

JOHN N. HUGHES
ATTORNEY AT LAW
PROFESSIONAL SERVICE CORPORATION
124 WEST TODD STREET
FRANKFORT, KENTUCKY 40601

TELEPHONE: (502) 227-7270

JNHUGHES@fewpb.net

April 10, 2015

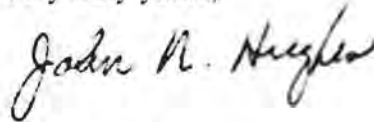
Mr. Jeff Derouen
Executive Director
Public Service Commission
211 Sower Blvd.
Frankfort, KY 40601

Case No. 2015-00108

Dear Mr. Derouen:

Northern Kentucky Water District submits its application for a certificate of convenience and necessity and financing. I certify that the electronically filed documents are a true representation of the original documents.

Very truly yours,



John N. Hughes

Attorney for Northern Kentucky
Water District

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF NORTHERN KENTUCKY)	
WATER DISTRICT FOR APPROVAL OF)	CASE NO. 2015-00108
THE FT. THOMAS TREATMENT PLANT)	
BASIN IMPROVEMENTS,)	
ISSUANCE OF A CERTIFICATE OF)	
CONVENIENCE AND NECESSITY AND)	
APPROVAL OF FINANCING)	

APPLICATION FOR APPROVAL OF CONSTRUCTION AND FINANCING

Northern Kentucky Water District (NKWD), by counsel, petitions for an order approving the construction of improvements to the Ft. Thomas Treatment Plant as described below pursuant to KRS 278.020. Approval of the financing pursuant to KRS 278.300 is also requested.

In support of the application, the following information is provided:

1. NKWD's office address is 2835 Crescent Spring Rd., Erlanger, KY 41018-0640. Its principal officers are listed in its current Annual Report on page 6, which is filed with the Commission as are its prior years Reports and is incorporated by reference.

Its contact officer is:

Jack Bragg, Vice President Finance
2835 Crescent Spring Rd.
Erlanger, KY 41018-0640
(859) 578 9898 Phone
(859) 578-3668 fax
jbragg@nkywater.org

2. NKWD is a non-profit water district organized under Chapter 74 and has no separate articles of incorporation;

3. A description of NKWD's water system and its property stated at original cost by accounts is contained in its Annual Report.

4. NKWD serves retail customers in Kenton, Boone and Campbell Counties and sells water at wholesale to non-affiliated water distribution systems in Kenton, Boone, Pendleton and Campbell Counties.

5. NKWD proposes to construct new facilities as described in Exhibit A. The project involves the reconfiguration of the rapid mixing basin walls and flocculation basin walls to meet recommended design standards with the expectation of improving treatment performance; the structural rehabilitation of two basins built in 1936 housing the preliminary treatment processes; the replacement of the existing flocculation and sludge collection equipment within the two basins; and the replacement of existing basin influent and effluent valves and slide gates. The estimated cost of the total project construction is \$2,217,590.

This project will be paid from the District's Five-Year Capital Budget, PSC No. 167 "FTTP Floc/Sed Basins 2&3, New Floc Drive and Rakes" with a budget of \$2,700,000 which includes construction cost, engineering, and contingencies. A summary of the project costs is provided below:

○ Design Engineering	\$ 145,000
○ Construction Engineering	\$ 75,000
○ Contractor's Bid	\$2,217,590
○ Misc. & Contingencies	<u>\$ 262,410</u>

Total Project Cost \$ 2,700,000

The project will be funded through multiple sources. The District intends to use \$2,100,000 of SRF Loan F14-015 and \$600,000 from a future Bond Anticipation Note 2015.

6. The construction is in the public interest and is required to allow NKWD to

continue to provide adequate service to its customers. The project, its cost, need and other details are contained in Exhibit A. The District has received all approvals from the DOW for the Plans and Specifications and funding for these improvements. See Exhibit B.

7. The total financing will be approximately \$2,700,000. The \$2,100,000 SRF portion of the funding is part of a \$4,000,000 loan from the Kentucky Infrastructure Authority. The remaining funds from that loan will be used for related water improvement projects as described in below. NKWD is seeking approval of the total \$4,000,000 loan in this application. See Exhibit D for details of the loan, the remaining projects to be funded and the KIA approval letter. These projects were included in the five year capital budget filed as Exhibit R in Case No. 2012-00072. Applications for approval of the remaining projects requiring a certificate of convenience and necessity associated with this loan will be filed as those projects are finalized.

A	B	C	D	E	F	G	H
Acct No.	Project Name	Budget	Constr. Start	Constr. End	PSC Ref No.	SRF Amount	Notes
184-0757	Silver Grove KY 8 WTR (2014 SRF)	\$1,100,000	8/15/2015	10/15/2015	190	\$1,400,000.00	Working on easements
184-0781	Rt 8 Dayton WTR (2014 SRF)	\$550,000	5/15/2015	8/20/2015	190		Waiting on KDOH approval
184-0790	North Fort Thomas Avenue (2014 SRF)	\$300,000	5/1/2015	7/15/2015	190		Waiting on KDOH approval
184-0475	MPTP Rawr Water Line Repl. (2014 SRF removable)	\$1,000,000	8/1/2015	3/1/2016	132	\$500,000.00	Under design

8. Easements and rights of way are not required, see Exhibit B.

9. This service will not compete with any other utility in the area.

10. The proposed construction project identified in Exhibit A is scheduled to begin construction in upon PSC approval and substantially completed in 24 months, beginning in May, 2015 and completed in May, 2017. Board approval of the final bids for the project is included in Exhibit C. The bids were opened February 24, 2015 and are subject to acceptance for 90 days. **The bids will expire May 25, 2015.**

11. No new franchises are required. A copy of the DOW letter approving the Plans and Specifications for the proposed improvements is attached as Exhibit B.

12. Construction descriptions are in Exhibit A and Bid Documents. Facts relied on

to justify the public need are included in the project descriptions in Exhibit A.

13. Maps of the area showing location of the proposed facilities are in Exhibit A.

14. The construction costs will be funded by as described above.

15. Estimated operating costs for operation and maintenance, depreciation and debt service after construction are shown in Exhibit D.

16. A description of the facilities and operation of the system are in Exhibit A.

17. A full description of the route, location of the project, description of construction and related information is in Exhibit A.

18. The start date for construction is May, 2015. The proposed in-service date is May, 2017. The total estimated cost of construction at completion is referenced in Exhibits A, B and D.

19. CWIP at end of test year is listed in the Annual Report incorporated by reference.

20. Plant retirements are listed in Exhibit B and the Annual Report. No salvage values are included as booked.

21. The use of the funds and need for the facilities is justified based on a the engineering report included as Exhibit A

22. No rate adjustment is being proposed.

23. The following information is provided in response to 807 KAR 5:001 (8):

a. Articles of Incorporation – None. NKWD is a statutorily created water district under KRS Chapter 74;

24. The following information is supplied pursuant to 807 KAR 5:001(9):

a. Facts relied upon to show that the application is in the public interest: See Exhibit A.

25. The following information is provided as required by 807 KAR 5:001 (11):

- a. A general description of the property is contained in the Annual Report,
- b. No stock is to be issued; No bonds are to be issued in this case;

c. There is no refunding or refinancing;

d. The proceeds of the financing are to construct the property described in Exhibit A.

e. The par value, expenses, use of proceeds, interest rates and other information is not applicable because no bonds are being issued at this time.

26. The following exhibits are provided pursuant to 807 KAR 5:001 (11)(2):

a. There are no trust deeds. All notes, indebtedness and mortgages are included in Exhibit F.

b. Property is to be constructed is described in Exhibit A.

27. The following information is provided pursuant to 807 KAR 5:001(6):

a. No stock is authorized.

b. No stock is issued.

c. There are no stock preferences.

d. Mortgages are listed in Exhibit F.

e. Bonds are listed in Exhibit F.

f. Notes are listed in Exhibit F.

g. Other indebtedness is listed in Exhibit F.

h. No dividends have been paid.

i. Current balance sheet, income statement and debt schedule are attached as Exhibits E and F.

28. USoA plant accounts are included in Exhibit D.

29. Depreciation cost, cost of operation after installation and debt service are in Exhibit D.

For these reasons, the District requests issuance of an order granting authority to construct and finance the facilities and for any other authorization that may be necessary.

SUBMITTED BY:

John N. Hughes

John N. Hughes
124 W. Todd St.
Frankfort, KY 40601

Attorney for Northern
Kentucky Water District
inhughes@fewpb.net
502 227 7270 Ph.

LIST OF EXHIBITS

Section 8(1)	Full name and post office address of applicant and a reference to the particular provision of law requiring Commission approval.	Application
Section 8(2)	The original and 10 copies of the application with an additional copy for any party named therein as an interested party.	yes
Section 8(3)	If applicant is a corporation, a certified copy of the Articles of Incorporation and all amendments thereto <u>or</u> if the articles were filed with the PSC in a prior proceeding, a reference to the style and case number of the prior proceeding.	n/a
Section 9(2)	1. The facts relied upon to show that the proposed new construction is or will be required by public convenience or necessity.	Exhibit A
	2. Copies of franchises or permits, if any, from the proper public authority for the proposed new construction or extension, if not previously filed with the commission.	Exhibit B
	3. A full description of the proposed location, route, or routes of the new construction or extension, including a description of the manner in which same will be constructed, and also the names of all public utilities, corporations, or persons with whom the proposed new construction or extension is likely to compete.	Exhibit A

4. Three (3) maps to suitable scale (preferably not more than two (2) miles per inch) showing the location or route of the proposed new construction or extension, as well as the location to scale of any like facilities owned by others located anywhere within the map area with adequate identification as to the ownership of such other facilities.	Exhibit A
5. The manner, in detail, in which it is proposed to finance the new construction or extension.	Exhibits A, D
6. An estimated cost of operation after the proposed facilities are completed.	Exhibit D

KRS 322.340	Engineering plans, specifications, plats and report for the proposed construction. The engineering documents prepared by a registered engineer, requires that they be signed, sealed, and dated by an engineer registered in Kentucky.	Exhibit A
-------------	--	-----------

Section 8(1)	Full name and post office address of applicant and a reference to the particular provision of law requiring Commission approval.	Application
Section 8(2)	The original and 10 copies of the application with an additional copy for any party named therein as an interested party.	yes
Section 8(3)	If applicant is a corporation, a certified copy of the Articles of Incorporation and all amendments thereto <u>or</u> if the articles were filed with the PSC in a prior proceeding, a reference to the style and case number of the prior proceeding.	n/a
KRS 278.300(2)	Every financing application shall be made under oath, and shall be signed and filed on behalf of the utility by its president, or by a vice president, auditor, comptroller or other executive officer having knowledge of the matters set forth and duly designated by the utility.	Application
807 KAR 5:001:		
Section 11(1)(a)	Description of applicant's property.	
	Statement of original cost of applicant's property and the	Annual

	cost to the applicant, if different.	Rpt
Section 11(1)(b)	If stock is to be issued: and kinds to be issued.	none
	--Description of amount and kinds to be issued.	
	--If preferred stock, a description of the preferences.	none
	If Bonds or Notes or Other Indebtedness is proposed:	Exhibit F
	--Description of the amount(s)	
	--Full description of all terms	
	--Interest rates(s)	
	--Whether the debt is to be secured and if so a description of how it's secured.	
Section 11(1)(c)	Statement of how proceeds are to be used. Should show amounts for each type of use (i.e., property, debt refunding, etc.)	Exhibit A
807 KAR 5:001:		
Section 11(1)(d)	If proceeds are for property acquisition, give a full description thereof. Supply any contracts.	n/a
Section 11(1)(e)	If proceeds are to refund outstanding obligations, give:	n/a
	--Par value	
	--Amount for which actually sold	
	--Expenses and application of proceeds	
	--Date of obligations	
	--Total amount	
	--Time held	
	--Interest rate	
	--Payee	
Section 11(2)(a)	Financial Exhibit (see below)	

Section 11(2)(b)	Copies of all trust deeds or mortgages. If previously filed, state case number.	Annual Rpt
Section 11(2)(c)	If Property to be acquired: --Maps and plans of property.	Exhibit A
Section 11(2)(c)	--Detailed estimates by USOA account number.	Exhibit D

ALL INFORMATION BELOW IN SECTIONS 6(1) THROUGH 6(9) SHOULD COVER THE PERIOD ENDING NOT MORE THAN 90 DAYS PRIOR TO DATE ON WHICH APPLICATION WAS FILED:

807 KAR 5:001		
Section 6(1)	Amount and types of stock authorized.	None
Section 6(2)	Amount and types of stock issued and outstanding.	None
Section 6(3)	Detail of preference terms of preferred stock.	None
Section 6(4)	<u>Mortgages:</u> --Date of Execution --Name of Mortgagor --Name of Mortgagee or Trustee --Amount of Indebtedness Secured --Sinking Fund Provisions	Exhibit E
Section 6(5)	<u>Bonds</u> --Amount Authorized --Amount Issued --Name of Utility Who Issued --Description of Each Class Issued --Date of Issue --Date of Maturity --How Secured --Interest Paid in Last Fiscal Year	Exhibit E

Section 6(6)	<u>Notes Outstanding:</u>	Exhibit E
	--Date of Issue	
	--Amount	
	--Maturity Date	
	--Rate of Interest	
	--In Whose Favor	
	--Interest Paid in Last Fiscal Year	
Section 6(7)	<u>Other Indebtedness:</u>	
	--Description of Each Class	
	--How Secured	
	--Description of Any Assumption of Indebtedness by Outside Party (i.e., any transfer)	
	--Interest Paid in Last Fiscal Yr.	none
Section 6(8)	Rate and amount of dividends paid during the five (5) previous fiscal years and the amount of capital stock on which dividends were paid each year.	None
Section 6(9)	Detailed income statement and balance sheet.	Exhibits F

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

NORTHERN KENTUCKY WATER DISTRICT
Fort Thomas Treatment Plant Basin Improvements
184-477

TABLE OF CONTENTS

<u>EXHIBIT</u>	<u>TITLE</u>
A	ENGINEERING REPORTS AND INFORMATION Project map, Basis of Design Report; Engineer's opinion of probable total construction cost; plans titled "Fort Tomas Treatment Plant Basin Improvements" dated January 15, 2015, sealed by a P.E.; specifications titled "Fort Thomas Treatment Plant Basin Improvements" dated January 15, 2015 and sealed by a P.E.
B	Certified statement from an authorized utility Official confirming: (1) Affidavit (2) Franchises (3) Plan review and permit status (4) Easements and Right-Of-Way status (5) Construction dates and proposed date in service (6) Plant retirements
C	BID INFORMATION AND BOARD RESOLUTION Bid tabulation, Engineer's recommendation of award, Board resolution.
D	PROJECT FINANCE INFORMATION Customers added and revenue effect, Debt issuance and source of debt, Additional costs and operating and maintenance, USoA plant account, Depreciation cost and debt service after construction.
E	SCHEDULE OF MORTGAGES, BONDS, NOTES, AND OTHER INDEBTEDNESS
F	CURRENT BALANCE SHEET AND INCOME STATEMENT

Fort Thomas Treatment Plant
Basin Improvements

Project 184-477

Project Description:

The project at the Fort Thomas Treatment Plant involves reconfiguration of the rapid mixing basin walls and flocculation basin walls to meet recommended design standards with the expectation of improving treatment performance; the structural rehabilitation of two basins built in 1936 housing the preliminary treatment processes; the replacement of the existing flocculation and sludge collection equipment within the two basins; and the replacement of existing basin influent and effluent valves and slide gates.

The recommended award amount for construction is \$2,217,590.

The bids were opened February 24, 2015 and are subject to acceptance for 90 days. Therefore, the bids will expire May 25, 2015.

The estimated cost of the total project with engineering, construction, and contingencies is \$2,700,000.

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

ENGINEERING REPORTS AND INFORMATION

Project Map

Basis of Design Report

Engineer's Opinion of Probable Total Construction Cost

Plans prepared by HDR titled "Fort Thomas Treatment Plant Basin
Improvements" dated January 15, 2015

Specifications prepared by HDR titled "Fort Thomas Plant Basin Improvements"
dated January 15, 2015

Case No. 2015-00108
Exhibit A

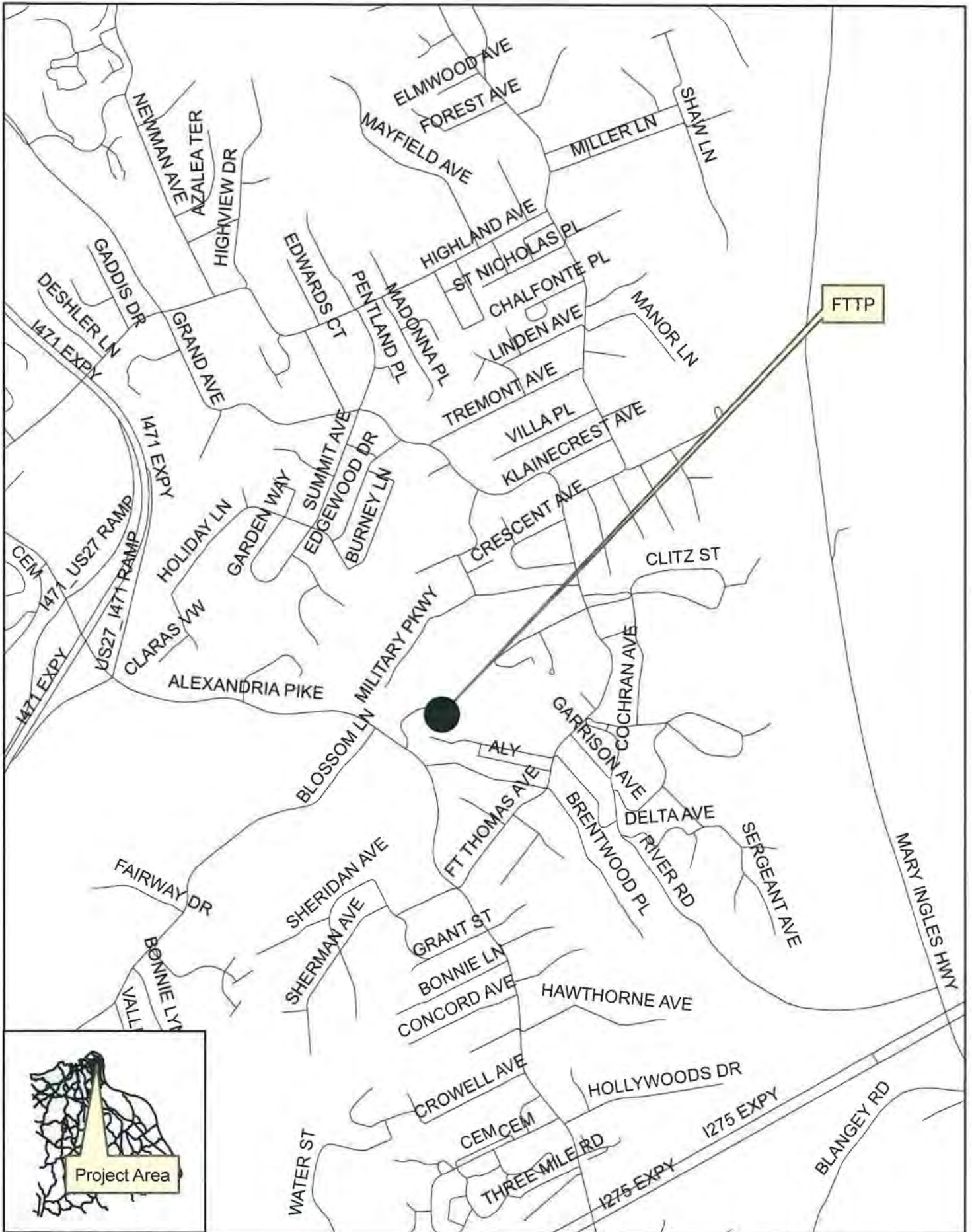
NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Project Map

Site Map



NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Basis of Design Report



**NKWD FTTP BASIN
IMPROVEMENTS PROJECT**

**TECHNICAL MEMORANDUM #1
FINAL 3/27/14**



HDR ENGINEERING, INC.



