment 947:5304.

Option 2. Full Conveyance with Single Force Main: Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the Gulpha pump station. The pump design should incorporate pumps with variable frequency drives with a delivery range between 2.5 to 32-MGD at a new Gulpha pump station and a 36-inch force main on the proposed alignment discharging to the Davidson Wastewater Treatment Plant’s (DWWTP) headworks.

Option 3. Full Conveyance with Dual Force Mains: Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the Gulpha pump station. Includes six-MGD dry-weather pumping capacity utilizing existing pumps and 26-MGD wet-weather pumping capacity at the Gulpha pump station. This option would entail rehabilitation or replacement of the existing 20-inch Gulpha force main for dry-weather flow and construction of a 36-inch force main for wet-weather flow on the proposed alignment discharging to the DWWTP headworks.

The following conclusions were based on the results of these evaluations. *RJN recommends that Hot Springs implement Option 2 – Full Conveyance with Single Force Main.* This option allows for CHS to best utilize the existing capacity of DWWTP’s EQ Basin without the addition of new storage assets that will have considerable O&M costs associated. This option allows for renewal of the Gulpha Interceptor and pump station while also being the most cost-effective option. The renewal of the Gulpha interceptor is projected to remove significant amounts of extraneous inflow and infiltration, as an unaccounted benefit. If future budgets allow, the existing Gulpha force main may be rehabilitated and utilized for dry-weather flows.

We appreciate the opportunity to work with Hot Springs and the excellent cooperation throughout the project. Should you have any questions, please do not hesitate to reach out.

Respectfully Submitted,
RJN GROUP, INC.

A handwritten signature in blue ink, appearing to read 'Mac Compton'.

Mac Compton, P.E.
Senior Project Manager

Colton Bryant, E.I.
Project Engineer

MC/CB/18-3665-00
Enclosure

INTRODUCTION

In February 2021, RJN Group, Inc. (RJN) contracted with Crist Engineers was requested to install 44 flow monitors and 10 rain gauges throughout the Hot Springs, AR sewer system with the purpose of recalibrating the existing hydraulic model. Along with recalibrating the model, updates to the hydraulic model from 2015 was performed with edits made to current population, water consumption data, and sewer main additions. Additionally, RJN, with guidance from Crist Engineers, was requested to evaluate storage and conveyance alternatives within the Gulpha sewer basin to eliminate the remaining five “chronic” Sanitary Sewer Overflows (SSOs).

The purpose of this technical memorandum is to discuss alternative storage and conveyance options evaluated within the Gulpha sewer basin along with each option’s probable costs so that a comprehensive comparison can be conducted.

BACKGROUND

Since 2009, RJN has been assisting the City of Hot Springs in eliminating SSOs throughout the Hot Springs, AR sewer system. RJN performed a flow monitoring program of the entire sanitary sewer system along with subsequent Sanitary Sewer Evaluation Studies (SSES) from 2009 to 2010, after which, the 2010 SECAP report was delivered. Within this report, rehabilitation of 50,797 LF of sewer main, and improvement of the Gulpha pump station was recommended for the Gulpha sewer basin. This included construction of a 30-inch parallel force main and upgraded 30-MGD pumping capacity at the Gulpha pump station. Figure 1.1 summarizes the recommendations for the Gulpha basin from the 2010 SECAP report. A hydraulic model update and recalibration was performed in 2015 which focused on those areas that were about to undergo capacity enhancements, such as the Stokes tributary area. In 2018, two meters were placed just upstream of the Gulpha pump station to evaluate the flows entering the station at that time.

Project ¹	Length (ft)	No I-1 Reduction Capital Cost ² (\$)	With I-1 Reduction Capital Cost ² (\$)
PRIORITY 1 PROJECTS			
<i>Gravity Mains</i>			
E. Grand Ave	295		
	<u>1,873</u>	<u>457,178</u>	<u>457,178</u>
Upper Gulpha Interceptor	2,168	508,950	508,951
<i>Force Main</i>			
Gulpha Pump Station Force Main	16,016	5,621,686	5,205,265
	<u>16,016</u>	<u>5,621,686</u>	<u>5,205,265</u>
<i>Pump Station</i>			
Gulpha Pump Station		8,360,300	6,999,980
		<u>8,360,300</u>	<u>6,999,980</u>
<i>Pump Station Subtotal</i>		<u>14,490,936</u>	<u>12,714,196</u>
PRIORITY 2 PROJECTS			
<i>Gravity Mains</i>			
Gulpha Interceptor	20,192	14,321,445	12,998,981
Ridgeway St	8,139	2,170,446	2,119,174
Spring St & Festival St	247	58,838	58,838
Upper Gulpha Interceptor	<u>4,014</u>	<u>859,905</u>	<u>662,380</u>
	<u>32,613</u>	<u>17,410,634</u>	<u>15,839,393</u>
<i>Gravity Subtotal</i>		<u>17,410,633</u>	<u>15,839,393</u>
<i>Priority 2 Total</i>		<u>31,901,589</u>	<u>28,553,589</u>
Gulpha Total			

Figure 1.1 – 2010 Gulpha SECAP Recommendations

The City of Hot Springs rehabilitated over 4,000 manholes (MH), along with capacity improvements of multiple force mains, gravity mains, and pump station upgrades. Within the Gulpha sewer basin, there are currently seven SSOs total, five of which occurred more than five times in 2020 and are considered “chronic”. A chronic SSO is an SSO that occurs more than five times per year. Figure 1.2 shows the locations of those seven SSOs. The SSO at MH 10578 is currently being addressed with the completion of the East Grand Ave. capacity improvement project. The remaining SSOs will be addressed by the completion of one of the alternatives discussed in chapter 2 of this technical memorandum.