TECHNICAL MEMORANDUM #1
TABLE OF CONTENTS

	<u>PAGE #</u>
1.1 EXISTING BASINS ASSESSMENTS	
1.1.1 BASIN #1	1
1.1.2 BASINS #2 & #3	3
1.1.3 RAPID MIX BASIN #1	6
1.2 PROPOSED FLOCCULATION MODIFICATIONS – ALTERNATE 1	
1.2.1 BASIN #1	7
1.2.2 BASINS #2 & #3	8
1.3 PROPOSED FLOCCULATION MODIFICATIONS – ALTERNATE 2	
1.3.1 BASIN #1	9
1.3.2 BASINS #2 & #3	10
1.4 ALTERNATIVE TO VERTICAL PADDLEWHEEL FLOCCULATION	11
1.5 PROPOSED CLARIFIER SLUDGE RAKES AND DRIVES MODIFICATIONS	14
1.6 PROPOSED MODIFICATIONS – OTHER	
1.6.1 RAPID MIX BASIN #1	14
1.6.2 SLUDGE DRAIN LINES AND TELESCOPING VALVES	14
1.6.3 BASIN INFLUENT AND EFFLUENT ISOLATION VALVES	15
1.6.4 JAR TESTING	15
1.7 RECOMMENDED ALTERNATES AND SCHEDULE	
1.7.1 ALTERNATE SELECTION	15
1.7.2 PHASING	16
1.7.3 BUDGET AND COST	16
1.7.4 SCHEDULE	16
APPENDIX 'A' – HDR ENGINEERING PHOTO LOG	
APPENDIX 'B' – FREELAND HARRIS (STRUCTURAL) PHOTO LOG	



**BASINS IMPROVEMENTS PROJECT
FORT THOMAS WTP
NORTHERN KENTUCKY WATER DISTRICT**

**TECHICAL MEMORANDUM
FINAL 3/27/14**

HDR is pleased to present our draft technical memorandum for the Basins Improvements Project at NKWD's Fort Thomas Treatment Plant (FTTP). Our observations are based on inspections of the sedimentation and flocculation basins (dewatered) that took place on October 3rd (basin #2), 10th (basin #3), and 17th (basin #1), 2013. HDR's basin assessment team included the project manager, a structural engineer and an equipment specialist. See Appendix 'A' and 'B' for detailed photo logs of the basin assessments by HDR Engineering and Freeland Harris Structural Engineers, respectively.

1.1 EXISTING BASINS ASSESSMENTS

1.1.1 BASIN #1

- A. Basin Description – Basin #1 was constructed in 1987 and is a conventional treatment type basin with an approximate 83'Lx44.7'Wx14.75'D 3-stage flocculation zone with three horizontal flocculators and wooden baffle walls supported by concrete piers. The basin also contains one 90' diameter circular clarifier (sedimentation basin) with a center driven sludge collector rake with corner sweeps. The clarifier floor is sloped 12:1 (8%) toward the centrally located, sludge collection drain. No major modifications have been completed on basin #1 since its construction with the exception of the installation of replacement tube settlers in 2006.

A review of the dimensions of the flocculation zone of basin #1 show a total volume of 409,060 gallons which equals 54 minutes of detention time at 11MGD design flow which is almost double the minimum required by DOW (30 min.). However, the flocculation zone volume characteristics are acceptable; the configuration of the baffle walls and flocculators allows cross cutting of flow and does not meet current DOW standards. DOW requires a minimum of 0.5 fps flow velocity through openings between stages and a maximum of 1.5 fps. The flow velocity through and under the existing baffle walls is approximately 0.03 fps (existing openings are +/- 83'Lx8'H), which is far below the recommended minimum. Openings of approximately 12 square feet (SF) between flocculation stages would be required to meet current criteria.

A review of the hydraulic conditions of the clarifier yielded results comparable to those described in the RFQ.

- B. Structural

The following structural assessments were provided by Freeland Harris Structural Engineers. All photo references are for the Basin #1 site visit photos in Appendix 'B'.

Basin #1 was observed to be in good condition with few structural concerns. The few items that were noticed are typical for a structure of this age. While these items are not cause for immediate "structural" concern, they should be repaired to extend the useful life of the basin. An explanation of the items observed follows:

- i. *It is common for concrete that is above the normal water level to deteriorate at a faster rate than concrete that is continuously submerged. This is true for Basin #1, as most of the visible deterioration was within the top 2' feet of the walls. This deterioration primarily consists of cracks and spalling concrete. This deterioration is in limited areas, and is "repairable" in nature. See Photos 1 and 2 in Appendix 'B'.*
- ii. *An area of noted deterioration was the concrete supports for the existing flocculators and the baffle walls. These members showed significant concrete surface deterioration. This specific deterioration was limited to these elements, thus, suggesting that they may subject to chemical attack. While there was no evidence suggesting that the members were not structurally sound, consideration should be given to coating the concrete to reduce the potential for future deterioration, should the members need to remain in service. See Photo 4 in Appendix 'B'.*
- iii. *The clarifier area concrete was noted as being in good condition, with only a few visible cracks. Some of these cracks were leaking, as groundwater was observed actively seeping thru them. These cracks should be injected to help prevent further deterioration of the concrete and any reinforcement that crosses the crack. See Photos 6, 7, and 8 in Appendix 'B'.*
- iv. *A visual observation of the Clarifier mechanism and other structural steel components suggested that they are in generally sound condition although some localized pitting and corrosion was noticed. It is recommended that these areas should be repaired as part of the normal paint maintenance program, if the equipment is to remain in service.*
- v. *The aluminum handrail generally appeared to be in good condition although the horizontal rails were loose in one area (southeast corner of the basin). This railing should be repaired per the manufacturer's recommendation.*
- vi. *A rodent hole was also noted beneath a stair support pad. This should be corrected to prevent future pad damage. See Photo 11 in Appendix 'B'.*

C. Mechanical –

- i. Flocculators and Drives - The staff indicated that the flocculators have not been replaced since their original installation in 1989 (based on shop drawing dates). Based on HDR's Condition Assessment Best Practice Appendix III, the expected useful life for the equipment is 20-25 years. The estimated adjusted useful life of the equipment is 22 years and the remaining life is expected to be no more than 3 years. Breakdowns have occurred due to flocculator shaft failures and the utility has had Variable Frequency Drive (VFD) No. 1 failures in the past.

The flocculators are a vital piece of process equipment since they operate continuously when the plant is producing water. According to the plant operations staff, at least 3 basins are needed for the plant to produce 26 MGD and if the demand is more than 26 MGD all 4 basins are needed. The Engineer's opinion of the condition of the unit is that it is in a state of moderate deterioration with an asset

condition ranking of 4 which means that 40% of the asset would require repair and would require rehabilitation.

- ii. Sludge Rakes and Drives – The staff indicated that the sludge collectors have not been replaced since their original installation in 1989 (based on shop drawings). Based on HDR's Condition Assessment Best Practice Appendix 3, the expected useful life for the equipment is 20-25 years. The estimated adjusted useful life of the equipment is 22 years and the remaining life is expected to be no more than 3 years. No major overhauls were noted and only minor defects were found. An asset condition ranking of 3 which indicates the percentage of the asset that requires repair is 15% which would require maintenance to return the asset to an acceptable level of service, but not necessarily replacement.

D. General Items

- i. Sludge Drain Lines – Based on conversations with NKWD staff, no concerns were expressed with the existing sludge drain line from basin #1 and they are happy with its performance.
- ii. Tube Settlers – The tube settlers were installed in 2006 to increase the efficiency of solids removal in the settling tanks and appear to be in good condition. No recommendations or comments were made by the operating staff concerning the tube settlers. A remaining life of 12 to 15 years would be a good estimate.
- iii. Basin Influent and Effluent Valves - Based on conversations with NKWD staff, no concerns were expressed with the existing influent and effluent valves on basin #1 and they are happy with their performance.

1.1.2 BASINS #2 & #3

- B. Basins Description – Basins #2 and #3 were constructed in 1936 and are of the conventional treatment type basins with an approximate 81.5'Lx33.5'Wx15'D 2-stage flocculation zone with two horizontal flocculators and wooden baffle walls supported by concrete piers. The basin also contains a 90' diameter circular clarifier (sedimentation basin) with a center driven sludge collector rake with corner sweeps. The clarifier floor is sloped 48:1 (2%) toward the centrally located, sludge collection drain.

No major process modifications have been completed on basins #2 or #3 since their construction in 1936 with the exception of the installation of tube settlers in 1991. The tube settlers were last replaced in 2006. Other primary mechanical components were replaced in 1991 consisting of the sludge collection rakes and drives, and the horizontal flocculator shafts, paddles, and drives. Also, new 6" SDR26 PVC drain lines and new telescoping valves were installed in the flocculation zones for both basin #2 and #3 to replace the existing 6" ductile iron drains. However, the new pipes were confined to the area (basement) under the basins and did not extend all the way to the junction manholes in the yard. The existing 6" ductile iron sludge drain main line still extends from the center of the clarifiers to the junction manhole and has a tendency to backup (per NKWD staff) on a regular basis. Backups are likely related to the age and diameter of the pipe.

A review of the dimensions of the flocculation zone of basins #2 and #3 shows a total volume of 306,334 gallons which equals 40 minutes of detention time at 11MGD design flow which is 33% more than the minimum required by DOW (30 min). However, the flocculation zone volume characteristics are acceptable, the baffle wall system and mixing allows cross cutting of flow and does not meet current DOW standards. DOW requires a minimum of 0.5 fps flow velocity through openings between stages and a maximum of 1.5 fps. The flow velocity through and under the existing baffle walls is approximately 0.03 fps (existing openings are +/- 81.5'Lx8'H), which is far below the recommended minimum. Openings of approximately 12 SF between flocculation stages would be required to meet current criteria.

A review of the hydraulic conditions of the clarifiers yielded results comparable to those described in the RFQ.

C. Structural

The following structural assessments were provided by Freeland Harris Structural Engineers. All photo references are for the Basin #2 (B2) and #3 (B3) site visit photos in Appendix 'B'.

Although Basins #2 and #3 were noted as having more structural issues than Basin #1, they can be considered as being in relatively good condition, given they were originally constructed in 1936. With the correction of the noted issues, the basins will be acceptable for continued use.

- i. Significant deterioration is present in the above grade walls. A close inspection of the walls suggests that their tops have been previously replaced. A review of the existing documents indicates that the walkway between Basins #2 and #3 was replaced in 1991. It's possible that the other work was done at that time, or perhaps as part of another project. This deterioration primarily consists of cracks and spalling concrete. Unlike Basin #1, this deterioration is wide spread, and the recommended repair is to remove sections of wall and replace, as has been done previously. See photos 1-6 (B2) and photos 1-7 (B3).*
- ii. As in Basin #1, the existing flocculators and baffle wall supports show concrete surface deterioration more so than the other basin areas. While there was no evidence suggesting that the members were not structurally sound, consideration should be given to coating the concrete to reduce the potential for future deterioration, should the members need to remain in service. See photos 7-8 (B3).*
- iii. The clarifier bottom surface is a structural slab supported by concrete piers thus creating a crawlspace beneath the basins. This slab does contain noticeable cracks that relate to the support elements of the basin. These cracks should be repaired to help prevent further deterioration of the concrete and any reinforcement that crosses the crack. See photos 7-8 (B2) and photos 9-10 (B3).*
- iv. An inspection of the crawl space below Basins #2 and #3 found the concrete pier structure to be in good conditions. Some cracks were apparent on the crawlspace ceiling and an active leak was observed below the North West corner of Basin #2. See photos 11-13 (B3).*

- v. *A visual observation of the Clarifier mechanism and other structural steel components suggested that they are in generally sound condition although some localized pitting and corrosion being noticed. It is recommended that these areas should be repaired as part of the normal paint maintenance program. See photos 14-17 (B3).*
- vi. *The aluminum handrail generally appeared to be in good condition.*

D. Mechanical –

- iii. Flocculators - The staff indicated that the flocculators were replaced in 1991. Based on HDR's Condition Assessment Best Practice Appendix 3, the expected useful life for the equipment is 20-25 years. The estimated adjusted useful life of the equipment is 22 years and the remaining life is expected to be no more than 3 years. Breakdowns have occurred due to flocculator shaft failures.

As with the previous basin the flocculators are a vital piece of process equipment since they operate continuously when the plant is producing water. The Engineer's opinion of the condition of the unit is that it is in a state of moderate deterioration with an asset condition ranking of 4 which means that 40% of the asset would require repair and would require rehabilitation.

- iv. Sludge Rakes and Drives – The staff indicated that the sludge collectors were replaced in 1991. Based on HDR's Condition Assessment Best Practice Appendix 3, the expected useful life for the equipment is 20-25 years. The estimated adjusted useful life of the equipment is 20 years and the remaining life is expected to be no more than 5 years. No major overhauls were noted and only minor defects were found. An asset condition ranking of 3 which indicates the percentage of the asset that requires repair is 15% which would require maintenance to return the asset to an acceptable level of service, but not necessarily replacement.

E. General Items –

- i. Sludge Drain Lines and Telescoping Valves – Based on conversations with NKWD staff the sludge drain lines from both basin #2 and #3 occasionally back up and require mechanical means to free blockages in the lines. The HDR basin assessment team was provided access to the basement area beneath the basins and observed the exterior condition of the existing 6" PVC and ductile iron sludge drain lines for basins #2 and #3 (Photo 20, Appendix 'A'). The lines appear to be in good condition from the exterior, but it is unknown without video inspection as to the condition of the interior of the pipe. It is anticipated that the sludge drain lines do not perform adequately due to the small diameter of the pipe and possible slope issues. Per ten states standards, DOW recommends a minimum diameter of 8" and a slope of 2-3% on all gravity sludge lines. The actual pipe slope could not be verified without an elevation survey.

In addition to the poor performance of the sludge drain lines, it is understood based on conversations with NKWD staff, that the telescoping valves in the flocculation

basins are no longer used due to the lack of slope and channeling of the basin floor to facilitate correct drainage of the sludge to the valve inlets. Sludge is worked through the flocculation basins into the main clarifier sludge drain during bi-annual cleanings.

It is recommended that the 6" sludge drain lines be replaced with 8" drain lines regardless of if the pipe has a blockage or not as it is probable that the blockages are being caused by the issues noted above.

- ii. Tube Settlers - The tube settlers were installed in 2006 to increase the efficiency of solids removal in the settling tanks and appear to be in good condition. No recommendations or comments were made by the operating staff concerning the tube settlers. A remaining life of 12 to 15 years would be a good estimate.
- iii. Basin Influent and Effluent Isolation Valves - Based on conversations with NKWD staff the 36" influent gate valves as well as the 48" effluent sluice gate valves no longer adequately close to completely shut off flow in and out of basins #2 and #3. The effluent sluice gates have considerable amounts of corrosion built up on them and have been in service since the plant was constructed in 1936. The sluice gates have greatly surpassed their useful design life of 25 years. Also, the sluice gates are currently operated manually and are very cumbersome to open by hand in their current condition. The influent valves could not be observed due to the rapid mix basin #1 being in service at the time of the site visit. Per NKWD staff and site observations in Basins #2 and #3, the influent valves do not completely shut off flow when in the "closed" position.

1.1.3 RAPID MIX BASIN #1

- A. Description – Rapid mix basin #1 serves sedimentation/flocculation basins #2 and #3. The existing rapid mix basin is approximately 14'Lx14'Wx12.5'D and contains one vertical shaft mixer. Flow calculations show that the rapid mix basin provides 72 seconds of detention time at basin #2 and #3 design flow (22 MGD) and 264 seconds at typical minimum flow (6 MGD). The basin was observed in the field, but very little could be physically inspected due to the basin being in service at the time of the site visit.
- B. Structural – The following structural comments were provided by Freeland Harris structural engineers:

Access to the rapid mix basin was not possible at the time of inspection, however some localized concrete deterioration was observed at the access hatch. Otherwise, based on conversations with NKWD, the existing rapid mix basin #1 does not have any notable structural issues. The existing concrete is believed to be in good condition because the basin is located in a climate controlled structure and is not exposed to the freeze-thaw environment.

- C. Mechanical – Based on conversations with NKWD the existing rapid mixer and drives are in good operating condition and do not require any maintenance at this time. However, NKWD

would like to improve the efficiency of the basin which may require replacement of the rapid mixer and drives if the rapid mix basin structure is modified.

1.2 PROPOSED FLOCCULATION MODIFICATIONS – ALTERNATE 1 (CHANGE BASINS CONFIGURATIONS AND SWITCH TO VERTICAL FLOCCULATORS)

1.2.1 BASIN #1

- A. General Description of Modifications – This alternate proposes the re-channelization of flows within the flocculation zone for Basin #1 (See Figure 1A) through the construction of new concrete baffle walls to eliminate cross cutting flows and encourage consistent detention times. Three-stage flocculation will be maintained with this alternate, but the flocculation basins will be modified to have a relatively square configuration (+/- 40'x30') rather than the current longitudinal configuration (14'x83') as well as include a tapered distribution channel to convey flows into the clarifier.

Switching from longitudinal arrangement to a square arrangement will reduce total detention time in the flocculation zone from 54 minutes to 53 minutes (1.8%) based on the dimensions noted above. Additional volume recaptured through the proposed removal of the horizontal flocculator drives dry wells was included in the numbers above. Despite a small reduction in detention time, 53 minutes of detention at max design flow (11 MGD) still exceeds the requirements of DOW by 77%.

DOW recommends flow through velocities between 0.5 fpm and 1.5 fpm for flocculation. Based on the proposed flocculation basins configuration, the flow through velocity through the flocculator basins will be 1.7 fpm at 11MGD design flow. However, under average flow conditions (5.5 MGD) for this basin the flow through velocity is 0.85 fpm and falls within the DOW recommended range. We discussed the flow through velocity concern with local manufacturers of flocculation equipment and learned that this situation is very typical when modifying old conventional horizontal flocculation basins. The increased velocity is not a concern from a treatment standpoint and can be counteracted with an adjusted mixing gradient to satisfy DOW.

Mixing will be enhanced through improved detention and reduction of crosscut flows. This alternate also proposes the replacement of the horizontal flocculators with vertical paddlewheel flocculators. The number and arrangement of vertical flocculators would be optimized by basin to assure consistent mixing gradients based upon no significant structural changes other than the renovation of baffles. Currently it is estimated that a quantity of 18 flocculators, 12 feet in diameter, will be required to achieve adequate mixing for this alternate.

B. Structural

The following structural assessments were provided by Freeland Harris Structural Engineers:

The following structural modifications will be required for Basin #1, Alternate 1.