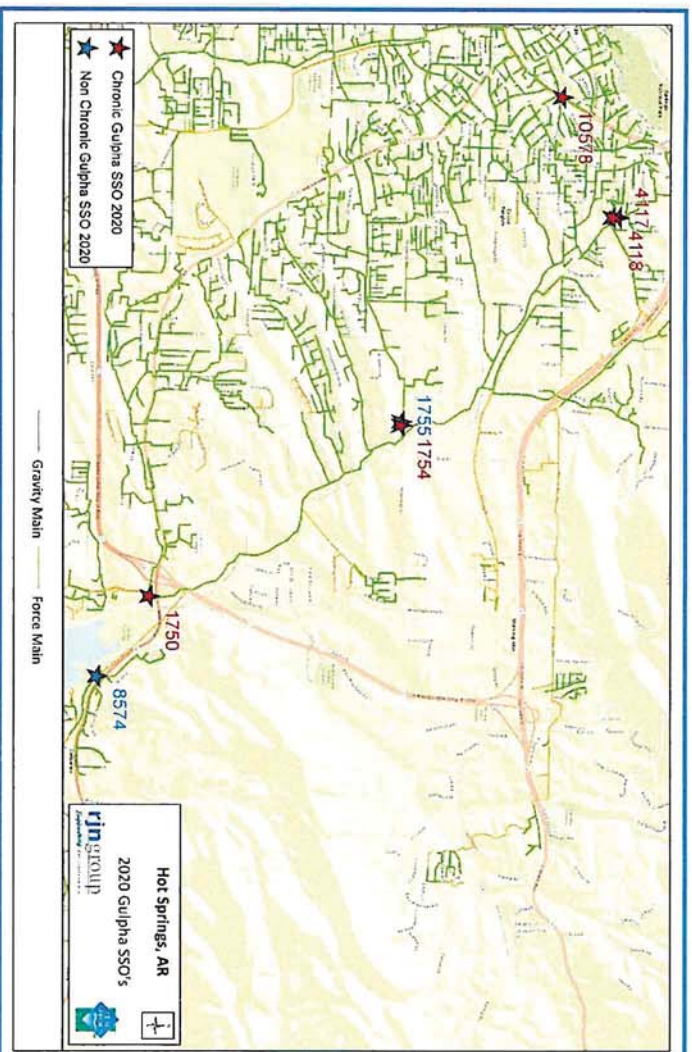


Figure 1.2 – 2020 Gulpha Basin SSOs

ALTERNATIVE EVALUATIONS

Eliminating the SSOs in the Gulpha sewer basin requires the sewer system to handle peak flows occurring during the 2-year/24-hour design storm event. The design storm is a theoretical storm event in which a total of 4.3-inches of rainfall falls over 24-hours and has a peak 1-hour intensity of 1.94-inches. Three options have been evaluated within the Gulpha basin so that the remaining recorded SSOs are eliminated. The three options are as follows:

Option 1. Gulpha Storage Tank: 11-million-gallon (MG) storage tank with odor control equipment at the Heller property east of Lakeside School District. Includes a five-million-gallon per day (MGD) pump station to empty the storage tank. Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the storage tank (MH 1742). Also includes 11.5-MGD pumping capacity at the Gulpha pump station and new 24-inch force main on the proposed alignment discharging into gravity main segment 947:5304.

Option 2. Full Conveyance with Single Force Main: Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the Gulpha pump station. The pump design should incorporate pumps with variable frequency drives with a delivery range between 2.5 to 32-MGD at a new Gulpha pump station and a 36-inch force main on the proposed alignment discharging to the Davidson Wastewater Treatment Plant's (DWWTP) headworks.

Option 3. Full Conveyance with Dual Force Mains: Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the Gulpha pump station. Includes six-MGD dry-weather pumping capacity utilizing existing pumps and 26-MGD wet-weather pumping capacity at the Gulpha pump station. This option would entail rehabilitation or replacement of the existing 20-inch Gulpha force main for dry-weather flow and construction of a 36-inch force main for wet-weather flow on the proposed alignment discharging to the DWWTP headworks.

For all options, MHs 1746, 1747, 1748, 1749, and 1750 need to be raised at least six feet. Doing so will prevent SSOs occurring near the Gulpha pump station during peak flow periods. These manholes are shown in **Figure 2.1**.

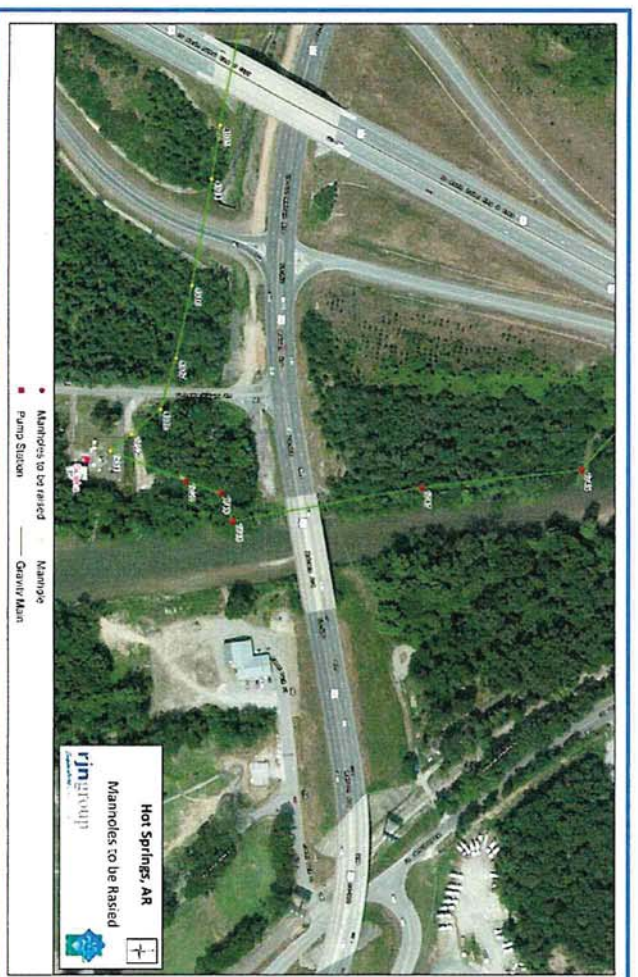


Figure 2.1 – Manholes to be Raised

PROPOSED FORCE MAIN ALIGNMENT

The City of Hot Springs provided RJN with a proposed force main alignment to be included in the evaluation for the Gulpha sewer basin. All options will require construction of a new force main along the proposed alignment. The force main begins at the Gulpha pump station and discharges into a new manhole on gravity main sewer segment 947:5304 with a total length of approximately 11,100 linear feet (LF). The high point of the proposed alignment is 46 feet lower (437 feet) than the existing force main's high point (483 feet). If constructed, this would cause the existing pumps at the Gulpha pump station to operate beyond their current allowable operational range. Therefore, to utilize the proposed force main, new pumps will be needed. The proposed force main alignment is shown in **Figure 2.2**.

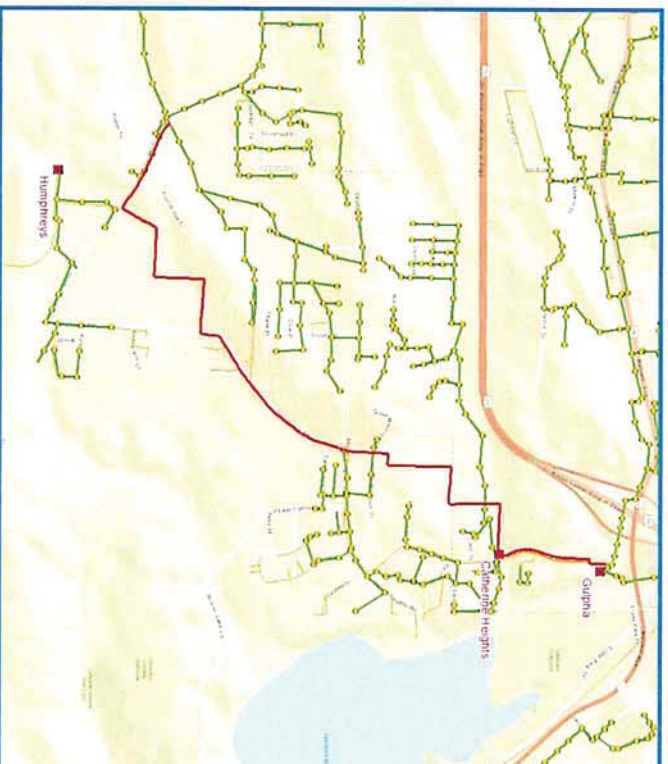


Figure 2.2 – Proposed Force Main Alignment

GULPHA STORAGE TANK

A storage tank option was evaluated with an initial goal of limiting the amount of capacity improvements needed along the Gulpha interceptor and limiting the need for increased pumping capacity at the Gulpha pump station. RJN was instructed by the City of Hot Springs to evaluate a storage tank option located at the "Heller property" east of Lakeside High School and north-west of exit nine on Highway 270 east. This location was selected due to feasibility of land acquisition and position within the Gulpha basin that allows for maximum utilization. The location of the proposed storage tank is shown in **Figure 2.3** on page 2-3.

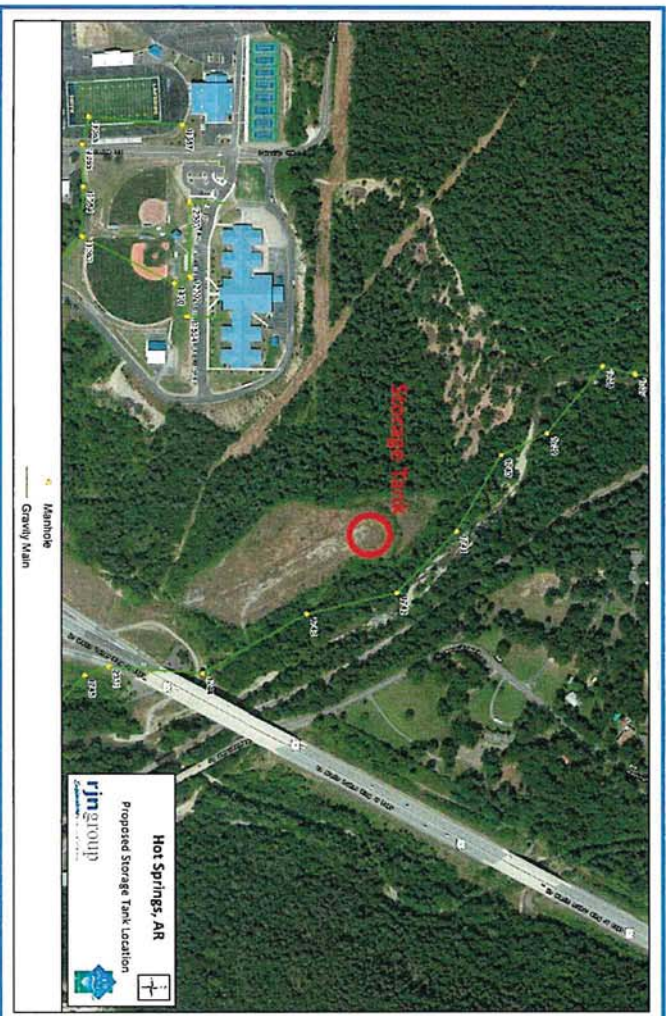


Figure 2.3 – Proposed Storage Tank Location

Initial setup was required when evaluating this option in the hydraulic model. To complete setup the following actions were completed:

- Add the force main along the proposed alignment with a 24-inch diameter
- Model the base of the storage tank to be 50-feet underground with a 36-inch influent pipe diverting off MH 1742. A storage tank with a diameter exceeding 200-feet becomes cost prohibitive, therefore, to achieve the appropriate volume, a 50-foot-deep storage tank is required.
- Add a pump to empty the storage tank after peak flow passed and sufficient capacity was available downstream

This scenario was run through the hydraulic model and upon review, multiple recorded SSOs were still predicted to occur along the Gulpha interceptor due to capacity restrictions even after storing peak flow. Therefore, upsizing of the Gulpha interceptor was completed in the hydraulic model as per recommendations in the 2010 SECAP report. This includes upsizing the gravity sewer main from MH 3314 near Gorge Rd to MH 4015 as part of the Spring Street upsizing project (7,270 LF) and upsizing gravity sewer from MH 4103 to MH 1742 as part of the Gulpha interceptor capacity improvement project (17,570 LF). Increased pipe diameters range from 15-inch at MH 3114 to 42-inch at MH 1742. With this option, capacity improvements are not required downstream of the storage tank. **Figure 2.4** on page 2-4 shows the Spring Street and Gulpha Capacity improvements for this option. After implementing the Gulpha interceptor capacity improvements in the hydraulic model, all recorded SSOs along the Gulpha interceptor were no longer predicted to overflow. In the event of back-to-back storm events, the Gulpha storage tank would likely not be able to store peak rainfall during the second storm and SSOs would likely occur along the Gulpha interceptor.