- i. *As stated earlier, the basin walls will require localized repair. This repair will primarily consist of patching spalled concrete areas with a polymer modified patching product and injection of cracks to deter further deterioration.*
- ii. *Demolition of existing flocculator and baffle wall support members to accommodate new "square" baffle wall configuration will be required.*
- iii. *Construction of new concrete baffle walls (if the final analysis yields that the existing basin slab can support the additional weight of concrete walls). FRP baffle walls will also be considered, should they prove to be more feasible or otherwise necessary due to the existing structure not being capable of supporting new concrete walls.*
- iv. *Northern Kentucky staff has expressed the desire to have a cover constructed over the flocculation tanks. The feasibility of being able to support a new roof structure cannot be determined until the final analysis of the concrete baffle wall design is complete. Consideration will be given to this request; however it is likely to be determined as unfeasible.*
- v. *The "square" baffle wall configuration will accommodate vertical flocculator support via the flocculator access walkways as provided by the flocculator manufacturer without additional support structure.*

1.2.2 BASINS #2 & #3

- C. General Description – This alternate proposes the re-channelization of flows within the flocculation zone for basins #2 and #3 (See Figure 2A) through the construction of new concrete baffle walls to eliminate cross cutting flows and encourage consistent detention times. The two-stage flocculation arrangement will be changed to three-stage flocculation, through modifying the basins to have a relatively square configuration (+/- 30'x30') rather than the current longitudinal configuration (13'x81.5' and 17.5'x84.5') as well as include a tapered distribution channel to convey flows into the clarifier. The alternate also includes the construction of a sloped concrete floor to drain sludge toward the center clarifier drain for easier biannual tank cleaning. Actual flocculation basin dimensions may vary based on existing foundation pier arrangements under slab, but proposed flocculation volumes are not anticipated to change.

Switching from longitudinal arrangement to a square arrangement will reduce total detention time in the flocculation zone from 40 minutes to 38 minutes (+/-5%). Additional volume recaptured through the proposed removal of the horizontal flocculators drives dry wells as well as the volume lost through the proposed creation of a sloped floor in the flocculation zone was included in the numbers above. Despite a small loss in detention time, 38 minutes of detention at max design flow (11 MGD) still exceeds the requirements of DOW by 27%.

DOW recommends flow through velocities between 0.5 fpm and 1.5 fpm for flocculation. Based on the proposed flocculation basins configuration, the flow through velocity through the flocculators will be 2.35 fpm at 11MGD design flow. However, under average flow conditions (5.5 MGD) for this basin the flow through velocity is 1.17 fpm and falls within the DOW recommended range. We discussed the flow through velocity concern with local

manufacturers of flocculation equipment and learned that this situation is very typical when modifying old conventional horizontal flocculation basins. The increased velocity is not a concern from a treatment standpoint and can be counteracted with an adjusted mixing gradient to satisfy DOW.

Mixing will be enhanced through improved detention and reduction of crosscut flows. This alternate also proposes the replacement of the horizontal flocculators with vertical paddlewheel flocculators. The number and arrangement of vertical flocculators would be optimized by basin to assure consistent mixing gradients based upon no significant structural changes other than the renovation of baffles. Currently it is estimated that a quantity of 12 flocculators, 12 feet in diameter, will be required to achieve adequate mixing.

A. Structural

The following structural assessments were provided by Freeland Harris Structural Engineers:

The following structural modifications will be required for Basins #2 and #3, Alternate 1.

- i. Due to the extensive deterioration of the basin walls significant modification is recommended. For the most part, the recommended repair is to remove and replace large sections of the wall "tops" as has been done in the past. Localized deterioration, in areas where the tops have already been replaced, may be repaired as in Basin #1 with a polymer modified patching product and crack injection.*
- ii. Demolition of existing flocculator and baffle wall support members to accommodate new "square" baffle wall configuration.*
- iii. Construction of new concrete baffle walls (if the final analysis yields that the existing basin slab can support the additional weight of concrete walls). FRP baffle walls will also be considered, should they prove to be more feasible or otherwise necessary due to the existing structure not being capable of supporting new concrete walls.*
- iv. As with Basin #1, consideration will be given to providing a cover over the flocculation tanks; however it is likely to be determined as being unfeasible.*
- v. The "square" baffle wall configuration will accommodate vertical flocculator support via the flocculator access walkways as provided by the flocculator manufacturer without additional support structure.*

1.3 PROPOSED FLOCCULATION MODIFICATIONS – ALTERNATE 2 (MAINTAIN CURRENT BASINS CONFIG. AND SWITCH TO VERTICAL FLOCCULATORS)

1.3.1 BASIN #1

- A. General Description of Modifications – This alternate proposes the modification of existing baffle walls of the flocculation zone for basin #1 to reduce cross cutting of flows, while maintaining the same wall configuration and three-stage flocculation (See Figure 1B). This

alternate also proposes the replacement of the horizontal flocculators with vertical paddlewheel flocculators. The number and arrangement of vertical flocculators would be optimized by basin to assure consistent mixing gradients based upon no significant structural changes other than the renovation of baffles. Currently it is estimated that a quantity of 21 flocculators, 11 feet in diameter, will be required to achieve adequate mixing.

The existing wooden baffle walls would be modified to support the new vertical flocculators, as well as, to reduce the flow-through area between the flocculation basins to meet current DOW standards of 0.5 fps minimum and 1.5 fps maximum flow through velocity. New wooden or FRP baffles would be installed to replace the existing aged wooden baffles. The new baffles would be installed such that the baffle walls limit the flow through area between basins to +/- 12 square feet to reduce flow cross cutting and promote consistent detention.

No change in volume of the flocculation zone is proposed. Therefore, no change in total possible detention time will be created by this alternate, however substantially improved hydraulics and mixing are anticipated.

B. Structural

The following structural assessments were provided by Freeland Harris Structural Engineers:

The following structural modifications will be required for Basin #1, Alternate 2.

- i. As stated earlier, the basin walls will require localized repair as described above.*
- ii. While it's possible to utilize the existing baffle wall support columns to support the new baffles, it's likely that some, if not all of the supports will require modification (or total replacement) to accept the new equipment. It is recommended that any supports that remain be coated to provide additional protection to the reinforcement due to the present surface deterioration. The existing horizontal flocculator support members will be removed.*
- iii. As with Alternate 1, consideration will be given to the request for a cover over the flocculation tanks; however it is likely to be determined as unfeasible.*
- iv. New horizontal support beams will be required to accommodate the vertical flocculator support walkways as the "non-structural" baffle walls cannot be used for flocculator support. These new horizontal members will likely utilize the baffle wall support columns.*

1.3.2 BASINS #2 & #3

- A. General Description of Modifications – This alternate proposes the modification of existing baffle walls of the flocculation zone for basins #2 and #3 to reduce cross cutting of flows, but maintaining the same wall configuration and two-stage flocculation (See Figure 2B). This alternate also proposes the replacement of the horizontal flocculators with vertical paddlewheel flocculators. The number and arrangement of vertical flocculators would be

optimized by basin to assure consistent mixing gradients based upon no significant structural changes other than the renovation of baffles. Currently it is estimated that a quantity of 8 flocculators, 10 feet in diameter, and 7 flocculators, 11 feet in diameter (15 total flocculators) will be required to achieve adequate mixing.

The existing wooden baffle walls would be modified to support the new vertical flocculators, as well as, to reduce the flow-through area between the flocculation basins to meet current DOW standards of 0.5 fps minimum and 1.5 fps maximum flow through velocity. New wooden or FRP baffles would be installed to replace the existing aged wooden baffles. The new baffles would be installed such that the baffle walls limit the flow through area between basins to +/- 12 square feet to reduce flow cross cutting and promote consistent detention.

No change in volume of the flocculation zone is proposed. Therefore, no change in total possible detention time will be created by this alternate, however substantially improved hydraulics and mixing are anticipated.

B. Structural

The following structural assessments were provided by Freeland Harris Structural Engineers:

The following structural modifications will be required for Basins #2 and #3.

- i. As stated earlier, the basin walls will require significant repair as described above.*
- ii. While it's possible to utilize the existing baffle wall support columns to support the new baffles, it's likely that some, if not all of the supports will require modification (or total replacement) to accept the new equipment. It is recommended that any supports that remain be coated to provide additional protection to the reinforcement due to the present surface detonation. The existing horizontal flocculator support members will be removed.*
- iii. As with Alternate 1, consideration will be given to providing a cover over the flocculation tanks; however it is likely to be determined as being unfeasible.*
- iv. New horizontal support beams will be required to accommodate the vertical flocculator support walkways as the "non-structural" baffle walls cannot be used for flocculator support. These new horizontal members will likely utilize the baffle wall support columns.*

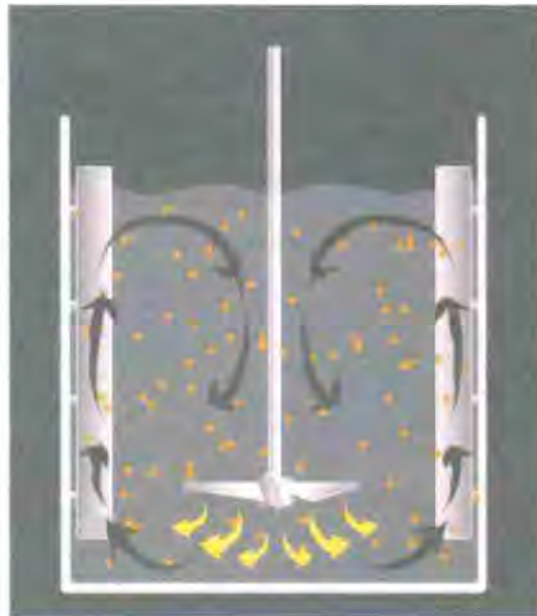
1.4 ALTERNATE TO VERTICAL PADDLEWHEEL FLOCCULATION

At the request of the district, we have begun some preliminary investigations into providing impeller mixers as an alternative to the vertical paddlewheel flocculators. From a hydraulic perspective, vertical impeller mixers (Image 1), like vertical paddlewheel flocculators (Image 2), can be VFD controlled to adjust mixing gradients as needed to improve flocculation performance and achieve desired mixing gradients. Due to the nature of the impeller and the smaller surface area in contact with the water, the impeller must rotate at a much higher RPM to achieve the same mixing gradients. At higher RPM's, better motor efficiencies can be obtained, but at the expense of higher directional mixing velocities at the impeller with a higher potential for

floc shear. See Image 3 depicting differences in hydraulic mixing velocities between the two options with the red indicating the highest velocities and blue the lowest.

Vertical paddlewheel flocculators provide more uniform hydraulic mixing velocities than the impeller mixers, and are in widespread use in Kentucky and the surrounding areas and therefore are recommended for this project. However, if the District wants to take a further look into impeller mixers during design, we would be more than happy to assist.

Preliminary research and quotes tell us that impeller mixers have an initial capital cost approximately 25% more than the vertical paddlewheel mixers. In addition to the higher capital cost, it is notable that there are not many installations currently in place in Kentucky. However, we understand that NKWD has impeller mixers in use at the Taylor Mill Treatment Plant and NKWD has been pleased with their performance. We will continue to evaluate this option for the District.



*Image 1: Vertical Impeller Mixer
(Courtesy of Dynamix Agitators, Inc.)*

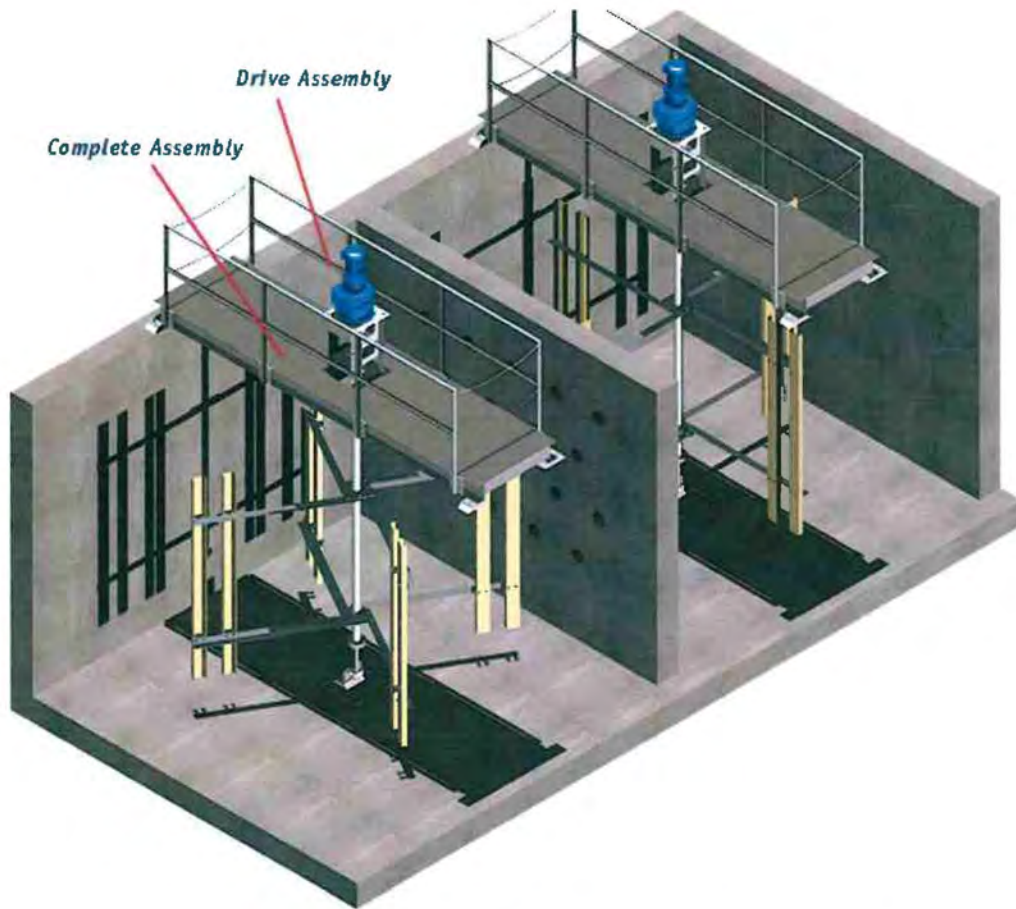
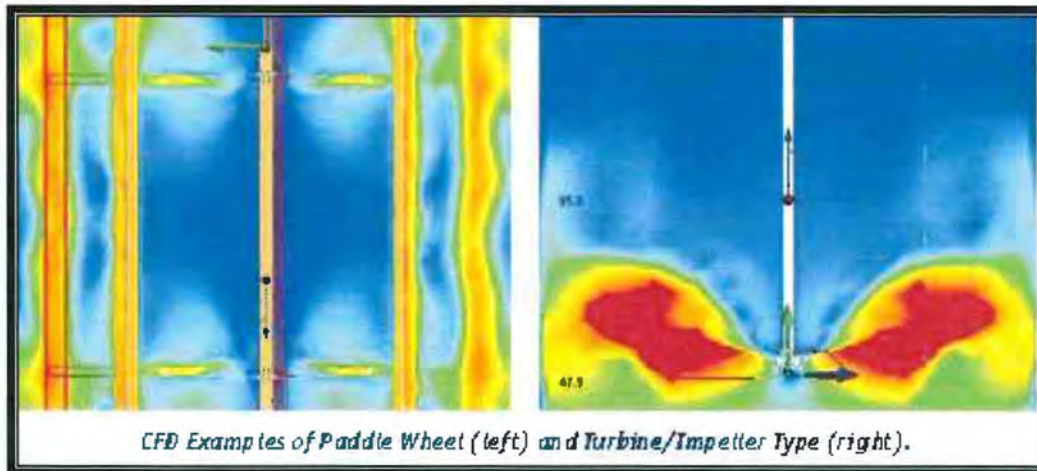


Image 2: Vertical Paddlewheel Flocculators (Courtesy of Jim Myers and Sons, Inc.)



CFD Examples of Paddle Wheel (left) and Turbine/Impeller Type (right).

Image 3 (Courtesy of Jim Myers and Sons, Inc.)

1.5 PROPOSED CLARIFIER SLUDGE RAKES AND DRIVES MODIFICATIONS

A. Clarifiers, Sludge Rakes and Drives – Drives and controls are recommended for replacement in the near future for Basins #1, #2, and #3. However, we recommend that the sludge rakes and structural support system for the rakes be maintenance overhauled which includes, but not limited to, repairing the oil leak at the top of the collector (roller bearings), replace collector blades as needed, sand blast and apply protective coatings as recommended by the manufacturer. Also, access ladders to the clarifiers as well as the flocculation basins need to be replaced with OSHA approved equipment for operator safety.

B. Structural

Should the clarifier sludge rakes and drives need to be replaced, the new equipment loads and support requirements shall be taken into consideration. Modifications to the mounting bases and anchors may be required to meet the manufacturer's recommendations.

1.6 PROPOSED MODIFICATIONS – OTHER

1.6.1 RAPID MIX BASIN #1

A. It is proposed that the rapid mix basin be baffled to reduce volume and detention times from the existing 14'Lx14'Wx12.5'D to a proposed 6.5'Lx6.5'Wx10'. Baffle walls would be constructed out of concrete or FRP and configured in general conformance to details on Figures 3 and 4. Existing influent raw water lines would be extended into the baffled area and the vertical rapid mixer relocated and replaced with a mixer optimally sized for the new basin configuration. Detention times for the newly configured basin would be approximately 12 seconds at 22 MGD (design flow), 25 seconds at 11 MGD (average flow), and 46 seconds at 6 MGD (typical low flow). All fall within the DOW recommended range of 10-30 seconds under normal conditions, not to exceed 60 seconds during typical low flow conditions.

B. Structural (By Freeland Harris) –

The observed structural deterioration at the rapid mix access hatch should be addressed by removing the failed concrete and patching with a polymer modified patching product. Additionally, the remainder of the below grade basin should be inspected at the time of construction, and any additional issues addressed at that time.

1.6.2 SLUDGE DRAIN LINES AND TELESCOPING VALVES

The existing 6" PVC and ductile iron sludge drain lines for basins #2 and #3 are recommended to be replaced with 8" PVC at a minimum 2-3% slope (if grade allows). The lines should be replaced from the center clarifier drain all the way to the first junction manhole outside the basins foot print where the sludge drain line from basins #1 and #4 join the lines from basins #2 and #3 respectively. At the manholes the sludge lines increase in diameter from 6" to 8" and according to NKWD Staff have no issues with flow conveyance beyond that point.

To improve the removal of sludge within the basins, the telescoping valves in the flocculation zone of basins #2 and #3 should be removed and sealed over and all associated plumbing should be removed, leaving only the drain lines from the clarifiers in service. Additionally, a new sloped concrete floor in the flocculation zones is proposed to help sludge flow toward the clarifiers and into the newly replaced sludge drain line. See detail on Figure 4 depicting the proposed slope floor.

1.6.3 BASIN INFLUENT AND EFFLUENT ISOLATION VALVES

It is recommended that the existing 36" steel influent gate valves be replaced with new 36" resilient wedge gate valves. Also, the existing 48" steel effluent sluice gates should be replaced with new aluminum or steel sluice gates. All new valves should be equipped with electric actuators controlled by local switch to improve operation. Aluminum sluice gates will be lighter than the existing steel gates and require lower horsepower actuators, but will have a higher capital cost of gate due to material type.

1.6.4 JAR TESTING

Per the RFQ assistance is being provided to the District on developing a procedure for jar testing and collecting the necessary data. A conference call has been held and data collection is underway. Separate deliverables for the jar testing study will be furnished at a later date.

1.7 RECOMMENDED ALTERNATE AND SCHEDULE

1.7.1 ALTERNATE SELECTION

Primarily capital cost, hydraulic differences, and basin configurations are the biggest differences between the two presented alternates.

Alternate 1 is less costly than Alternate 2 by requiring fewer flocculator units as well as less structural grating to access the flocculators. See also section 1.6.3.

Additionally, Alternate 1 is better hydraulically (mixing-wise) than alternate 2 by creating a less direct flow path through the basins based on flow openings locations and basin configurations. Alternate 1 will also provide 3 stage flocculation as opposed to the 2 stage flocculation provided with Alternate 2, and will reduce cross cutting of flows by providing both an over-under and side to side flow path. A quantifiable difference between existing conditions and Alternates 1 and 2 cannot be obtained without detailed modeling. However, we are confident that either Alternate (1 or 2) will be substantially more effective than the existing conditions, with Alternate 1 being most effective hydraulically.