The second goal with this option is to maximize the already existing storage capacity at the DWWTP EQ basin and to prevent SSOs from occurring at the force main discharge into gravity main segment 947:5304. The pumps at Gulpha pump station were sized large enough to reduce the size of the storage tank, without creating an SSO at the discharge of the force main. For this option, two six-MGD pumps with a firm 11.5-MGD capacity is recommended at the Gulpha pump station to convey both dry and wet-weather.

Storage tank volume of 11-MG will be required with a height of 50-feet and a diameter of 193.5-feet. A five-MGD pump station was sized to drain the storage tank in approximately 51-hours, starting 87-hours after peak rainfall. Draining the storage tank at rates higher than five-MGD would result in downstream surcharging and recirculation of flow. A graph showing the time to drain the Gulpha storage tank is shown in **Figure 2.5** on page 2-5. It should be noted that additional operation and maintenance (O&M) costs will be expected during the lifetime of the Gulpha Storage tank. This would include cleaning, safety checks, repairs, routine maintenance, etc. These costs are not included in the cost estimate for this option provided within this interim technical memorandum.

Estimated costs for this option are presented in **Table 2-1** on page 2-5. Due to high variability in the current market, costs are subject to change. Additionally, more detailed costs will be provided within the SECAP update report to be submitted at the beginning of 2022.

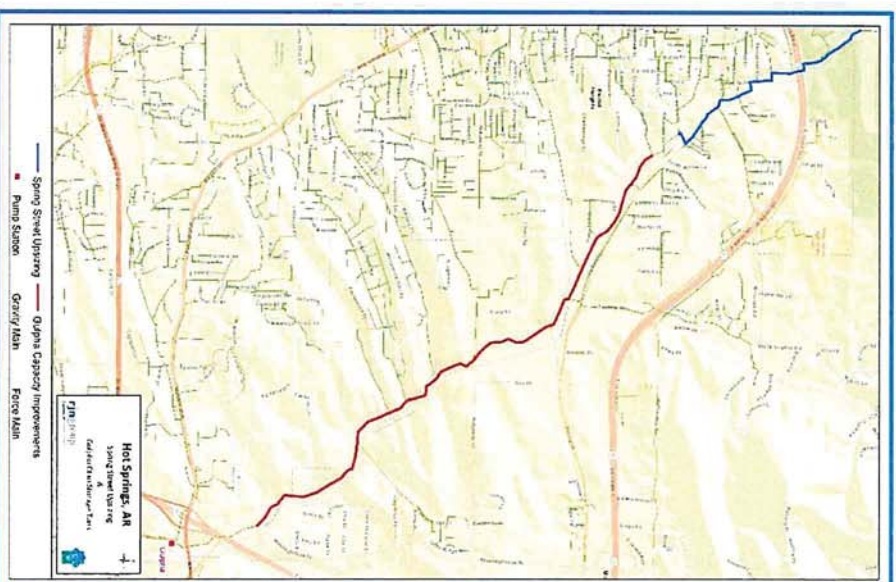


Figure 2.4 – Spring Street and Gulpha CI to Storage Tank

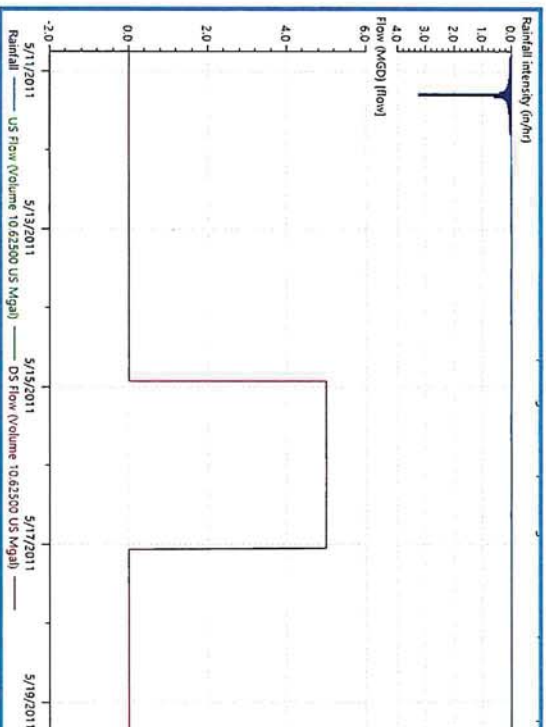


Figure 2.5 – Gulpha Storage Tank Drain Time

TABLE 2-1
COST SUMMARY OF GULPHA STORAGE TANK ALTERNATIVE

Item	Unit Cost	Quantity	Estimated Capital Cost ^{2/} \$
Storage Tank	8,500,000 (\$)	1	8,500,000
Odor Control	750,000 (\$)	1	750,000
5 MGD Pump station ^{1/}	1,320,000 (\$)	1	1,320,000
6 MGD Pump ^{1/}	333,333 (\$)	3	1,000,000
24-inch Force main	450 (\$/LF)	11,100 LF	4,995,000
Spring St. Upsizing	470 (\$/LF)	7,270 LF	3,416,900
Gulpha Interceptor	950 (\$/LF)	17,570 LF	16,691,500
Contingency	3,600,000 (\$)	1	3,600,000
Professional Services	6,500,000 (\$)	1	6,500,000
Total			46,773,400

^{1/} Includes backup pump

^{2/} Cost in 2021 Dollars. Includes 10% contingency and 18% professional services fee.

FULL CONVEYANCE WITH SINGLE FORCE MAIN

A full conveyance option was evaluated with the purpose of conveying peak flows during the design storm to the DWWTP with a single force main and without storage in the Gulpha basin. Initial setup in the hydraulic model included: implementing the Spring Street and Gulpha interceptor capacity improvements to the Gulpha pump station and utilizing the proposed force main alignment. Gulpha interceptor capacity improvements to the Gulpha pump station total 20,200 LF of replacement. Spring Street and Gulpha interceptor capacity improvements for this option are shown in Figure 2.6 on page 2-6.

Upsizing the Gulpha interceptor allows more flow to be conveyed to the Gulpha pump station. The peak flow rate predicted to reach the Gulpha pump station under these conditions during the design storm is 32-MGD. Therefore, a firm capacity of 32-MGD is necessary at the Gulpha pump station for this option.

According to the hydraulic model, a flow rate of 32-MGD through the Gulpha force main would cause SSOs at the force main discharge into gravity main segment 947.5304. Therefore, it is recommended to extend the proposed force main alignment to the DWWTP headworks for this option. This would add approximately 5,100 LF of force main to the proposed alignment for a total of 16,200 LF. At 32-MGD of peak flow, the forcemain would need to be at least 36-inches in internal diameter to maintain sufficient velocities. An internal diameter of 36-inches at 32-MGD of flow would deliver a velocity of 7.0 feet per second (fps).

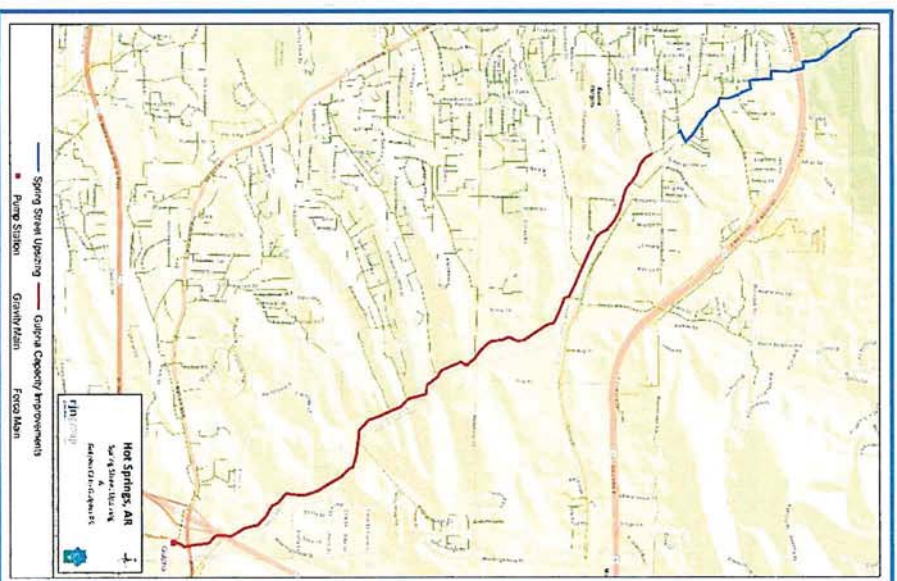


Figure 2.6 Spring Street and Gulpha CI to Gulpha PS

Average dry-weather flow in the Gulpha sewer basin is 2.5 MGD. The pump design should incorporate pumps with variable frequency drives with a delivery range between 2.5 to 32-MGD. Consequently, dry-weather velocities through the 36-inch force main would be less than one-fps which can lead to formation of hydrogen sulfide (H_2S) and deposition. The use of calcium nitrate can sequester sulfate reducing to hydrogen sulfide in anaerobic conditions that can be prevalent in long force mains. Furthermore, calcium nitrate can reduce the formation of ammonium compounds in anaerobic conditions that may be prevalent where wastewater is stored in the equalization basin at DWWTP. Ammonium compounds will have detrimental treatment impacts on the biological process at DWWTP.

As a result of this anticipated sulfate and ammonium production, it is recommended that the Gulpha pump Station design incorporate a means to dose calcium nitrate. Estimated costs for this option are presented in **Table 2-2.**

**TABLE 2-2
COST SUMMARY OF FULL CONVEYANCE
WITH SINGLE FORCE MAIN ALTERNATIVE**

Item	Unit Cost	Quantity	Estimated Capital Cost ^{1/} \$
New Pump Station	5,100,000 (\$)	1	5,100,000
36-inch Force Main	500 (\$/LF)	16,200 LF	8,100,000
Spring St. Upsizing	470 (\$/LF)	7,270 LF	3,416,900
Gulpha Interceptor	950 (\$/LF)	20,200 LF	19,190,000
Contingency	3,500,00 (\$)	1	3,500,000
Professional Services	6,300,000 (\$)	1	6,300,000
Total			45,606,900

1/ Cost in 2021 Dollars. Includes 10% contingency and 18% professional services fee.

FULL CONVEYANCE WITH DUAL FORCE MAINS

The full conveyance with dual force mains option was evaluated to increase dry-weather velocity through the Gulpha force main and to provide easier operation of the Gulpha pump station pump/force main configuration. This option requires the same Spring Street and Gulpha interceptor capacity improvements as the single force main option but utilizes a dry-weather force main and wet-weather force main. For this option, continuing the use of the existing 20-inch Gulpha force main's alignment for dry-weather operation is evaluated. The existing pumps at the Gulpha pump station may be utilized to service the 20-inch force main during dry-weather flows. The existing Gulpha force main is reaching end-of-life and would require rehabilitation or replacement to continue use. Assuming pressure grade CIPP rehabilitation method, the internal diameter of the 20-inch Gulpha force main would decrease to approximately 17-inches. Dry-weather velocities through a 17-inch force main are approximately 3.0 fps.

A 30-inch wet-weather force main was initially attempted to convey wet-weather flows in the hydraulic model, but peak velocity through the forcemain was 8.1 fps which can lead to force main failure. Therefore, a 36-inch wet-weather force main that extends from the Gulpha pump station to the DWWTP is recommended. The existing pumps can provide six-MGD of capacity during peak flow periods, so an additional 26-MGD pumping capacity would be necessary. Dedicating dry-weather pumps to a dry-weather force main and wet-weather pumps to a wet-weather force main simplifies the configuration at the Gulpha pump station compared to both dry and wet-weather pumps servicing a single force main. This option may allow for the existing Gulpha pump station to stay in service and a new peak flow pump station be constructed if it is determined to be more practical. Estimated costs for this option are presented in **Table 2-3** on page 2-8.

TABLE 2-3
COST SUMMARY OF FULL CONVEYANCE
WITH DUAL FORCE MAIN ALTERNATIVE

Item	Unit Cost	Quantity	Estimated Capital Cost ^{1/} \$
New Pump Station	4,100,000 (\$)	1	4,100,000
Force Main Rehab	500 (\$/LF)	7,300 LF	3,650,000
36-inch Force Main	500 (\$/LF)	16,200 LF	8,100,000
Spring St. Upsizing	470 (\$/LF)	7,270 LF	3,416,900
Gulpha Interceptor	950 (\$/LF)	20,200 LF	19,190,000
Contingency	3,800,000 (\$)	1	3,800,000
Professional Services	6,840,000 (\$)	1	6,840,000
Total			49,096,900

^{1/} Costs in 2021 Dollars. Includes 10% contingency and 18% professional services fee.