Based on the reasoning above, Alternate 1 is the recommended alternate.

1.7.2 PHASING

The following project Phases are proposed based on the recommended alternate (Alternate 1) for flocculation basins improvements, other critical work items, and available funding:

Phase 1 (2014): Flocculation zone improvements for basins #2 and #3 (Alternate 1), replacement of sludge drain lines in basins #2 and #3, replacement of influent and effluent sluice and gate valves, modifications to rapid mix #1, concrete repairs to the top 2 feet of concrete walls on basins #2 and #3 and other miscellaneous concrete repair work (large cracks, etc.), and cleaning and recoating of sludge rakes in basins #2 and #3.

Phase 2 (2018): Flocculation zone Improvements for basins #1 and #4 (Alternate 1), miscellaneous concrete repairs in basins #1 and #4, and miscellaneous cleaning and recoating of metals in basins #1 and #4. *Work proposed for Basin #4 was "assumed" based on work proposed for Basin #1 assuming both are in similar condition. Actual work required for Basin #4 may vary after field inspections and assessments are completed on Basin #4 at a later date (not included in this contract). The budget for this Phase was prepared by the District and is simply a placeholder for funding planning at this time.*

1.7.3 BUDGET AND COST

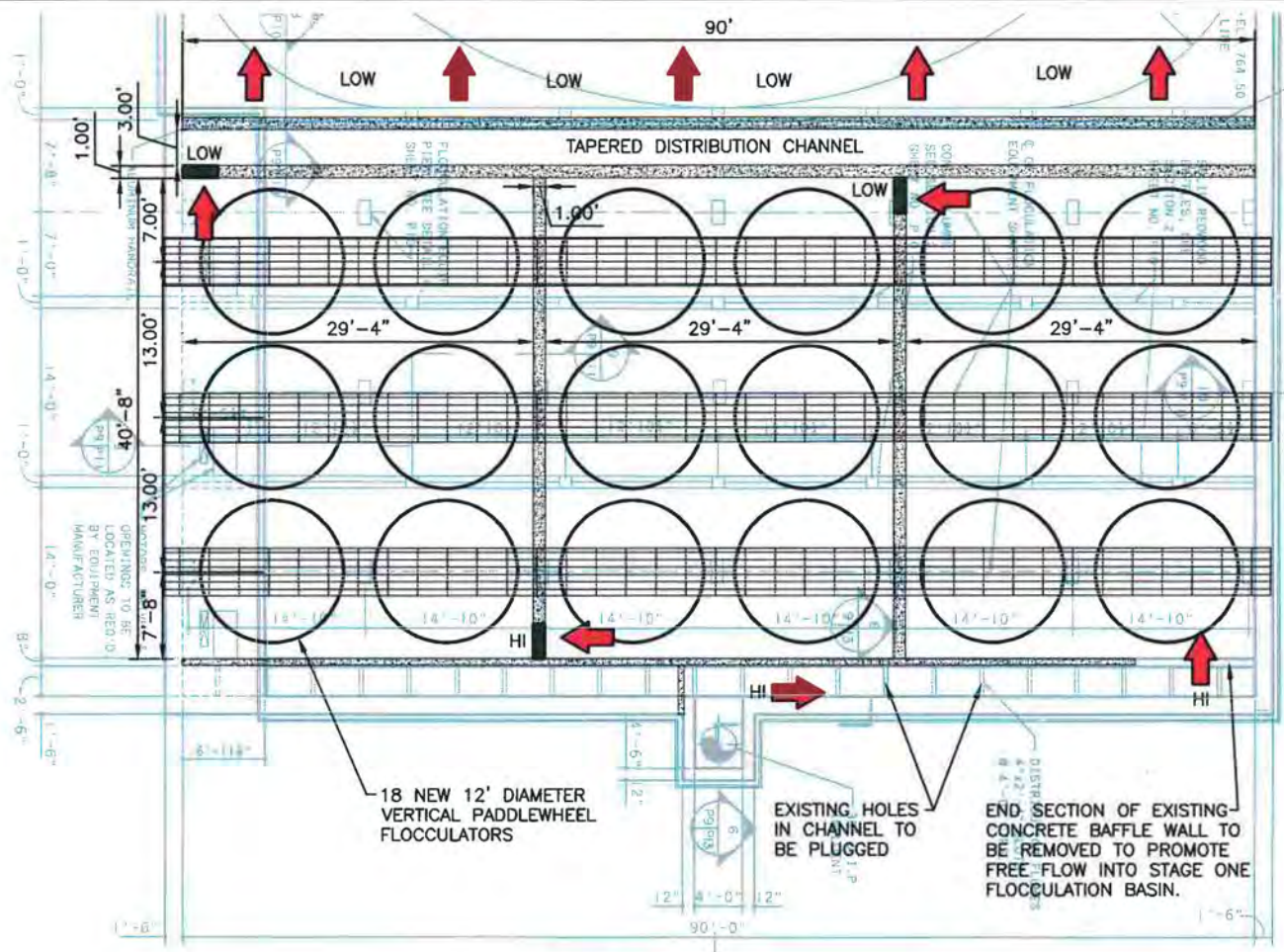
Per information provided by NKWD, the available funding over the coming years for this project is as follows:

Budget 2014 - \$2,784,000 (Phase 1)
Budget 2018 - \$3,735,000 (Phase 2)

Figures 5A-5B and 6A-6B depict the Engineer's Opinions of Probable Project Cost by phase for basin improvements Alternate 1 and Alternate 2 respectively for Basins #1, #2, #3, and #4. Work was broken into two phases in accordance with the budgeted funding targets provided by NKWD for the 2014 and 2018 fiscal years.

1.7.4 SCHEDULE

Various staging constraints affect the proposed Phase 1 project. The following schedule in Figure 7 depicts the proposed preliminary schedule and staging of work related to the Phase 1 effort. The intent of the scheduling for the Phase 1 project is to complete the construction of Basin #2 in the 2014/2015 winter and Basin #2 and Rapid Mix #1 work in the 2015/2016 winter.



PLAN
1" = 10'

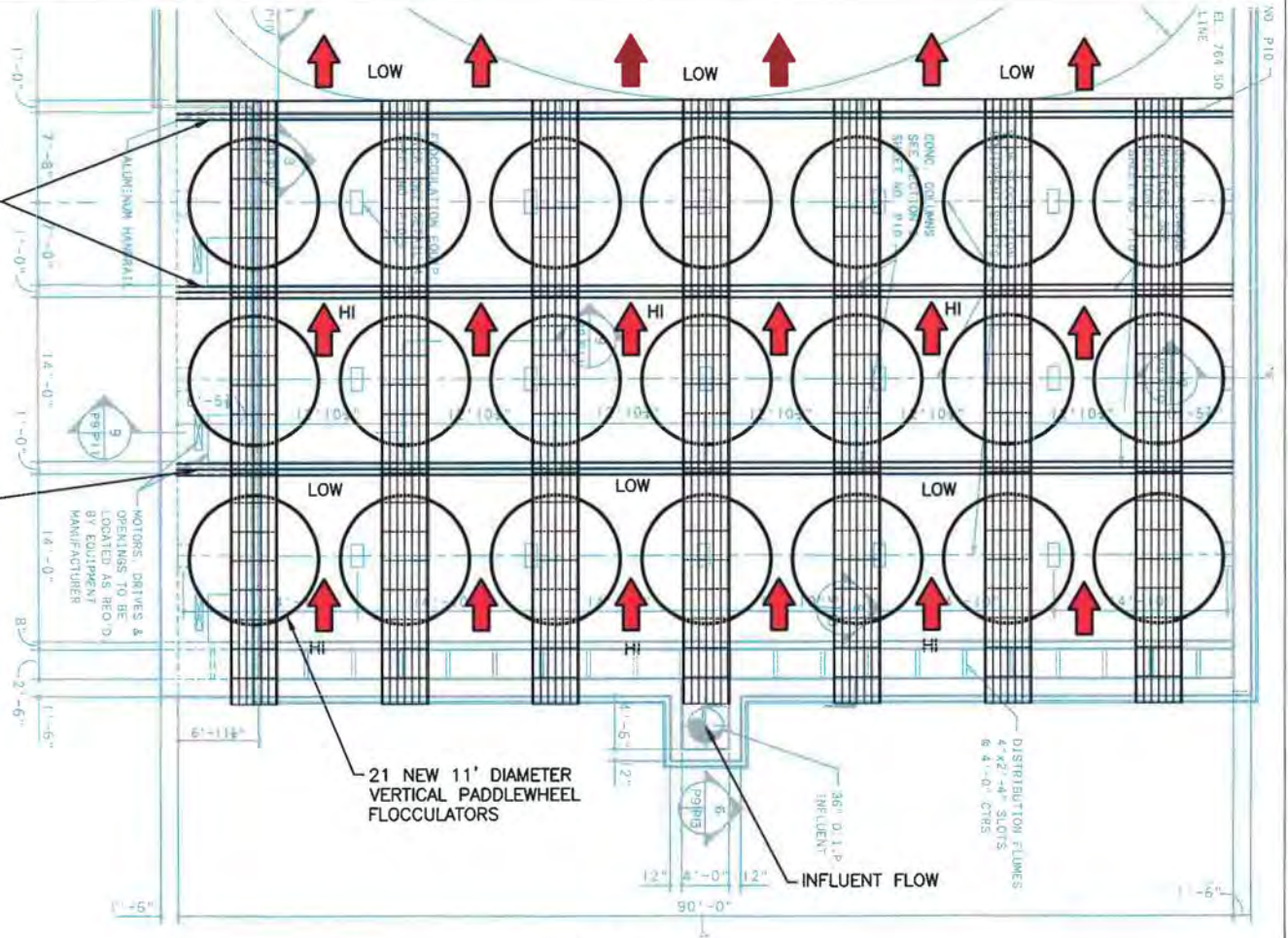


NKWD FTTP BASIN IMPROVEMENTS PROJECT
BASINS #1 MODIFICATIONS (ALTERNATE 1)
 TECHNICAL MEMORANDUM #1

DATE
3/27/14
 FIGURE
1A

REBUILD EXISTING
BAFFLES AND REDUCE
FLOW THROUGH
OPENING AREA

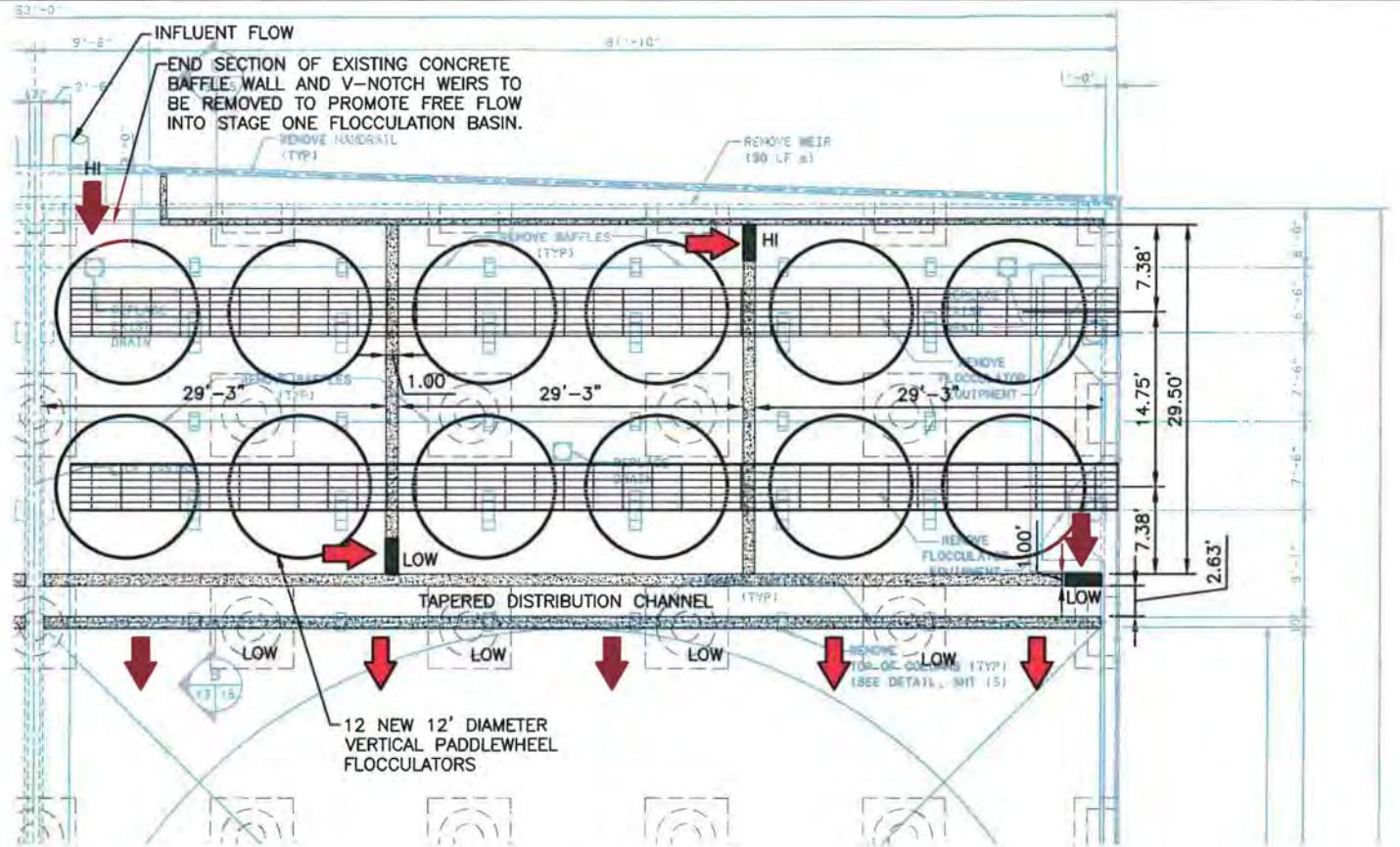
REBUILD EXISTING
BAFFLES AND REDUCE
FLOW THROUGH
OPENING AREA



PLAN

1" = 10'

	NKWD FFTP BASIN IMPROVEMENTS PROJECT BASINS #1 MODIFICATIONS (ALTERNATE 2)	DATE 3/27/14
	TECHNICAL MEMORANDUM #1	FIGURE 1B



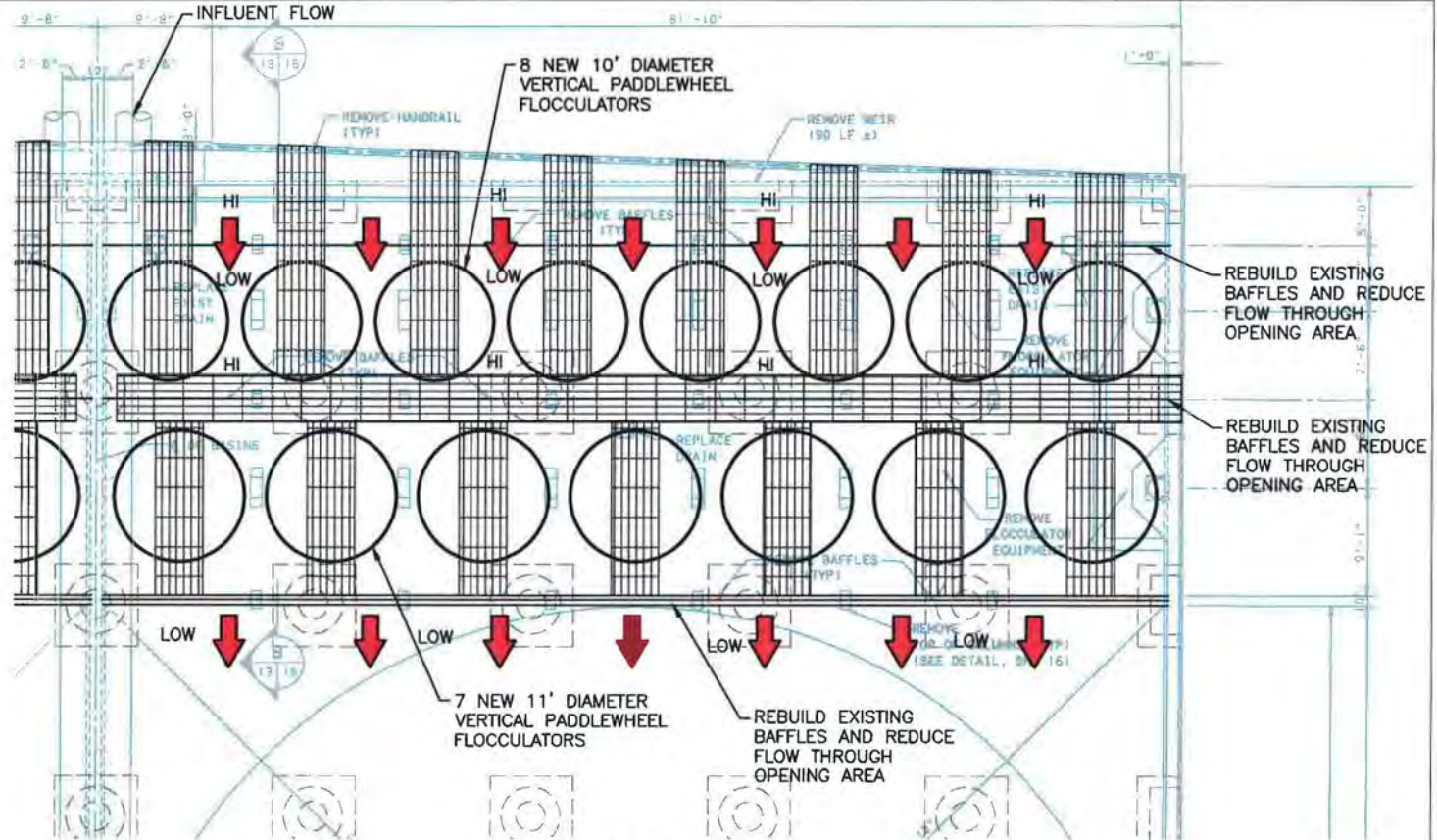
PLAN
1" = 10'



NKWD FTTP BASIN IMPROVEMENTS PROJECT
BASINS #2 & #3 MODIFICATIONS (ALTERNATE 1)