CONSIDERATIONS

When evaluating each option, it is imperative to consider the downstream effects at the DWWTP. Currently, several upgrades are underway at the DWWTP that will increase biological and hydraulic capacity which will reduce storage volume to the EQ basin during storm events. Each option was evaluated on the total volume stored at the EQ basin as well as the time required for DWWTP to recover from the design storm event. Stored EQ volume is returned to process via a pump station, having a pump range between 2 to 12-MGD; however, the return rate should not be detrimental to the biological process.

The biological process has a 7-Day rated capacity of 24-MGD. For the hydraulic modeling effort, the drain back is scheduled to commence once flows reduce to 20-MGD to provide an operational buffer. A hydraulic flow splitting structure post preliminary treatment diverts 24-MGD to the biological process, with up to an additional 24-MGD diverted to tertiary filters where flow is then combined with biological treatment prior to UV disinfection. When flow exceeds 48-MGD, it is diverted prior to preliminary treatment to the EQ basin, which has a storage capacity of 80-million gallons. **Figure 3.1** below shows a hydrograph of influent flows to the DWWTP during the design storm event. Flow values into DWWTP from the Gulpha sewer basin are calculated based on the 2021 flow monitoring and recalibration efforts. Flow values from the rest of the sewer system (Fairwood, Stokes, Hot Springs Creek) are calculated using the 2015 SECAP model for this interim technical memorandum. The 2015 SECAP model has implemented all capacity improvements recommended therefore, has minimal model predicted SSOs.

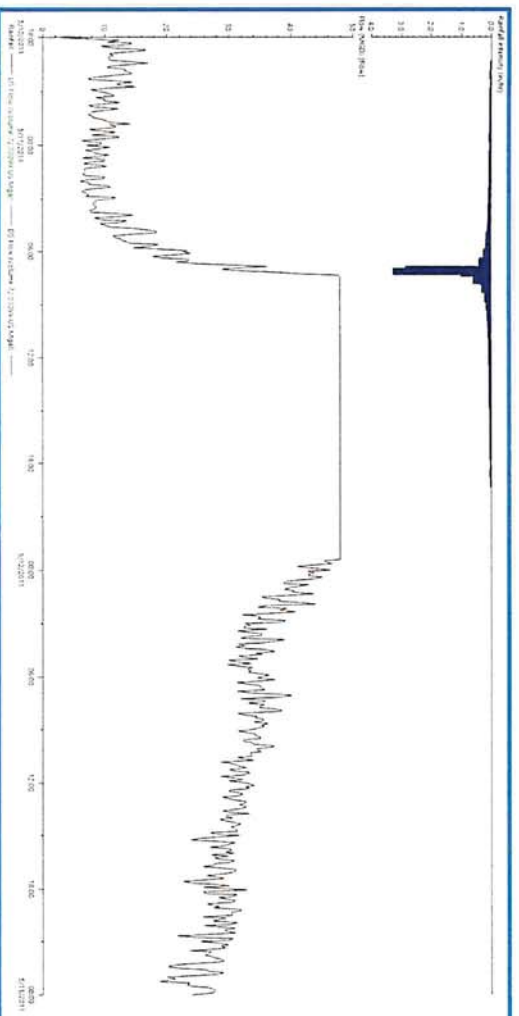


Figure 3.1 – DWWTP Influent Hydrograph

GULPHA STORAGE TANK

For the Gulpha storage tank option, the hydraulic model predicts that the EQ basin at the DWWTTP will fill for approximately 15-hours during the design storm and hold a total volume of approximately 10.7 MG. **Figure 3.2** below shows EQ storage vs. time during the design storm. The EQ drain pumps were controlled to pump at 8-MGD when influent flow had dropped down to 12-MGD for a total of 20-MGD through the biological process. **Figure 3.3** shows the time required for complete recovery of the DWWTTP. According to the hydraulic model, it will take approximately seven and a half days to fully recover from the design storm event for this option.

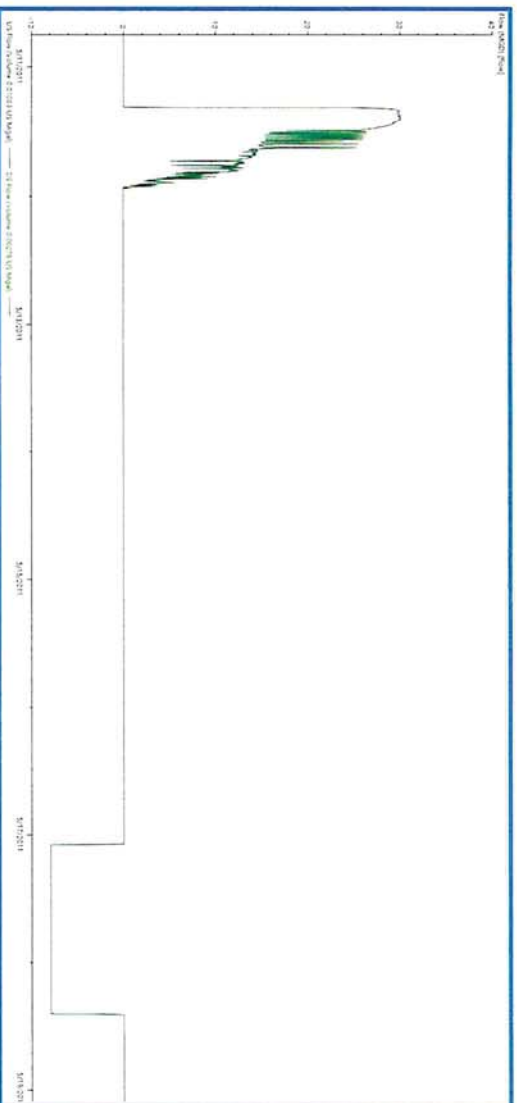


Figure 3.2 – EQ Storage Vs. Time – Gulpha Storage Tank Option

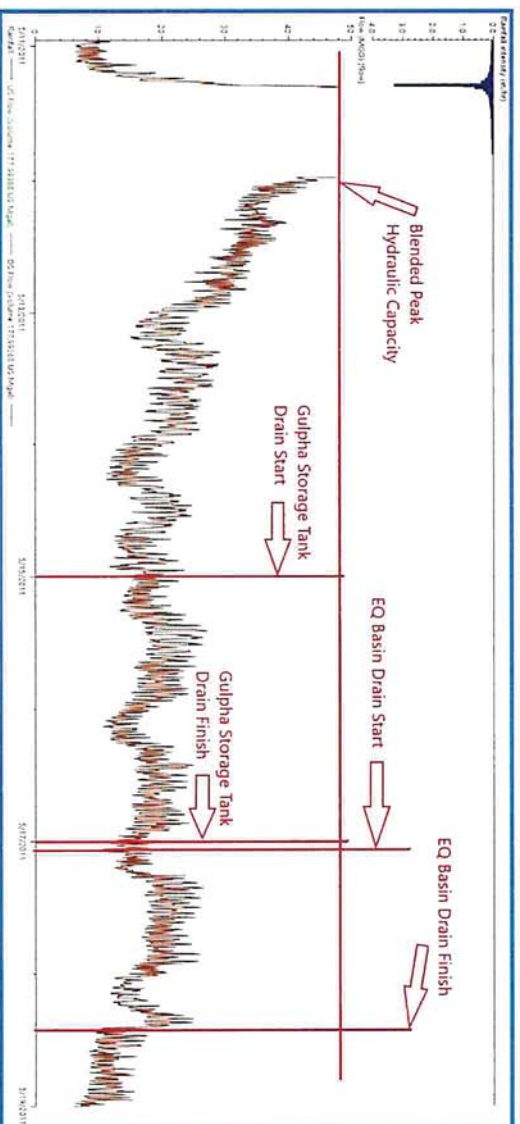


Figure 3.3 – DWWTTP Recovery – Gulpha Storage Tank Option

FULL CONVEYANCE OPTIONS

The flow arriving at the DWWTP for both “Full Conveyance” options are essentially the same since the total pump rate at the Gulpha pump station is the same (32 MGD). The hydraulic model predicts that the EQ basin at the DWWTP will fill for approximately 14-hours during the design storm and hold a total volume of approximately 20 MG, of the 80 MG capacity, before draining begins.

Figure 3.4 below shows EQ storage vs. time during the design storm. **Figure 3.5** shows the time required for complete recovery of the DWWTP. According to the hydraulic model it will take approximately eight days to recover from the design storm event for the full conveyance options.

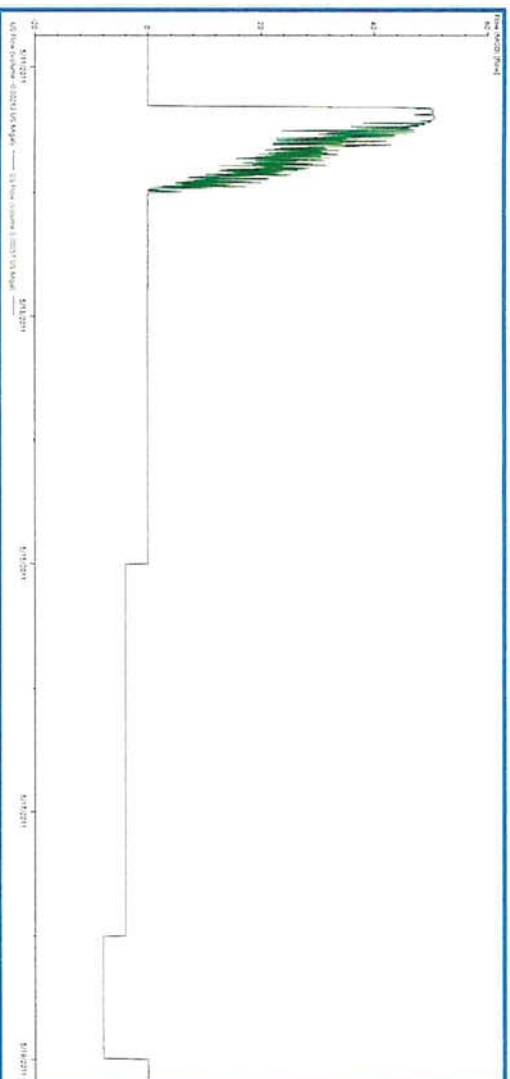


Figure 3.4 –EQ Storage Vs. Time – Full Conveyance Options

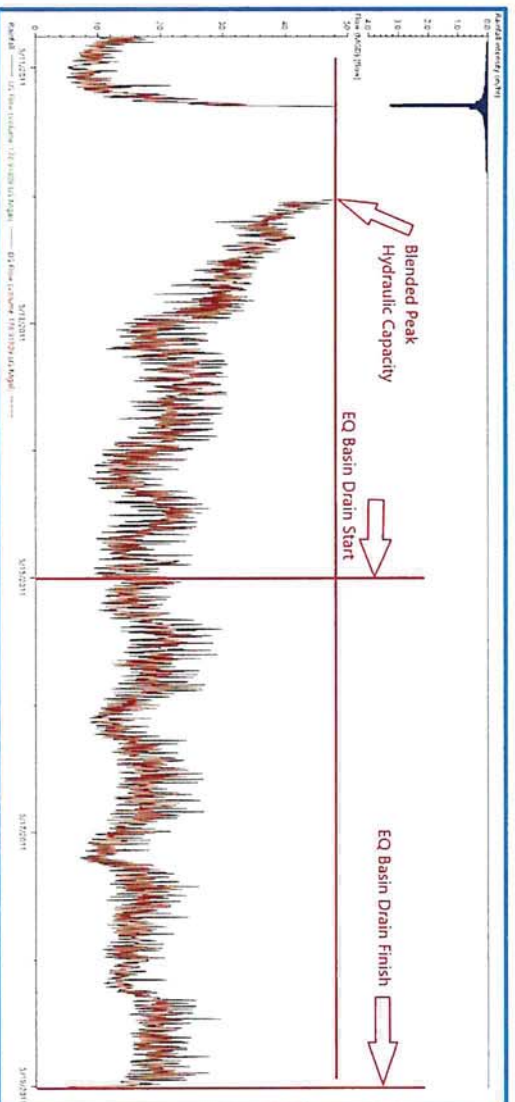


Figure 3.5 – DWWTP Recovery – Full Conveyance Options

SUMMARY

Since 2010, the City of Hot Springs has made significant efforts in reducing the number of SSOs occurring throughout the city. The city conducted city-wide flow monitoring in 2010 and 2015 and a sanitary sewer evaluation study in 2010 which led to the rehabilitation of over 4,000 manholes, upsizing of several gravity mains and force mains, and upgrades to pumping capacity at pump stations.