TECHNICAL MEMORANDUM #1

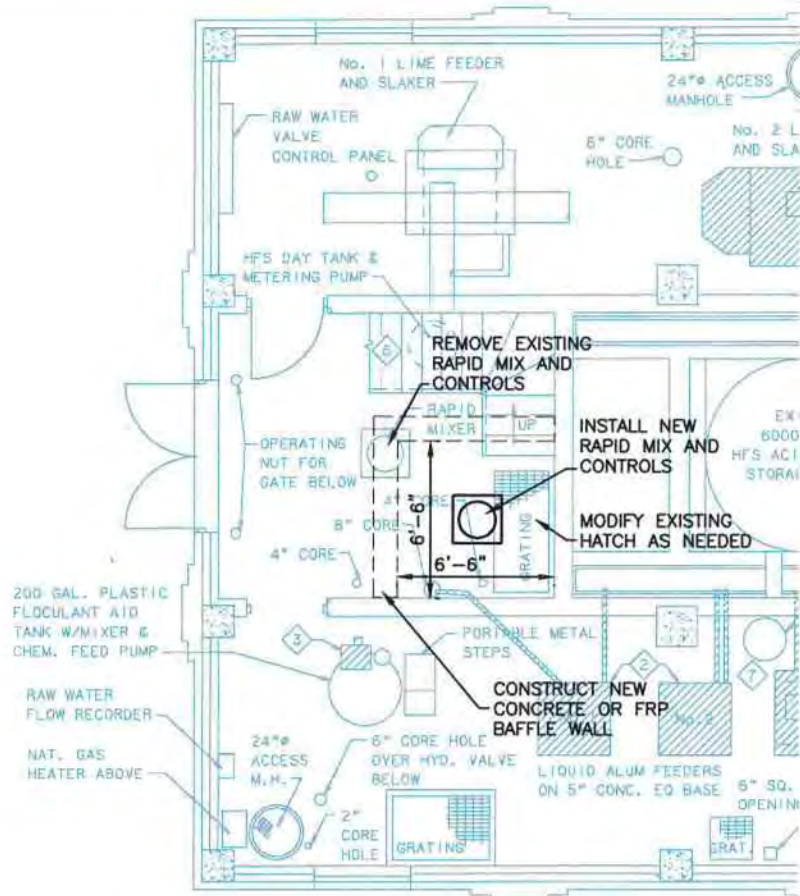
DATE	3/27/14
FIGURE	2A



PLAN

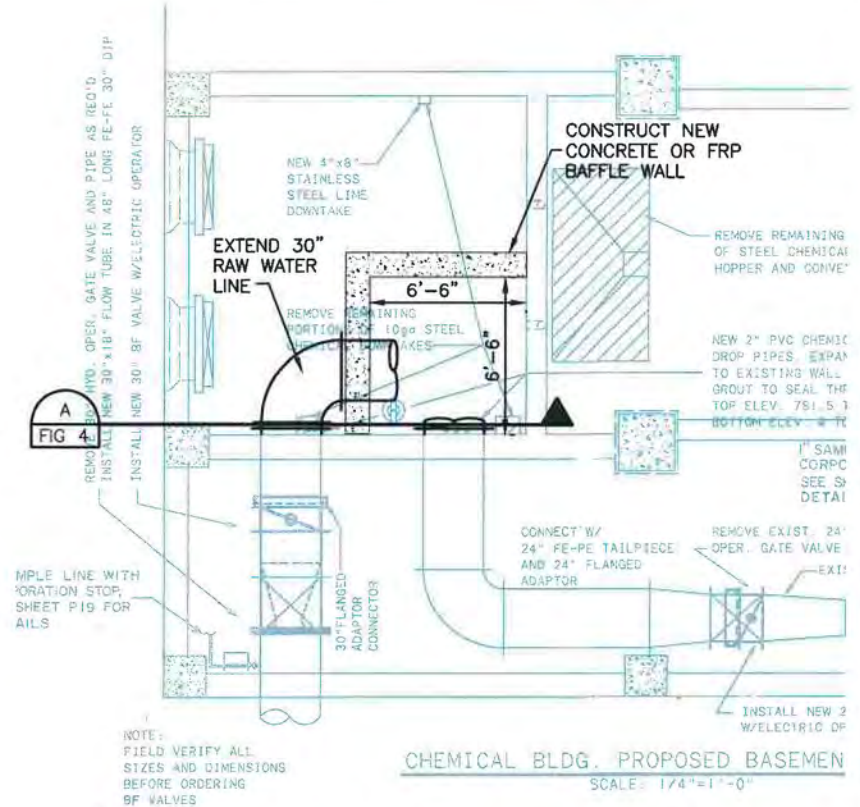
1" = 10'

	NKWD FTTP BASIN IMPROVEMENTS PROJECT BASINS #2 & #3 MODIFICATIONS (ALTERNATE 2)		<small>DATE</small> 3/27/14
	<small>TECHNICAL MEMORANDUM #1</small>		<small>FIGURE</small> 2B



RAPID MIX #1 - UPPER PLAN

1" = 5'



RAPID MIX #1 - LOWER PLAN

1" = 5'

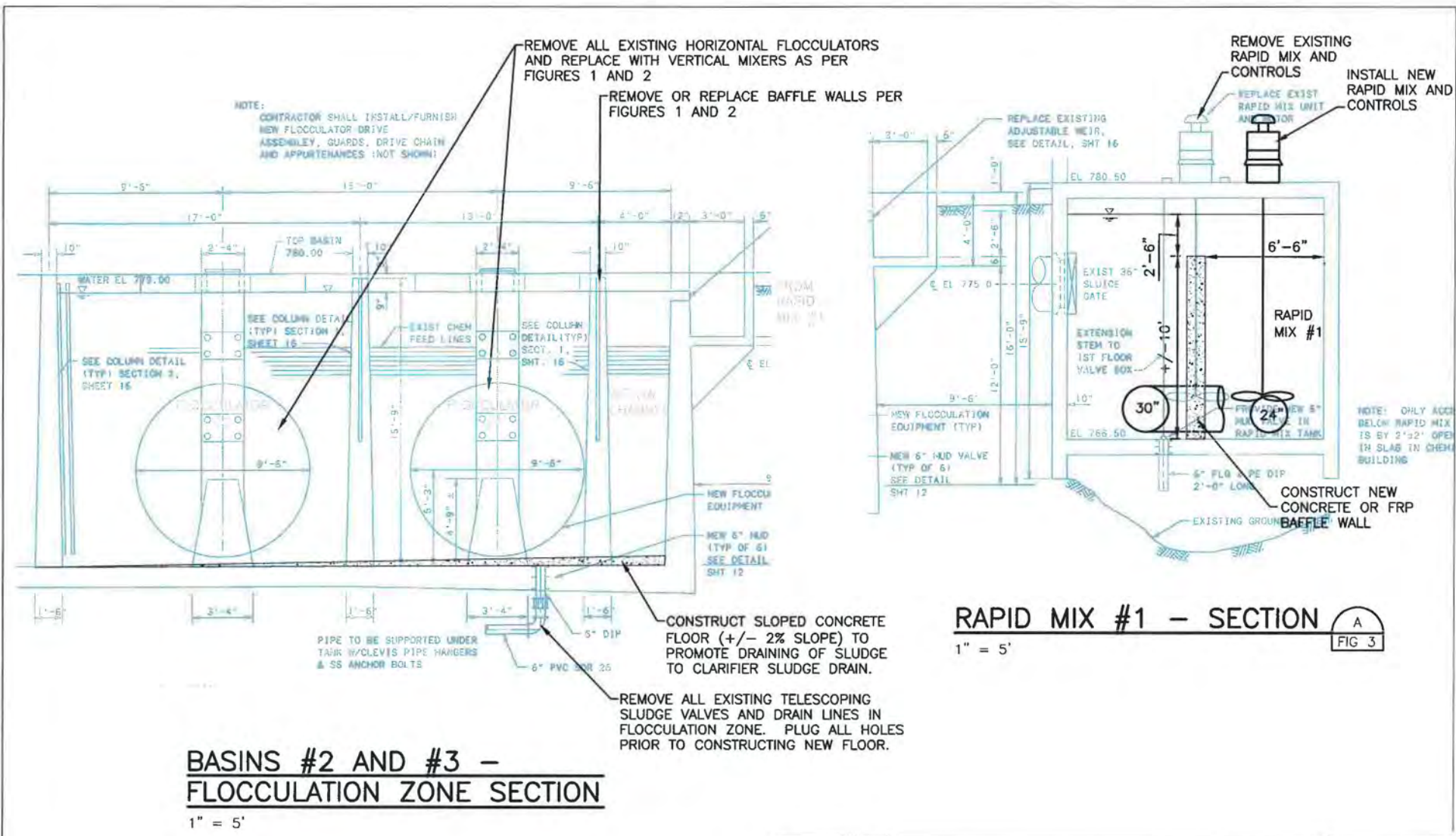


NKWD FFTP BASIN IMPROVEMENTS PROJECT
RAPID MIX #1 - PROPOSED MODIFICATIONS

TECHNICAL MEMORANDUM #1

DATE
 3/27/14

FIGURE
 3



HDR	NKWD FTP BASIN IMPROVEMENTS PROJECT PROPOSED MODIFICATIONS	DATE 3/27/14
	TECHNICAL MEMORANDUM #1	FIGURE 4

NORTHERN KENTUCKY WATER DISTRICT
 FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENT PROJECT - ALTERNATE 1
 ENGINEERS OPINION OF PROBABLE PROJECT COST
 3/27/2014

FIGURE 5A

#	ITEM	QTY	UNITS	UNIT PRICE	AMOUNT
PHASE 1 (2014)					
A BASIN #2 AND #3 FLOCCULATION AND CLARIFIER MODIFICATIONS - ALTERNATE 1					
1	Drain basin and clean in preparation for construction	2	EA	\$ 2,500.00	\$ 5,000.00
2	Demolish existing wooden baffle walls, concrete supports, and flocculator drive wells and dispose (One Basin)	2	EA	\$ 15,000.00	\$ 30,000.00
3	Demolish existing electrical to horizontal flocculators, controls, horizontal flocculators and remove	4	EA	\$ 7,500.00	\$ 30,000.00
4	12' Diameter Vertical Paddlewheel Flocculators	24	EA	\$ 27,000.00	\$ 648,000.00
5	Vertical Flocculators Access Bridges and Support System (One Basin)	2	EA	\$ 135,000.00	\$ 270,000.00
6	Construct new concrete baffle walls (Both Basins)	310	CY	\$ 800.00	\$ 248,000.00
7	Construct sloped concrete floor in flocculation zone (Both Basins)	80	CY	\$ 350.00	\$ 28,000.00
8	New 36" Influent Gate Valve with Electric Actuator	2	EA	\$ 40,000.00	\$ 80,000.00
9	New 48" Effluent Sluice Gate with Electric Actuator	2	EA	\$ 50,000.00	\$ 100,000.00
10	Repair (remove and re-pour) top two feet of concrete of basins #2 and #3 and reattach existing railing	70	CY	\$ 1,000.00	\$ 70,000.00
11	Replace existing 6" DI clarifier sludge drain with new 8" PVC (Both Basins)	1	LS	\$ 40,000.00	\$ 40,000.00
12	Clean and repaint existing sludge rake structural steel components.	1	LS	\$ 75,000.00	\$ 75,000.00
	Subtotal				\$ 1,624,000.00
B RAPID MIX BASIN #1 MODIFICATIONS					
1	Drain basin and clean in preparation for construction	1	LS	\$ 1,000.00	\$ 1,000.00
2	Demolish existing rapid mixer and controls and patch old penetration	1	LS	\$ 3,500.00	\$ 3,500.00
3	Install new rapid mixer and controls	1	LS	\$ 94,052.00	\$ 94,052.00
4	Construct new FRP or concrete baffle walls inside rapid mix basin	1	LS	\$ 8,840.00	\$ 8,840.00
5	Construct new hatch and access ladder to gate valves to basin #2 and #3 in rapid mix basin	1	LS	\$ 13,500.00	\$ 13,500.00
	Subtotal				\$ 120,892.00
C GENERAL					
1	Electrical /Instrumentation/Controls	1	LS	\$ 290,639.00	\$ 290,639.00
2	Miscellaneous Construction	1	LS	\$ 174,490.00	\$ 174,490.00
3	Mobilization/Demobilization	1	LS	\$ 52,347.00	\$ 52,347.00
4	General Conditions	1	LS	\$ 52,347.00	\$ 52,347.00
5	Contractor O&P	1	LS	\$ 244,285.00	\$ 244,285.00
	Subtotal				\$ 814,108.00
PROBABLE CONSTRUCTION COST - PHASE 1					
	Engineering				\$ 225,000.00
PROBABLE PROJECT COST - PHASE 1					
					\$ 2,784,000.00

NORTHERN KENTUCKY WATER DISTRICT
 FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENT PROJECT - ALTERNATE 1
 ENGINEERS OPINION OF PROBABLE PROJECT COST
 3/27/2014

FIGURE 5B

#	ITEM	QTY	UNITS	UNIT PRICE	AMOUNT
PHASE 2 (2018)					
A BASIN #1 AND #4 FLOCCULATION MODIFICATIONS - ALTERNATE 1					
1	Drain basin and clean in preparation for construction	1	LS	\$ 5,000.00	\$ 5,000.00
2	Demolish existing wooden baffle walls, concrete supports, and flocculator drive wells and dispose	1	LS	\$ 30,000.00	\$ 30,000.00
3	Demolish existing electrical to horizontal flocculators, flocculator controls, and flocculators	1	LS	\$ 30,000.00	\$ 30,000.00
4	12' Diameter Vertical Paddlewheel Flocculators	36	EA	\$ 30,000.00	\$ 1,080,000.00
5	Vertical Flocculators Access Bridges and Support System (One Basin)	2	EA	\$ 202,500.00	\$ 405,000.00
6	Construct new concrete baffle walls	350	CY	\$ 800.00	\$ 280,000.00
	Subtotal				\$ 1,830,000.00
A BASIN #1 AND #4 CLARIFIER MODIFICATIONS					
1	Drain basin and clean in preparation for construction (Both Basins)	1	LS	\$ 10,000.00	\$ 10,000.00
2	Demolish existing sludge rake drive and controls (Both Basins)	1	LS	\$ 7,500.00	\$ 7,500.00
3	New sludge rake drive and controls (Both Basins)	1	LS	\$ 137,550.00	\$ 137,550.00
4	Maintenance existing sludge rake and roller bearings. Includes stripping and recoating of steel components and installation of scrapers (Both Basins)	1	LS	\$ 85,000.00	\$ 85,000.00
5	Clean and repaint existing sludge rake structural steel components.	1	LS	\$ 75,000.00	\$ 75,000.00
6	Replace fiberglass weir troughs (Basin #1 only)	1	LS	\$ 67,500.00	\$ 67,500.00
	Subtotal				\$ 382,550.00
B GENERAL					
1	Electrical /Instrumentation/Controls	1	LS	\$ 375,930.00	\$ 375,930.00
2	Miscellaneous Construction	1	LS	\$ 331,883.00	\$ 331,883.00
3	Mobilization/Demobilization	1	LS	\$ 66,377.00	\$ 66,377.00
4	General Conditions	1	LS	\$ 66,377.00	\$ 66,377.00
5	Contractor O&P	1	LS	\$ 331,883.00	\$ 331,883.00
	Subtotal				\$ 1,172,450.00
SUBTOTAL PROBABLE CONSTRUCTION COST - PHASE 2					\$ 3,385,000.00
Engineering					\$ 350,000.00
PROBABLE PROJECT COST - PHASE 2					\$ 3,735,000.00

NOTHERN KENTUCKY WATER DISTRICT
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENT PROJECT - ALTERNATE 2
ENGINEERS OPINION OF PROBABLE PROJECT COST

3/27/2014

FIGURE 6A

#	ITEM	QTY	UNITS	UNIT PRICE	AMOUNT
PHASE 1 (2014)					
A BASIN #2 AND #3 FLOCCULATION AND CLARIFIER MODIFICATIONS - ALTERNATE 1					
1	Drain basin and clean in preparation for construction	2	EA	\$ 2,500.00	\$ 5,000.00
2	Demolish existing wooden baffle walls, concrete supports, and flocculator drive wells and dispose (One Basin)	2	EA	\$ 15,000.00	\$ 30,000.00
3	Demolish existing electrical to horizontal flocculators, controls, horizontal flocculators and remove	4	EA	\$ 7,500.00	\$ 30,000.00
4	10' Diameter Vertical Paddlewheel Flocculators	16	EA	\$ 27,000.00	\$ 432,000.00
5	11' Diameter Vertical Paddlewheel Flocculators	14	EA	\$ 27,000.00	\$ 378,000.00
6	Vertical Flocculators Access Bridges and Support System (One Basin)	2	EA	\$ 184,000.00	\$ 368,000.00
7	Construct new concrete baffle walls (Both Basins)	310	CY	\$ 800.00	\$ 248,000.00
8	Construct sloped concrete floor in flocculation zone (Both Basins)	80	CY	\$ 350.00	\$ 28,000.00
9	New 36" Influent Gate Valve with Electric Actuator	2	EA	\$ 40,000.00	\$ 80,000.00
10	New 48" Effluent Sluice Gate with Electric Actuator	2	EA	\$ 50,000.00	\$ 100,000.00
11	Repair (remove and re-pour) top two feet of concrete of basins #2 and #3 and reattach existing railing	70	CY	\$ 1,000.00	\$ 70,000.00
12	Replace existing 6" DI clarifier sludge drain with new 8" PVC (Both Basins)	1	LS	\$ 40,000.00	\$ 40,000.00
13	Clean and repaint existing sludge rake structural steel components.	1	LS	\$ 75,000.00	\$ 75,000.00
	Subtotal				\$ 1,884,000.00
B RAPID MIX BASIN #1 MODIFICATIONS					
1	Drain basin and clean in preparation for construction	1	LS	\$ 1,000.00	\$ 1,000.00
2	Demolish existing rapid mixer and controls and patch old penetration	1	LS	\$ 3,500.00	\$ 3,500.00
3	Install new rapid mixer and controls	1	LS	\$ 94,052.00	\$ 94,052.00
4	Construct new FRP or concrete baffle walls inside rapid mix basin	1	LS	\$ 8,840.00	\$ 8,840.00
5	Construct new hatch and access ladder to gate valves to basin #2 and #3 in rapid mix basin	1	LS	\$ 13,500.00	\$ 13,500.00
	Subtotal				\$ 120,892.00
C GENERAL					
1	Electrical /Instrumentation/Controls	1	LS	\$ 300,245.00	\$ 300,245.00
2	Miscellaneous Construction	1	LS	\$ 200,490.00	\$ 200,490.00
3	Mobilization/Demobilization	1	LS	\$ 60,147.00	\$ 60,147.00
4	General Conditions	1	LS	\$ 60,147.00	\$ 60,147.00
5	Contractor O&P	1	LS	\$ 299,079.00	\$ 299,079.00
	Subtotal				\$ 920,108.00
PROBABLE CONSTRUCTION COST - PHASE 1					
	Engineering				\$ 225,000.00
PROBABLE PROJECT COST - PHASE 1					
					\$ 3,150,000.00

NOTHERN KENTUCKY WATER DISTRICT
 FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENT PROJECT - ALTERNATE 2
 ENGINEERS OPINION OF PROBABLE PROJECT COST

3/27/2014

FIGURE 6B

#	ITEM	QTY	UNITS	UNIT PRICE	AMOUNT
	PHASE 2 (2018)				
A	BASIN #1 AND #4 FLOCCULATION MODIFICATIONS - ALTERNATE 1				
1	Drain basin and clean in preparation for construction	1	LS	\$ 5,000.00	\$ 5,000.00
2	Demolish existing wooden baffle walls, concrete supports, and flocculator drive wells and dispose	1	LS	\$ 30,000.00	\$ 30,000.00
3	Demolish existing electrical to horizontal flocculators, flocculator controls, and flocculators	1	LS	\$ 30,000.00	\$ 30,000.00
4	11' Diameter Vertical Paddlewheel Flocculators	42	EA	\$ 30,000.00	\$ 1,260,000.00
5	Vertical Flocculators Access Bridges and Support System (One Basin)	2	EA	\$ 202,500.00	\$ 405,000.00
6	Construct new concrete baffle walls	350	CY	\$ 800.00	\$ 280,000.00
	Subtotal				\$ 2,010,000.00
A	BASIN #1 AND #4 CLARIFIER MODIFICATIONS				
1	Drain basin and clean in preparation for construction (Both Basins)	1	LS	\$ 10,000.00	\$ 10,000.00
2	Demolish existing sludge rake drive and controls (Both Basins)	1	LS	\$ 7,500.00	\$ 7,500.00
3	New sludge rake drive and controls (Both Basins)	1	LS	\$ 137,550.00	\$ 137,550.00
4	Maintenance existing sludge rake and roller bearings. Includes stripping and recoating of steel components and installation of scrapers (Both Basins)	1	LS	\$ 85,000.00	\$ 85,000.00
5	Clean and repaint existing sludge rake structural steel components.	1	LS	\$ 75,000.00	\$ 75,000.00
6	Replace fiberglass weir troughs (Basin #1 only)	1	LS	\$ 67,500.00	\$ 67,500.00
	Subtotal				\$ 382,550.00
B	GENERAL				
1	Electrical /Instrumentation/Controls	1	LS	\$ 386,130.00	\$ 386,130.00
2	Miscellaneous Construction	1	LS	\$ 358,883.00	\$ 358,883.00
3	Mobilization/Demobilization	1	LS	\$ 71,777.00	\$ 71,777.00
4	General Conditions	1	LS	\$ 71,777.00	\$ 71,777.00
5	Contractor O&P	1	LS	\$ 358,883.00	\$ 358,883.00
	Subtotal				\$ 1,247,450.00
	SUBTOTAL PROBABLE CONSTRUCTION COST - PHASE 2				\$ 3,640,000.00
	Engineering				\$ 350,000.00
	PROBABLE PROJECT COST - PHASE 2				\$ 3,990,000.00

FIGURE 7

NKWD FTTP BASINS IMPROVEMENTS PROJECT - TM #1
PRELIMINARY CONSTRUCTION STAGING SCHEDULE

Task / Description	2014					2015								2016			
	August	September	October	November	December	January	February	March	April	May-Sept	October	November	December	January	February	March	April
Advertise for Bids	■																
Open Bids		■															
ATA Package Preparation, Submittal, and Review Period		■	■	■	■												
Contingent Award of Contract			■														
PSC Certificate of Convenience and Necessity Period			■	■	■	■	■	■	■	■							
Shop Drawing Submittal and Review Period			■	■	■	■	■	■	■	■							
Construction Materials Fabrication Period						■	■	■	■	■							
Notice to Proceed (with onsite Work)										P1							
PART 1 OF PHASE 1 CONSTRUCTION																	
Construction Start (on site work begins)							■	■	■	■	■	■	■	■	■	■	■
On Site Electrical Work in Preparation for Basin #2 Mods							■	■	■	■	■	■	■	■	■	■	■
Misc. On Site Work in Preparation for Basin #2 Mods							■	■	■	■	■	■	■	■	■	■	■
Basin #2 Drained and Out of Service (In Basin Work)								X	X	X	X	X	X	X	X	X	X
Construct New Sludge Drain Line for Basin #2										■	■	■	■	■	■	■	■
Misc. Work to Closeout Part 1 of Phase 1 Construction										■	■	■	■	■	■	■	■
Project On-Hold Period Waiting for Next Construction Season											5 MONTHS						
PART 2 OF PHASE 1 CONSTRUCTION																	
On Site Electrical Work in Preparation for Basin #3 Mods												■	■	■	■	■	■
Misc. On Site Work in Preparation for Basin #3 Mods												■	■	■	■	■	■
Basin #3 Drained and Out of Service (In Basin Work & Misc. Basin #2 Work)												X	X	X	X	X	X
Basin #3 Drained and Out of Service (Clarifier Sludge Rakes Work)																	
Basin #2 Drained and Out of Service (Clarifier Sludge Rakes Work)																	
Construct New Sludge Drain Line for Basin #3																	
Rapid Mix #1 Drained and Out of Service (In Basin Work)																	
Misc. Project Closeout Work																	
Project Closeout																	
CONFLICT #1 - TMTP One Basin Out of Service							X	X	X	X	X	X	X	X	X	X	X

■ Bidding Item
 ■ Offsite Construction Related Item
 ■ Onsite Construction Related Item
 ■ Construction Staging Conflict
 ■ Basin Out of Service X

APPENDIX A

HDR Engineering
Site Visit Photo Log

APPENDIX 'A'

PHOTO LOG



Photo 1 - Basin #1 Clarifier



Photo 2 - Basin #1 Flocculation Zone

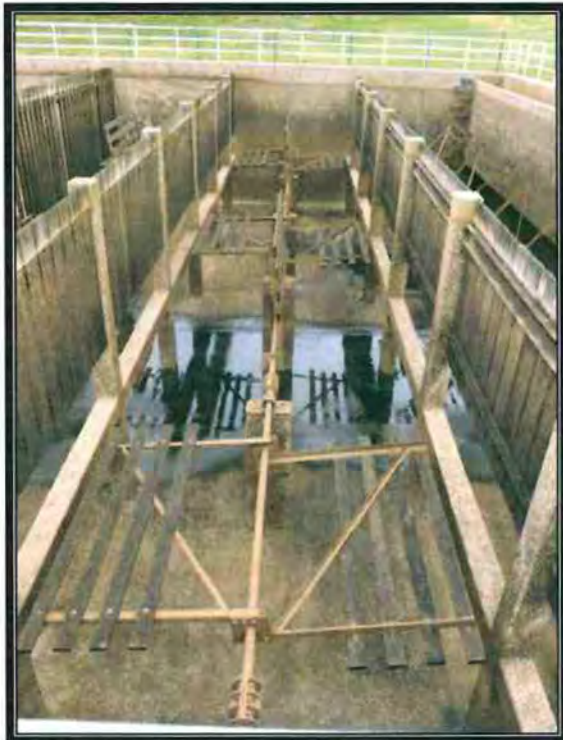


Photo 3 - Basin #1 Flocculator #2



Photo 4 - Basin #1 Flocculator Drive (Typ.)

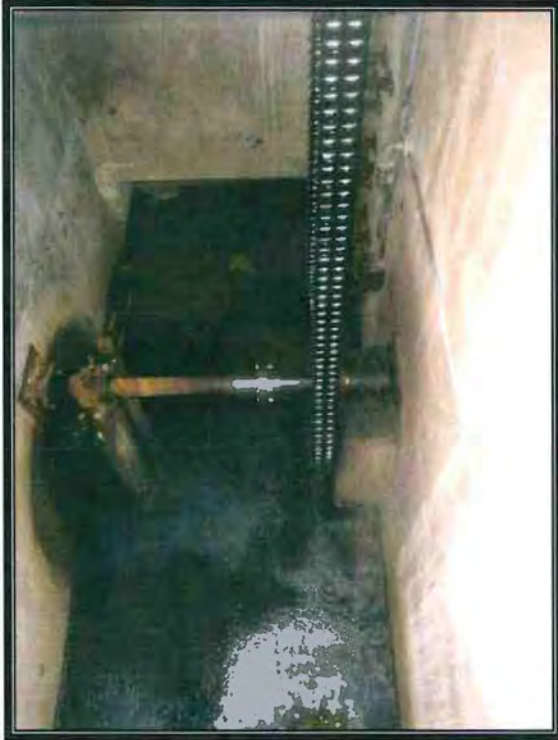


Photo 5 - Basin #1 Flocculator Drive Chain (Typ.)



Photo 6 - Basin #1 Influent Flow Channel



Photo 7 - Basin #1 Clarifier Sludge Rake Arm



Photo 8 - Basin #1 Clarifier Sludge Rake



Photo 9 - Basin #1 Clarifier Sludge Rake Drive



Photo 10 - Basin #1 Clarifier Effluent Channel



Photo 11 - Basin #2 / #3 Clarifier (Typ.)



Photo 12 - Basin #2 / #3 Tube Settlers (Typ.)



Photo 13 - Basin #2 / #3 Clarifier Sludge Rake Dr. (Typ.) Photo 14 - Basin #2 / #3 Final Baffle Wall (Typ.)



Photo 15 - Basin #2 / #3 Clarifier Sludge Rake (Typ.) Photo 16 - Basin #2 / #3 Effluent Sluice Gate Operators (Typ.)



Photo 17 - Basin #2 / #3 Effluent Sluice Gate (Typ.)



Photo 18 - Basin #2 / #3 Horiz. Flocculator Condition (Typ.)



Photo 19 - Basin #1, #2, #3 Baffle Wall (Typ.)

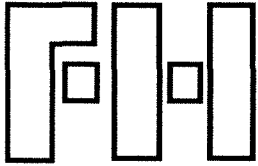


Photo 20 - Basin #2 / #3 Sludge Drain Lines (Typ.)

APPENDIX B

Freeland Harris (Structural)

Site Visit Photo Log




freeland harris
consulting engineers

201 west short street • suite 410
lexington, kentucky 40507 • (859) 252-6413

Field Report Photos
Fort Thomas Water Treatment Plant
Basin #1
October 17, 2013

The following structural observations were made during my site visit.

1.	Basin wall top deterioration.	 A black and white photograph showing a close-up of a concrete wall. The top edge of the wall is severely deteriorated, with large sections of concrete missing and exposed aggregate. The wall appears to be part of a basin, with a dark, possibly water-filled area below it.
----	-------------------------------	---

2. Vault top deterioration.



3. Vault opening overcuts from previous modification.



4. Baffle wall support columns with surface deterioration below water level.



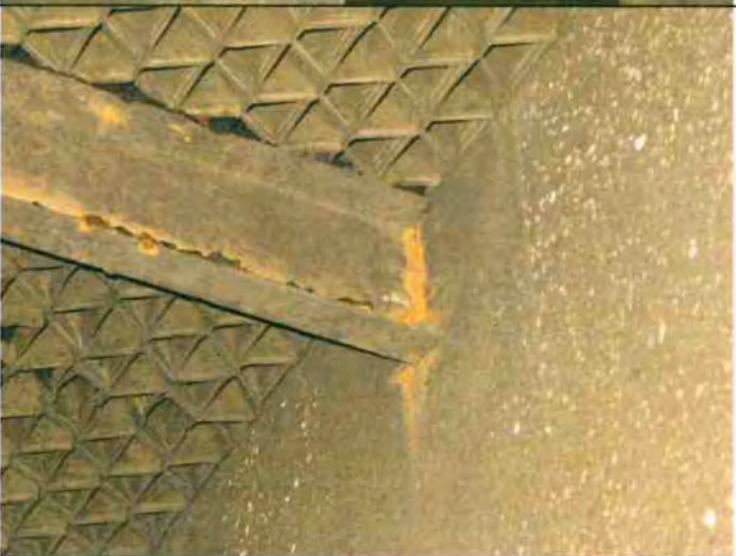


5. Baffle wall support columns with surface deterioration below water level.



6. Clarifier base slab cracks actively leaking.



7.	Clarifier base slab cracks actively leaking.	
8.	Clarifier wall crack actively leaking.	
9.	Rusting/pitting of tube settler steel beams.	

10. Damaged railing.



11. Rodent hole beneath stair base.






freeland harris
consulting engineers

201 west short street • suite 410
lexington, kentucky 40507 • (859) 252-6413

Field Report Photos
Fort Thomas Water Treatment Plant
Basin #2
October 3, 2013

The following structural observations were made during my site visit.

1.	Basin wall top deterioration.	 A photograph showing the top edge of a concrete basin wall. The concrete is heavily deteriorated, with large areas of missing material and exposed aggregate. The surface is uneven and cracked. In the background, there is a line of trees and a clear sky.
----	-------------------------------	---

2. Basin wall top deterioration.



3. Basin wall top deterioration.



4. Basin wall top deterioration.



5. Basin wall top deterioration.



6. Mixer baffle support surface deterioration.



7. "Pattern" cracks in clarifier base slab.



8. "Pattern" cracks in clarifier base slab.



9. Clarifier equipment corrosion.



10. Tube settler support beam corrosion.





freeland harris
consulting engineers

201 west short street • suite 410
lexington, kentucky 40507 • (859) 252-6413

Field Report Photos
Fort Thomas Water Treatment Plant
Basin #3 & Crawl Space
October 10, 2013

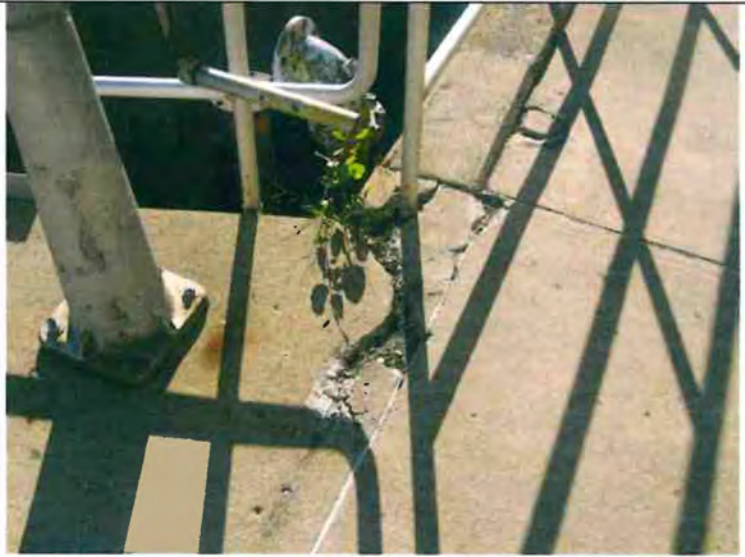
The following structural observations were made during my site visit.

1.	Basin wall top deterioration.	 A photograph showing the top edge of a concrete basin wall. The concrete is heavily deteriorated, with significant cracking and crumbling. A metal railing is visible in the foreground, and a shadow of a person is cast on the wall.
----	-------------------------------	--

2. Basin wall top deterioration.









3. Basin wall top deterioration.









4. Basin wall top deterioration.



5.	Basin wall top deterioration.	 A close-up photograph of the top edge of a concrete basin wall. The concrete is heavily weathered, with a large, jagged crack running along the top surface. A yellow vertical post and a white horizontal pipe are visible in the foreground, partially obscuring the wall.
6.	Basin wall top where previously replaced.	 A photograph showing the top edge of a concrete basin wall. The surface is dark and appears to have been recently treated or repaired, with some visible texture and discoloration. A dark, rectangular object is leaning against the wall in the foreground.
7.	Basin wall top where previously replaced.	 A photograph of a concrete basin wall top, similar to the previous image. The wall shows signs of repair or replacement, with a dark, textured surface. A metal railing is visible in the foreground, and the background shows an outdoor setting with some vegetation.

8.	Baffle wall support surface deterioration.	
9.	"Pattern" cracks in clarifier base slab.	
10.	"Pattern" cracks in clarifier base slab.	

11.	Active leak in crawl space beneath Basin #2 and #3.	 A photograph showing a dark, active leak of water or oil from a pipe or joint in a crawl space. The surrounding area is dark and appears to be a concrete or masonry structure.
12.	Base slab cracks visible from crawl space beneath Basin #2 and #3.	 A photograph showing a concrete base slab with several visible cracks. The cracks are dark and run across the surface of the slab. The surrounding area is dark and appears to be a crawl space.
13.	Exposed base slab reinforcement beneath Basin #2 and #3.	 A photograph showing exposed base slab reinforcement. The reinforcement consists of several parallel steel bars (rebar) embedded in a concrete slab. The surrounding area is dark and appears to be a crawl space.

14.	Tube settler support beams with active corrosion.	 A photograph showing a close-up of a concrete structure with a grid-like pattern of reinforcement. The surface is heavily corroded, with bright orange and yellow rust spots and a general yellowish-brown discoloration. A dark horizontal line, likely a support beam, runs across the middle of the frame.
15.	Previous repair to clarifier in Basin #3.	 A photograph of a complex metal truss structure, possibly a clarifier. The structure is made of numerous interconnected metal beams and girders, forming a triangular and rectangular framework. The metal appears to be galvanized steel, with some areas showing signs of wear and discoloration. The background is dark and indistinct.
16.	Scraper part from clarifier in Basin #3.	 A photograph of a rectangular metal scraper part lying on a light-colored concrete floor. The scraper has a dark, possibly painted or coated surface. The floor is slightly textured and shows some minor stains and shadows. The lighting is bright, casting a distinct shadow of the scraper onto the floor.

17.

Baffle wall support beam
corrosion.



NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Engineer's Opinion
Of Probable
Construction Cost

1/15/2015
NORTHERN KENTUCKY WATER DISTRICT
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS PROJECT
ENGINEERS OPINION OF PROBABLE CONSTRUCTION COST

#	ITEM	QTY	UNITS	UNIT PRICE	AMOUNT
1	ITEM 1 - WALKWAY SURFACE REPAIR				
a	Overall Walkway General Repairs	1,000	SF	\$ 20.00	\$ 20,000.00
b	Crack Repair	150	LF	\$ 10.00	\$ 1,500.00
c	Spalled Surface Repair	200	SF	\$ 50.00	\$ 10,000.00
	Subtotal Item 1				\$ 31,500.00
2	ITEM 2 - TYPICAL BASIN CRACK REPAIR				
a	Typical Basin Crack Repair	3,000	LF	\$ 10.00	\$ 30,000.00
	Subtotal Item 2				\$ 30,000.00
3	ITEM 3 - FILTER BUILDING - STRUCTURAL CONCRETE REPAIRS				
a	Concrete Beam Repair Type A (includes shoring, reinforcing steel or mesh)	85	LF	\$ 300.00	\$ 25,500.00
b	Concrete Beam Repair Type B (includes shoring, reinforcing steel or mesh)	35	LF	\$ 350.00	\$ 12,250.00
c	Concrete Beam Repair Type C (includes shoring, reinforcing steel or mesh)	15	LF	\$ 325.00	\$ 4,875.00
d	Concrete Ceiling Repair (includes shoring, reinforcing steel or mesh)	800	SF	\$ 60.00	\$ 48,000.00
e	Wall and Column Repair (includes shoring, reinforcing steel or mesh)	24	SF	\$ 45.00	\$ 1,080.00
	Subtotal Item 3				\$ 91,705.00
4	ITEM 4 - GENERAL CONSTRUCTION (FTTP BASIN IMPROVEMENTS LESS ITEMS 1-3 ABOVE)				
	BASIN #2 AND #3 FLOCCULATION AND CLARIFIER MODIFICATIONS				
1	Drain basins, clean, and prepare for construction	1	LS	\$ 5,000.00	\$ 5,000.00
2	Demolition - General Miscellaneous (concrete, flocculators, equipment, slide gates, etc.)	1	LS	\$ 85,000.00	\$ 85,000.00
3	Demolition - Electrical	1	LS	\$ 15,000.00	\$ 15,000.00
4	Vertical Impeller Flocculators, Drives, Shafts, and Impellers (No Controls or Electrical)	1	LS	\$ 500,000.00	\$ 500,000.00
5	Vertical Flocculators Access Bridges and Support Systems	1	LS	\$ 250,000.00	\$ 250,000.00
6	Concrete baffle walls and wall cap concrete	300	CY	\$ 1,000.00	\$ 300,000.00
7	Construct sloped concrete floors in flocculation zones	150	CY	\$ 500.00	\$ 75,000.00
8	New 48" Effluent Slide Gate with Electric Actuator	2	EA	\$ 28,506.00	\$ 57,012.00
9	8" resilient wedge gate valve with stem extension and pedestal operator	6	EA	\$ 3,500.00	\$ 21,000.00
10	Repair upper portion of demolished concrete walls of basins #2 and #3 and reattach existing railing	50	CY	\$ 1,000.00	\$ 50,000.00
11	Replace top slab of sludge valve vaults, provide new hatches and grating, reattach railings	1	LS	\$ 50,000.00	\$ 50,000.00
12	Cap existing 6" PVC clarifier sludge drains in vault beneath Basin #2 and #3 (6 total)	1	LS	\$ 2,500.00	\$ 2,500.00
13	Replace clarifier sludge collection systems in their entirety (No Controls or Electrical)	1	LS	\$ 508,800.00	\$ 508,800.00
14	Replace 6" plug valves and electric actuators on sludge drain lines from Basin #2 and #3	2	EA	\$ 11,250.00	\$ 22,500.00
15	Miscellaneous Metals, Handrails, Gates, and Davits	1	LS	\$ 30,000.00	\$ 30,000.00
16	Install FRP access ladder and provide access way through existing handrail	10	EA	\$ 3,500.00	\$ 35,000.00
17	Install Temporary Bulkhead in Eff. Flume, Replace Floor Hatch, and Repair Terrazzo Tile	1	LS	\$ 15,000.00	\$ 15,000.00
	Subtotal Item 4 (parts 1-17)				\$ 2,021,812.00
	RAPID MIX BASIN #1 MODIFICATIONS				
18	Drain basin, clean, and prepare for construction	1	LS	\$ 1,500.00	\$ 1,500.00
19	Demolition - General Miscellaneous (concrete, equipment, hatches, slide gates, etc.)	1	LS	\$ 12,500.00	\$ 12,500.00
20	Demolition - Electrical	1	LS	\$ 2,500.00	\$ 2,500.00
21	Repair old access penetrations through rapid mix #1 floor	1	LS	\$ 7,500.00	\$ 7,500.00
22	Install new rapid mixer (No Controls or Electrical)	1	LS	\$ 53,625.00	\$ 53,625.00
23	Construct new concrete baffle walls inside rapid mix basin	15	CY	\$ 1,000.00	\$ 15,000.00
24	Construct new hatch and access ladder to basin #2 and #3 influent slide gates in rapid mix basin	1	LS	\$ 13,500.00	\$ 13,500.00
25	Miscellaneous Metals, Handrails, and Davits	1	LS	\$ 10,000.00	\$ 10,000.00
26	36"x78" Slide Weir, Complete In-Place	1	LS	\$ 7,500.00	\$ 7,500.00
27	New 36" Influent Slide Gate Valve with Electric Actuator	2	EA	\$ 23,586.00	\$ 47,172.00
28	Replace 30" butterfly valves and electric actuators on 30" influent raw water lines to Rapid Mix #1	2	EA	\$ 20,250.00	\$ 40,500.00
	Subtotal Item 4 (parts 18-28)				\$ 211,297.00
	GENERAL				
29	Electrical/Lighting/Controls	1	LS	\$ 233,926.00	\$ 233,926.00
30	Miscellaneous Construction	1	LS	\$ 238,632.00	\$ 238,632.00
31	Mobilization/Demobilization	1	LS	\$ 71,590.00	\$ 71,590.00
32	General Conditions	1	LS	\$ 71,590.00	\$ 71,590.00
33	Contractor O&P	1	LS	\$ 357,948.00	\$ 357,948.00
	Subtotal Item 4 (General)				\$ 973,686.00
	Subtotal Item 4				\$ 3,206,795.00
	PROBABLE CONSTRUCTION COST (Items 1-4)				\$ 3,360,000.00
	ADDITIVE ALTERNATIVES				
1	FILTER BUILDING - PAINT RESTORATION				
1	Filter Building Filter Bays Paint Restoration (Includes all Labor and Materials in SF price)	8,300	SF	\$ 22.00	\$ 182,600.00
	Subtotal				\$ 182,600.00
	PROBABLE CONSTRUCTION COST WITH ADDITIVE ALTERNATIVES				\$ 3,542,600.00