There are currently seven SSOs remaining in the Gulpha sewer basin, five of which occurred more than five times in 2020. **Figure 4.1** below shows the locations of the seven SSOs. The SSO at manhole (MH) 10578 is currently being addressed with completion of the East Grand Ave. capacity improvement project.

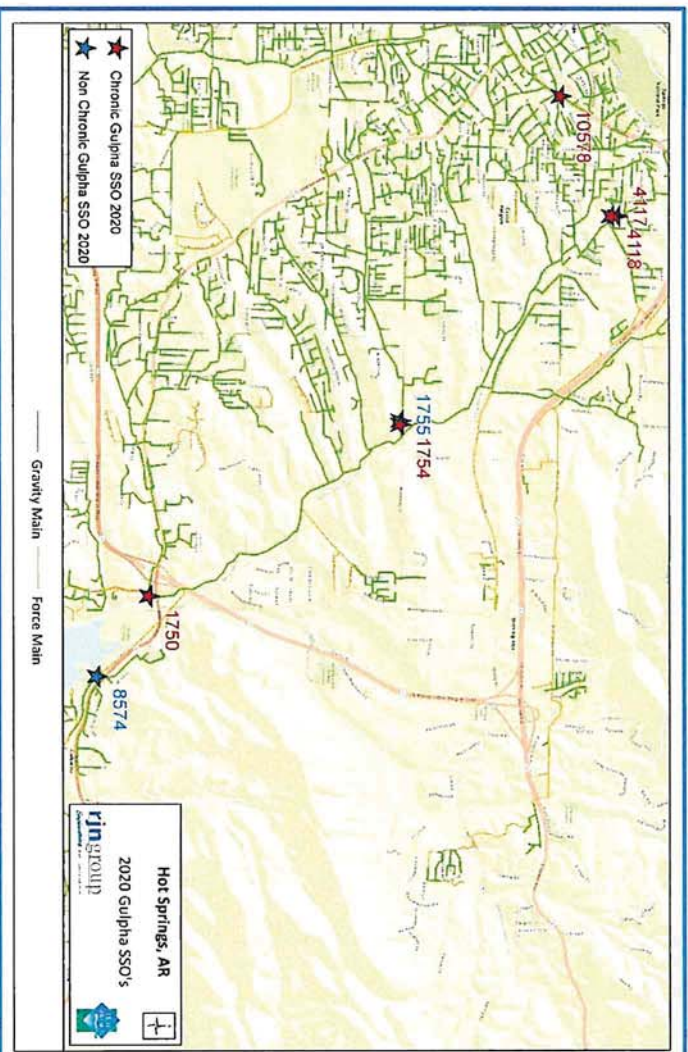


Figure 4.1 – 2020 Gulpha Basin SSOs

To eliminate the remaining SSOs, the Gulpha sewer basin needs to efficiently convey peak flows during the 2-year/24-hour design storm event. Three alternatives were evaluated with the purpose of conveying peak flows in the Gulpha sewer basin during the design storm event to the DWWTP. The three alternatives are as follows:

Option 1. Gulpha Storage Tank: 11-million-gallon (MG) storage tank with odor control equipment at the

Heller property east of Lakeside School District. Includes a five-million-gallon per day (MGD) pump station to empty the storage tank. Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the storage tank (MH 1742). Also includes 11.5-MGD pumping capacity at the Gulpha pump station and new 24-inch force main on the proposed alignment discharging into gravity main segment 947:5304.

Option 2. Full Conveyance with Single Force Main: Requires completion of the Spring Street and Gulpha

interceptor capacity improvements to the Gulpha pump station. The pump design should incorporate pumps with variable frequency drives with a delivery range between 2.5 to 32-MGD at a new Gulpha pump station and a 36-inch force main on the proposed alignment discharging to the Davidson Wastewater Treatment Plant's (DWWTP) headworks.

Option 3. Full Conveyance with Dual Force Mains: Requires completion of the Spring Street and Gulpha interceptor capacity improvements to the Gulpha pump station. Includes six-MGD dry-weather pumping capacity utilizing existing pumps and 26-MGD wet-weather pumping capacity at the Gulpha pump station. This option would entail rehabilitation or replacement of the existing 20-inch Gulpha force main for dry-weather flow and construction of a 36-inch force main for wet-weather flow on the proposed alignment discharging to the DWWTP headworks.

Each alternative will eliminate the remaining SSOs along the Gulpha interceptor. A summary of estimated costs and alternative specifics is given in **Table 4-1** on page 4-3.

R/N recommends that Hot Springs implement Option 2 – Full Conveyance with Single Force Main. This option allows for CHS to best utilize the existing capacity of DWWTP's EQ Basin without the addition of new storage assets that will have considerable O&M costs associated. This option allows for renewal of the Gulpha Interceptor and pump station while also being the most cost-effective option. The renewal of the Gulpha interceptor is projected to remove a significant amount of extraneous inflow and infiltration, as an unaccounted benefit. If future budgets allow, the existing Gulpha force main may be rehabilitated and utilized for dry-weather flows.

**TABLE 4-1
SUMMARY OF ESTIMATED COST AND ALTERNAIVE SPECIFICS**

Option	Alternative Description	Storage (MG)	Capacity Improvements	New Pumps	Peak Pumping Capacity (MGD)	Pumping ^{1/} (MG)	Force Main	Force Main Velocity (fps)	Estimated Capital Cost ^{2/} (\$Million)	DWWTP EQ (MG)
1	Gulpha Storage Tank	11	24,850 LF	(3) 6-MGD	11.5	28.3	24-inch	5.7	46.77	10.7
2	Full Conveyance with Single Force Main	No	27,500 LF	Yes	32	39.3	36-inch	7.0	45.61	20
3	Full Conveyance with Dual Force Main	No	27,500 LF	Yes	32	39.3	17-inch & 36-inch	5.9 & 5.7	49.10	20

1/ Total volume over 72-hours from the start of the design storm event

2/ Costs are in 2021 Dollars. Includes 10% contingency and 18% professional services fee.