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Plans and Specifications prepared by HDR titled “Fort
Thomas Treatment Plant Basin Improvements”

Northern Kentucky Water District

The following items are enclosed separately from this volume in hard copy and enclosed in this submittal in electronic copy.

- Plans prepared by HDR titled “Fort Thomas Treatment Plant Basin Improvements” dated January 15, 2015
- Specifications prepared by HDR titled “Fort Thomas Treatment Plant Basin Improvements” dated January 15, 2015

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

CERTIFIED STATEMENTS

Affidavit

Franchises

Plan Review and Permit Status

Easements and Right-of-Way Status

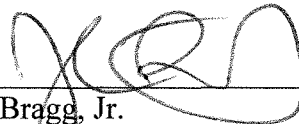
Construction Dates and Proposed Date In Service

Plant Retirements

AFFIDAVIT

Fort Thomas Treatment Plant Basin Improvements

Affiant, Jack Bragg, Jr., being the first duly sworn, deposes and says that he is the Vice President of Finance and Support Services of the Northern Kentucky Water District, which he is the Applicant in the proceeding styled above; that he has read the foregoing "Taylor Mill Treatment Plant Electrical and Basin Improvements" Application and knows the contents thereof, and that the same is true of his own knowledge, except as to matters which are therein stated on information or belief, and that is to those matters he believes them to be true.



Jack Bragg, Jr.
Vice President, Finance & Support Services
Northern Kentucky Water District

Subscribed and sworn to before me in said County to be his act and deed by
Jack Bragg, Jr., Vice President of Finance and Support Services of the Northern
Kentucky Water District, this

_____ day of _____ 2015.

NOTARY PUBLIC
Kenton County, Kentucky
My commission expires _____

Northern Kentucky Water District

Franchises required – None

Plan Review and Permit Status - The District has reviewed and approved the plans and specifications prepared by HDR titled “Fort Thomas Treatment Plant Basin Improvements” dated January 15, 2015.

The District received technical approval from the Division of Water on January 14, 2015 (see attached letter).

Easements and Right-of-Way Status - Easement and Right-of-Way statements are not required.

Start date of construction – May 2015

Proposed date in service – May 2017

Plant retirements – There are no retirements as a result of this project.

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

BID INFORMATION AND BOARD RESOLUTION

Bid Tabulation

Engineer's Recommendation of Award

Board Resolution

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Bid Tabulation

BID TAB

Northern Kentucky Water District
Fort Thomas Treatment Plant
Basin Improvements

February 24, 2015

COMPANY NAME	BASE BID	ALTERNATE BID
Building Crafts, Inc.	\$2,217,590.00	\$400,000.00
Dugan & Meyers	\$2,232,000.00	\$348,000.00
Danis Construction	\$2,246,019.00	\$321,300.00
Shook Construction	\$2,714,200.00	\$350,000.00
Judy Construction	\$2,789,000.00	\$162,000.00
Cleary Construction	\$4,237,825.00	\$505,000.00

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Engineer's Recommendation of Award



March, 10 2015

Amy Kramer, P.E.
Engineering Manager
Northern Kentucky Water District
2835 Crescent Springs Road
Erlanger, KY 41018

RE: Recommendation of Award
Fort Thomas Treatment Plant Basin Improvements
Northern Kentucky Water District

Dear Amy,

As you are aware, bids were received for the referenced project on Tuesday February 24, 2014. Northern Kentucky Water District (NKWD) received six bids from contractors interested in performing the work. All the bidders that submitted are regularly engaged in this type of municipal utility construction work and all were considered to be generally suitable for performing the project. The bidders and their bid amounts to perform the work are provided below with additional details shown on the attached bid tabulation.

Firm	Base Bid	Add. Alternate 1
Building Crafts Inc.	\$2,217,590.00	\$400,000.00
Dugan and Meyers Construction Co.	\$2,232,000.00	\$348,000.00
Danis Industrial Construction Co.	\$2,246,019.00	\$321,300.00
Shook Construction Co.	\$2,714,200.00	\$350,000.00
Judy Construction Co.	\$2,789,000.00	\$162,000.00
Cleary Construction Inc.	\$4,237,825.00	\$505,000.00

HDR has reviewed all the bids submitted and have found no mathematical errors or material deficiencies in the information provided. The published engineer's estimate for the construction project base bid was \$3,360,000.00 and Additive Alternate 1 was \$182,600.00. As you can see, bids were very competitive. Five of the six base bids were below the Engineer's estimate and the lowest three were within 1% of each other.

Regarding the bids for Additive Alternate No. 1, 5 of the 6 bids were above the Engineer's estimate. NKWD expressed concern following the bid opening about the pricing of the additive alternate. Therefore, a meeting was held on Wednesday March 4, 2015 with Building Crafts Inc. (BCI), NKWD, and HDR to discuss Building Craft's pricing of said alternate, as their bid was significantly higher (13%, 20%, and 12%) than the next three bidders. It was concluded in the meeting that the Contractor understood the scope of work, but their proposed



price was greater than NKWD was prepared to accept. As a result, NKWD has requested that BCI review their proposed price and determine if any reductions can be offered that would get them more in line with the other bids. Subsequently, BCI reviewed their costs, but were unable to reach an agreeable number and therefore, NKWD will not award the additive work.

HDR is aware that BCI has performed a substantial amount of work on the Fort Thomas Treatment Plant in the past and NKWD has a good relationship with them. Our understanding is that their work has been acceptable and that they have demonstrated the capability of performing work of this nature and size. We have also reviewed the list of vendors and subcontractors that BCI has proposed and find no objections.

Based on this information, HDR finds no reason that Building Crafts Inc. should not be awarded the base contract for the construction of the Fort Thomas Treatment Plant Basin Improvements Project and recommends award of the same. If you have any questions regarding this matter, please call me at (859) 629-4841.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Brett Fisher'.

Brett Fisher, P.E.
Project Manager

Attachment

cc. File

BID TABULATION
FORT THOMAS TREATMENT PLANT IMPROVEMENTS PROJECT
NORTHERN KENTUCKY WATER DISTRICT
BIDS RECEIVED: FEBRUARY 24, 2015, 2:00 PM

Bid Item	Bid Item Description	Unit	Est. Qty.	Engineer		Building Crafts Inc.		Dugan and Meyers Const. Co.		Denis Industrial Construction Co.		Shook Construction Co.		Judy Construction Co.		Cleary Construction Inc.	
				Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
Item 1	Walkway Surface Repair																
1a	Overall Walkway Area to be Repaired - General Repair	SF	1000	\$ 20.00	\$ 20,000.00	\$ 11.00	\$ 11,000.00	\$ 10.80	\$ 10,800.00	\$ 10.42	\$ 10,420.00	\$ 11.00	\$ 11,000.00	\$ 10.80	\$ 10,800.00	\$ 20.00	\$ 20,000.00
1b	Crack Repair	LF	150	\$ 10.00	\$ 1,500.00	\$ 22.00	\$ 3,300.00	\$ 21.60	\$ 3,240.00	\$ 20.84	\$ 3,126.00	\$ 21.00	\$ 3,150.00	\$ 21.60	\$ 3,240.00	\$ 20.00	\$ 3,000.00
1c	Spalled Surface Area Repair	SF	200	\$ 50.00	\$ 10,000.00	\$ 39.00	\$ 7,800.00	\$ 37.80	\$ 7,560.00	\$ 36.47	\$ 7,294.00	\$ 40.00	\$ 8,000.00	\$ 37.80	\$ 7,560.00	\$ 30.00	\$ 6,000.00
Item 2	Typical Basin Crack Repair																
2a	Crack Repair	LF	3000	\$ 10.00	\$ 30,000.00	\$ 31.00	\$ 93,000.00	\$ 36.00	\$ 108,000.00	\$ 31.26	\$ 93,780.00	\$ 32.50	\$ 97,500.00	\$ 32.40	\$ 97,200.00	\$ 65.00	\$ 195,000.00
Item 3	Existing Filter Building Structural Concrete Repair																
3a	Beam Repair Method A	LF	85	\$ 300.00	\$ 25,500.00	\$ 110.00	\$ 9,350.00	\$ 108.00	\$ 9,180.00	\$ 104.20	\$ 8,857.00	\$ 110.00	\$ 9,350.00	\$ 108.00	\$ 9,180.00	\$ 675.00	\$ 57,375.00
3b	Beam Repair Method B	LF	35	\$ 350.00	\$ 12,250.00	\$ 138.00	\$ 4,830.00	\$ 135.00	\$ 4,725.00	\$ 130.40	\$ 4,564.00	\$ 140.00	\$ 4,900.00	\$ 135.00	\$ 4,725.00	\$ 1,050.00	\$ 36,750.00
3c	Beam Repair Method C	LF	15	\$ 325.00	\$ 4,875.00	\$ 138.00	\$ 2,070.00	\$ 135.00	\$ 2,025.00	\$ 130.40	\$ 1,956.00	\$ 140.00	\$ 2,100.00	\$ 135.00	\$ 2,025.00	\$ 1,500.00	\$ 22,500.00
3d	Ceiling Repair Method A	SF	800	\$ 60.00	\$ 48,000.00	\$ 82.00	\$ 65,600.00	\$ 81.00	\$ 64,800.00	\$ 78.15	\$ 62,520.00	\$ 81.50	\$ 65,200.00	\$ 81.00	\$ 64,800.00	\$ 105.00	\$ 84,000.00
3e	Wall and Columns	SF	24	\$ 45.00	\$ 1,080.00	\$ 110.00	\$ 2,640.00	\$ 108.00	\$ 2,592.00	\$ 104.25	\$ 2,502.00	\$ 125.00	\$ 3,000.00	\$ 108.00	\$ 2,592.00	\$ 175.00	\$ 4,200.00
Item 4	General Construction (of FTTP Basin Improvements Project)																
4a	Item 4(a) includes all work depicted or implied in the project plans and specifications that is not included in work items 1-3 above.	LS	1	\$ 3,206,785.00	\$ 3,206,785.00	\$ 2,018,000.00	\$ 2,018,000.00	\$ 2,019,078.00	\$ 2,019,078.00	\$ 2,051,000.00	\$ 2,051,000.00	\$ 2,510,000.00	\$ 2,510,000.00	\$ 2,586,878.00	\$ 2,586,878.00	\$ 3,809,000.00	\$ 3,809,000.00
TOTAL BASE BID (in numbers)					\$ 3,360,000.00	\$ 2,217,980.00	\$ 2,232,000.00	\$ 2,246,019.00	\$ 2,714,200.00	\$ 2,789,000.00	\$ 4,237,825.00						

Additive Alternatives																	
1	Additive Alternate No. 1 (as described in Specification Section 01030, Part 2.1A)	LS	1	\$ 182,600.00	\$ 182,600.00	\$ 400,000.00	\$ 400,000.00	\$ 348,000.00	\$ 348,000.00	\$ 321,300.00	\$ 321,300.00	\$ 350,000.00	\$ 350,000.00	\$ 162,000.00	\$ 162,000.00	\$ 505,000.00	\$ 505,000.00

I hereby certify that this is a true and correct tabulation of the bids.

Brett D. Fisher
 Brett D. Fisher, P.E., Project Manager
 HDR Engineering, Inc.



NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

PLAN REVIEW AND PERMIT STATUS

Approval Letter from Kentucky Division of Water

STEVEN L. BESHEAR
GOVERNOR



LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE, 4TH FLOOR
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

January 14, 2015

Ms. Amy Kramer
Northern KY Water District
2835 Crescent Springs Rd
Erlanger, KY 41018

RE: Northern KY Water District
AI # 2485, APE20140012
PWSID # 0590220-14-012
Fort Thomas Treatment Plant Basin
Improvements
Campbell County, KY

Dear Ms. Kramer:

We have reviewed the plans and specifications for the above referenced project. The plans include the conversion of Basins #2 and #3 from two-stage horizontal flocculation to three-stage vertical impeller flocculation and improvements to Rapid Mix #1 which feeds Basin #2 and #3

This is to advise that plans and specifications for the above referenced project are APPROVED with respect to sanitary features of design, as of this date with the requirements contained below.

1. The detention period should not be more than thirty seconds with mixing equipment capable of imparting a minimum velocity gradient (G) of at least 750 fps/ft.
2. Basins should be equipped with devices capable of providing adequate mixing for all treatment flow rates.
3. Inlet and outlet design shall minimize short-circuiting and destruction of floc. Basins shall be designed so that individual basins may be isolated without disrupting plant operation. A drain and/or pumps shall be provided to handle dewatering and sludge removal.
4. The detention time for floc formation should be at least 30 minutes with consideration to using tapered (i.e., diminishing velocity gradient) flocculation. The flow-through velocity should be not less than 0.5 nor greater than 1.5 feet per minute.

Northern KY Water District
AI # 2485, APE20140012
PWSID # 0590220-14-012
Fort Thomas Treatment Plant Basin Improvements
Campbell County, KY
January 14, 2015
Page 2 of 2

5. Agitators shall be driven by variable speed drives with the peripheral speed of paddles ranging from 0.5 to 3.0 feet per second. External, non-submerged motors are preferred.
6. The velocity of flocculated water through pipes or conduits to settling basins shall be not less than 0.5 nor greater than 1.5 feet per second.

Based on DOW records, this project is being funded by a State Revolving Fund (SRF) loan. Therefore, this approval is for the technical aspects of the project only. Currently, a State Planning and Environmental Assessment Report (SPEAR) related to your funding application is under review. **Therefore, you are NOT authorized to advertise for bids at this time. Should you choose to proceed with the bidding and award a contract prior to DOW approval, this will be at your own risk and payment from the SRF program is not guaranteed**

If you have any questions concerning this project, please contact Mr. William Wright at 502-564-3410 extension 4829.

Sincerely,



Mark Rasche, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

MR:WW

Enclosures

C: HDR Engineering
Northern Kentucky District (Campbell County) Health Department
Public Service Commission (by e-mail only)
Division of Plumbing (by e-mail only)

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

Board Resolution

**Northern Kentucky Water District
Board of Commissioners
Special Meeting
March 31, 2015**

A special meeting of the Board of Commissioners of the Northern Kentucky Water District was held on March 31, 2015 at the District's facility located at 2835 Crescent Springs Road, Erlanger, Kentucky. All Commissioners were present. Also present were Ron Lovan, Rusty Collinsworth, Kyle Ryan, Don Gibson, Joe Webster, Bill McGrath, Joan Verax, Mary Carol Wagner, Matt Piccirillo, Rodney Sparks, Amy Kramer, Jack Bragg, Rick Harrison, Richard Harrison, Lori Simpson, Kevin Owen, Sherril Cook, Mollie Bailey, Dave Enzweiler, Chris Hoyle, and Brian Dunham.

Chairperson Sommerkamp called the meeting to order at 12:35 p.m., and Richard Harrison led the pledge of allegiance.

The Commissioners reviewed correspondence received and articles published since the last board meeting, which was a Special Meeting on February 26, 2015.

On motion of Commissioner Wagner, seconded by Commissioner Cunningham, the Commissioners recognized the retirement of Richard Harrison and unanimously approved the following resolution:

Whereas, Richard Harrison has provided dedicated service from October 17, 1988 to March 31, 2015 to the Northern Kentucky Water District and the community served by the District, and

Whereas, it is the intention of the District to recognize Richard Harrison for his distinguished record of service and his effective use of knowledge and experience to commendably and to the very best of his ability with honor, integrity and dignity serve the District and its constituents as a faithful employee;

Whereas, during his 27-year career, Richard contributed to projects and initiatives including, but not limited to: Working with District staff to secure over \$18 million in grant funding and \$48 million in low interest loan funding; Participation in 8 mergers or acquisitions with other utilities; Assisting in the Development of the District's Main Replacement Program; Establishment of the District's Performance Management Program; Working with staff to make safe drinking water available to over 4,000 households through the District's Mainline Extension Program; and Assisting in the Development of the District's Master Plan;

Now, therefore, the Board of Commissioners hereby recognizes the years of dedication and service given by Richard Harrison and formally extends congratulations to Richard for his service;

And Does Extend best wishes to Richard Harrison for success in all his future endeavors both professionally and personally.

Rusty Collinsworth, Kyle Ryan, Don Gibson, Joe Webster, Bill McGrath, Joan Verax, Mary Carol Wagner, Matt Piccirillo, Rodney Sparks, Rick Harrison, Lori Simpson, Kevin Owen, Sherril Cook, Mollie Bailey, Dave Enzweiler, and Chris Hoyle then exited the meeting.

On motion of Commissioner Collins, seconded by Commissioner Spaulding, with Commissioner Macke abstaining, the Commissioners unanimously approved the minutes for the Special Board of Commissioners meeting held on February 26, 2015.

The Board was provided a copy of the District's check registers, which included the check number, check date, payee, check amount and description of the reason for each payment, detailing the District's expenditures for the period February 3, 2015 through February 27, 2015. On motion of Commissioner Wagner, seconded by Commissioner Cunningham, and after discussion, the Commissioners unanimously approved the expenditures of the District for the month of February, 2015.

On motion of Commissioner Collins, seconded by Commissioner Wagner, the Commissioners unanimously approved the acceptance of the bid by and awarding the contract to Building Crafts, Inc. for the Fort Thomas Treatment Plant Basin Improvements project with a total project budget of \$2,700,000, and authorized the District staff to execute the appropriate contract documents.

On motion of Commissioner Macke, seconded by Commissioner Cunningham, the Commissioners unanimously approved the bids by and awarding contracts for the purchase of distribution inventory material from the various vendors listed in the bid summary attached hereto, and authorized staff to execute the appropriate contract documents.

On motion of Commissioner Wagner, seconded by Commissioner Spaulding, the Commissioners unanimously approved the District's acceptance of the bid by and awarding a contract to Hartman & Smith Construction Company for the New Linden Road Water Main Replacement Project with a total project budget of \$490,000, and authorized staff to execute the appropriate documents.

On motion of Commissioner Spaulding, seconded by Commissioner Collins, the Commissioners unanimously approved the District's acceptance of the bid by and awarding a contract to JD Contracting Services, LLC for the Division Street Water Main Replacement Project with a total project budget of \$225,000, and authorized staff to execute the appropriate documents.

On motion of Commissioner Wagner, seconded by Commissioner Macke, the Commissioners unanimously approved the District's acceptance of the bid by and awarding a contract to Lonkard Construction Company for the North Fort Thomas Avenue Water Main Replacement Project with a total project budget of \$300,000, and authorized staff to execute the appropriate documents.

On motion of Commissioner Macke, seconded by Commissioner Cunningham, the Commissioners unanimously approved the District's acceptance of the bid by and awarding a contract to Rose Excavating and Development, Inc. for the Shaw and Sheridan Drive Water Main Replacement Project with a total project budget of \$375,000, and authorized staff to execute the appropriate documents.

The Commissioners reviewed the District's financial reports and Department reports. As part of his financial report, Mr. Bragg provided an overview of a possible revenue adjustment and indicated that a more detailed presentation would take place in one or more future meetings. As part of his report, Mr. Harrison reviewed with the Commissioners the status of on-going projects within the 2014 5-Year Capital Budget and operating budget, including noting that there were no change orders since the last board meeting.

Other matters of a general nature were discussed.

On a motion of Commissioner Collins, seconded by Commissioner Wagner, the Board unanimously agreed to go into executive session under the provisions of KRS 61.810(1)(c) to discuss the future sale of the Dixie Highway property in order to protect the value of the property to be sold. The executive session commenced at 2:14 p.m. and ended at 2:42 p.m.

On a motion by Commissioner Spaulding, seconded by Commissioner Collins, the meeting was adjourned at 2:42 p.m.

CHAIRMAN

SECRETARY

0008168.0617439 4840-2255-3635v1

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

PROJECT FINANCE INFORMATION

Customers Added and Revenue Effect

Debt Issuance and Source of Debt

Additional Costs for Operating and Maintenance

USoA Plant Account

Depreciation Cost and Debt Service After Construction

KIA Financing Documents

Northern Kentucky Water District

Customers Added and Revenue Effect: There will be zero new customers added and no revenue effect as a result of the Fort Thomas Treatment Plant Basin Improvements project.

Debt Issuance and Source of Debt: This project will be paid from the District's Five-Year Capital Budget, PSC No. 167 "FTTP Flocc/Sed Basins 2 & 3, New Flocc Drive and Rakes" with a budget of \$2,700,000 which includes construction cost, engineering, and contingencies. A summary of the project costs is provided below:

○ Design Engineering	\$ 145,000
○ Construction Engineering	\$ 75,000
○ Contractor's Bid	\$ 2,217,590
○ Misc. & Contingencies	\$ 262,410
Total Project Cost	\$ 2,700,000

The project will be funded using \$2,100,000 from SRF Loan F14-015 and \$600,000 from a future Bond Anticipation Note.

USoA Accounts: The anticipated amounts for the project cost of \$2,700,000 will fall under the following Uniform System of Accounts Codes:

Code 304 "Structures and Improvements"	\$ 330,000
Code 320 "Water Treatment Equipment"	\$2,370,000

Additional Costs and O&M: Additional operating and maintenance costs incurred for the project are as follows:

Power	\$ 10,000
Labor	\$ 0
Maintenance	\$ 45,000 (2% of construction)
	\$ 55,000 Additional Annual O&M

Depreciation and Debt Service: Annual depreciation and debt service after construction are as follows:

Depreciation: \$8,800/year over 37.5 years for Code 304 Structures & Improvements
\$79,000/year over 30 years for Code 320 Water Treatment Equipment

Debt Service: \$125,351 over 20 years (SRF loan)
\$38,407 over 25 years (conventional loan)

Fort Thomas Treatment Plant Advanced Treatment Project			
Depreciation	Cost	Depreciation Years	Annual Depreciation
Account 304 Structures & Improvements	\$330,000	37.5	\$8,800.00
Account 320 Water Treatment Equipment	\$2,370,000	30	\$79,000.00
Total	\$2,700,000.00		\$87,800.00
Debt Service on SRF Loan			
Total Borrowed	\$2,100,000		
Interest Rate including administration fee	1.75%		
Term (Years)	20		
Annual Debt Service SRF	\$125,351.57		
Debt service on bond issue			
Total Borrowed	\$600,000		
Interest Rate	4.00%		
Term (Years)	25		
Annual Debt Service Traditional	\$38,407.18		
Total Annual Debt Service	\$163,758.75		

Northern Kentucky
Water District

March 31, 2014


Ms. Tammy McCall
Financial Analyst
Kentucky Infrastructure Authority
1024 Capital Center Drive, Suite 340
Frankfort, KY 40601

Dear Ms. McCall,

Please find enclosed the executed Conditional Commitment Letter for the Drinking Water State Revolving Fund F14-015.

If you have any questions or need additional documentation, please do not hesitate to contact me at (859) 426-2734.

Sincerely,



Amy Kramer, P.E.
Engineering & Distribution Manager

akk



KENTUCKY INFRASTRUCTURE AUTHORITY

1024 Capital Center Drive, Suite 340
Frankfort, Kentucky 40601
Phone (502) 573-0260
Fax (502) 573-0157
<http://kia.ky.gov>

Steven L. Beshear
Governor

John E. Covington III
Executive Director

December 6, 2013

Mr. C. Ronald Lovan, P.E., President/CEO
Northern Kentucky Water District
2835 Crescent Springs Road
Erlanger, KY 41018

**KENTUCKY INFRASTRUCTURE AUTHORITY
FEDERALLY ASSISTED DRINKING WATER REVOLVING LOAN FUND
CONDITIONAL COMMITMENT LETTER (F14-015)**

Dear Mr. Lovan:

The Kentucky Infrastructure Authority ("the Authority") commends your efforts to improve public service facilities in your community. On December 5, 2013, the Authority approved your loan for the Campbell County Water Main Rehabilitation and Treatment Plant Project subject to the conditions stated below. The total cost of the project shall not exceed \$5,734,000 of which the Authority loan shall provide \$4,000,000 of the funding. Other anticipated funding for the project is reflected in Attachment A. The final loan amount will be equal to the Authority's portion of estimated project cost applied to the actual project cost. Attachment A incorporated herein by reference fully describes the project.

An Assistance Agreement will be executed between the Authority and the Northern Kentucky Water District upon satisfactory performance of the conditions set forth in this letter. A period of twelve months from the date of this letter (12/6/2014) will be allowed for you to meet the conditions set forth in this letter and enter into an Assistance Agreement. A one-time extension of up to six months may be granted for applicants that experience extenuating circumstances. Funds will be available for disbursement only after execution of the Assistance Agreement.

The Assistance Agreement and this commitment shall be subject, but not limited to, the following terms:

1. The Authority project loan shall not exceed \$4,000,000.

2. The loan shall bear interest at the rate of 1.75% per annum commencing with the first draw of funds.
3. The loan shall be repaid over a period not to exceed 20 years from the date the loan is closed.
4. Interest shall be payable on the amount of actual funds received. The first payment shall be due on June 1 or December 1 immediately succeeding the date of the initial draw of funds, provided that if such June 1 or December 1 shall be less than three months since the date of the initial draw of funds, then the first interest payment date shall be the June 1 or December 1 which is at least six months from the date of the initial draw of funds. Interest payments will be due each six months thereafter until the loan is repaid.
5. Full principal payments will commence on the appropriate June 1 or December 1 within twelve months from initiation of operation. Full payments will be due each six months thereafter until the loan is repaid.
6. A loan servicing fee of 0.25% of the annual outstanding loan balance shall be payable to the Authority as a part of each interest payment.
7. Loan funds will be disbursed after execution of the Assistance Agreement as project costs are incurred.
8. The Authority loan funds must be expended within six months of the official date of initiation of operation.
9. Fund "F" loan funds may be considered to be federal funds. OMB Circular A-133, "Audits of States, Local Governments and Non-Profit Organizations, requires that all recipients and subrecipients **expending \$500,000 or more in a year in federal awards must have a single or program-specific audit conducted for that year** in accordance with the Circular. If the federal amount expended plus all other federal funds expended exceeds the threshold, you are required to arrange for an A-133 audit to be performed by an independent, licensed CPA, or in special cases, the Auditor of Public Accounts of the Commonwealth of Kentucky.
10. The Authority requires an annual audit to be performed for the life of the loan.

The following is a list of the standard conditions to be satisfied prior to execution of the Assistance Agreement or incorporated in the Assistance Agreement. Any required documentation must be submitted to the party designated.

1. The Authority to Award (bid) package must be submitted to the Division of Water for approval within 14 days of bid opening.
2. The Assistance Agreement must be executed within six (6) months from bid opening.
3. Documentation of final funding commitments from all parties other than the Authority as reflected in the credit analysis shall be provided prior to preparation of the Assistance Agreement and disbursement of the loan monies. Rejections of any anticipated project funding shall be immediately reported and may cause this loan to be subject to further consideration.
4. The loan must undergo review by the Capital Projects and Bond Oversight Committee of the Kentucky Legislature prior to the state's execution of the Assistance Agreement. The committee meets monthly on the third Tuesday. At this time we know of no further submission required for their review; however, they may request information as needed.
5. Any required adjustment in utility service rates shall be adopted by ordinance, municipal order or resolution by the appropriate governing body of the Borrower. Public hearings as required by law shall be held prior to the adoption of the service rate ordinance, order, or resolution. Any required approvals by the Kentucky Public Service Commission shall be obtained.
6. The Borrower must complete and return to the Authority the attached "Authorization For Electronic Deposit of Vendor Payment" Form.
7. An environmental review shall be conducted by the Division of Water for all construction projects receiving DWSRF funds, within the term of this binding commitment and prior to project bid.
8. Technical plans and specifications and a complete DWSRF specifications checklist shall be approved by the Division of Water prior to project bid.

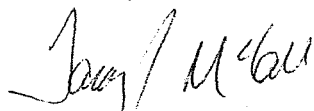
Mr. C. Ronald Lovan
December 6, 2013
Page 4

9. All easements or purchases of land shall be completed prior to commencement of construction. Clear Site Certification of all land or easement acquisitions shall be provided to the Division of Water. DOW representatives shall be notified for attendance of the pre-construction conference.
10. Project changes or additions shall require a complete environmental and change order review before they can be included in the DWSRF loan project.
11. Applicant must provide certification from their legal counsel stating that they have prepared construction specifications in accordance with all applicable state or federal wage rate laws, and that the procurement procedures, including those for construction, land, equipment and professional services that are a part of the project, are in compliance with applicable federal, state and local procurement laws.
12. The Borrower shall comply with all Davis Bacon related monitoring and reporting and require all contractors to pay wages pursuant to applicable prevailing wage rates (federal or state) for all work relating to the subject Project.
13. The project shall comply with the reporting requirements of the Transparency Act, and shall complete the attached Transparency Act Reporting Information Form and provide to the Authority no later than 30 days after the KIA Board approval date of your loan.
14. If the project has a "Green Reserve" component, the Borrower must submit a Business Case, if required.

Any special conditions stated in Attachment A must be resolved.

Please inform the Authority of any changes in your financing plan as soon as possible. We wish you every success for this project which will benefit both your community and the Commonwealth as a whole.

Sincerely,




Tammy J. McCall
Financial Analyst

Mr. C. Ronald Lovan
December 6, 2013
Page 5

Attachments

cc: Jack Bragg, VP of Finance, Northern Kentucky Water District
Richard Harrison, P.E., Northern Kentucky Water District
Division of Water
Dirk Bedarff, Peck, Shaffer & Williams LLP
State Local Debt Office, DLG
Borrower File - Northern Kentucky Water District - F14-015

Please sign and return a copy of this letter indicating your acceptance of this commitment and its terms. Also attach the completed "Authorization For Electronic Deposit of Vendor Payment" Form.


Accepted

313114
Date

AUTHORIZATION FOR ELECTRONIC DEPOSIT
OF BORROWER PAYMENT
KENTUCKY INFRASTRUCTURE AUTHORITY
(FUND F14-015)

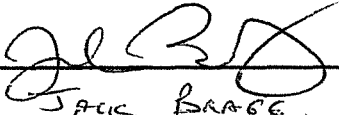
Borrower Information:

Name: Northern Kentucky Water District
Address: 2835 Crescent Springs Rd
City: ERIANGER State: KY Zip: 41018
Federal I.D. # 61-1311695
Contact Name: JACK BRAGG, JR Telephone: 859-426-2758
Email: jbragg@nkywater.org

Financial Institution Information:

Bank Name: First National
Branch: Florence Phone No: _____
City: Florence State: KY Zip: 41042
Transit / ABA No.: 242272489
Account Name: Grant / Loan
Account Number: 1740125110461

I, the undersigned, authorize payments directly to the account indicated above and to correct any errors which may occur from the transactions. I also authorize the Financial Institution to post these transactions to that account.

Signature:  Date: 3/31/17
Name Printed: JACK BRAGG, JR Job Title: CFO

Please return completed form to: Kentucky Infrastructure Authority
1024 Capital Center Drive, Suite 340
Frankfort, KY 40601
phone: 502-573-0260
fax: 502-573-0157

TRANSPARENCY ACT REPORTING INFORMATION FORM

CLEAN WATER STATE REVOLVING FUND AND DRINKING WATER STATE REVOLVING FUND

This form is required for projects funded in whole or in part from the Clean Water State Revolving Fund or the Drinking Water State Revolving Fund. This form is to be completed and returned with the signed Conditional Commitment Letter from the Kentucky Infrastructure Authority.

Borrower Information:

Name:	Northern Kentucky Water District
Data Universal Numbering system (DUNS) No.*:	
KIA Loan Number:	F14-015
Street Address	
City, State and Zip (Zip must include 4 digit extension)	
Federal Congressional District(s) of Borrower Utility Service Area:	

*If the DUNS No. provided above is registered under a different name than the recipient of funding, please provide the registration name below:

DUNS Name	
-----------	--

*If the recipient has not yet obtained a DUNS Number, please do so no later than 30 days after the KIA Board approval date of your loan request and provide notification to KIA of the number once issued. For instructions on DUNS registration, please contact sandy.williams@ky.gov.

Physical Location of Project (Primary Place of Performance)

Street Address	
City, State and Zip (Zip must include 4 digit extension)	
Federal Congressional District(s) of Project Location	

Reliance upon Federal Assistance (please answer the below questions Yes or No):

Did recipient receive 80% or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards) during the last fiscal year?	
Did recipient receive \$25 million or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards) during the last fiscal year?	
Does the public have access to compensation of senior executives of the recipient through periodic reports filed under Section 13A or 15D of the Securities Exchange Act of 1934 or Section 6104 of the Internal Revenue Code of 1986?	

DUNS Registration Information: <http://fedgov.dnb.com/webform> OR 1-866-705-5711

Registration can be completed over the phone or via the web. Phone registration requests take approximately 10 minutes and are free. Internet requests are fulfilled within 24 hours.

ATTACHMENT A

**Northern Kentucky Water District
F14-015**

EXECUTIVE SUMMARY		Reviewer	Brandi Armstrong	
KENTUCKY INFRASTRUCTURE AUTHORITY		Date	December 5, 2013	
FUND F, FEDERALLY ASSISTED DRINKING WATER		KIA Loan Number	F14-015	
REVOLVING LOAN FUND		WRIS Number	WX21037004	
BORROWER	NORTHERN KENTUCKY WATER DISTRICT KENTON COUNTY			
BRIEF DESCRIPTION				
The Northern Kentucky Water District is requesting a \$4,000,000 Fund "F" loan for the Campbell County Water Main Rehabilitation and Treatment Plant project. The project will replace approximately 12,000 linear feet of six to eight inch lines with eight to twelve inch lines, replace approximately 5,700 linear feet of 24 inch water main with a 36 inch line, replace existing process equipment and repair concrete basins. The replacements are due to a need for additional capacity coupled with the high failure rate of existing lines.				
PROJECT FINANCING		PROJECT BUDGET		
Fund F Loan	\$4,000,000	RD Fee %	Actual %	
Local Funds	1,734,000	Administrative Expenses		\$5,000
		Legal Expenses		5,000
		Land, Easements		11,000
		Eng - Design	6.7%	8.6%
		Eng - Constr / Insp	3.5%	1.7%
		Construction		4,710,000
		Contingency		468,000
TOTAL	\$5,734,000	TOTAL		\$5,734,000
REPAYMENT	Rate	1.75%	Est. Annual Payment	\$247,902
	Term	20 Years	1st Payment	6 Mo. after first draw
PROFESSIONAL SERVICES	Engineer	NA		
	Bond Counsel	Peck, Shaffer, & Williams		
PROJECT SCHEDULE	Bid Opening	Mar-14		
	Construction Start	Apr-14		
	Construction Stop	Jun-15		
DEBT PER CUSTOMER	Existing	\$3,085		
	Proposed	\$2,810		
OTHER DEBT	See Attached			
OTHER STATE-FUNDED PROJECTS LAST 5 YRS	See Attached			
RESIDENTIAL RATES		<u>Users</u>	<u>Avg. Bill</u>	
	Current	80,833	\$35.74	(for 4,000 gallons)
	Additional	0	\$35.74	(for 4,000 gallons)
REGIONAL COORDINATION	This project is consistent with regional planning recommendations.			
CASHFLOW	Cash Flow Before Debt Service	Debt Service	Cash Flow After Debt Service	Coverage Ratio
Audited 2011	24,901,248	14,986,158	9,915,090	1.7
Audited 2012	28,151,693	17,076,648	11,075,045	1.6
Projected 2013	28,970,069	18,840,942	10,129,127	1.5
Projected 2014	29,883,871	20,101,678	9,782,193	1.5
Projected 2015	31,205,475	20,996,368	10,209,107	1.5
Projected 2016	32,587,930	21,385,958	11,201,972	1.5
Projected 2017	34,033,913	21,394,469	12,639,444	1.6
Projected 2018	35,546,207	21,177,377	14,368,830	1.7

Reviewer: Brandi Armstrong
Date: December 5, 2013
Loan Number: F14-015

**KENTUCKY INFRASTRUCTURE AUTHORITY
DRINKING WATER STATE REVOLVING FUND (FUND "F")
NORTHERN KENTUCKY WATER DISTRICT, KENTON COUNTY
PROJECT REVIEW
WX21037004**

I. PROJECT DESCRIPTION

The Northern Kentucky Water District is requesting a \$4,000,000 Drinking Water SRF loan for the Campbell County Water Main Rehabilitation and Treatment Plant Project. The project will replace approximately 12,000 linear feet of six to eight inch lines with eight to twelve inch lines, replace approximately 5,700 linear feet of 24 inch line with a 36 inch line for the Memorial Parkway Treatment Plant, replace existing process equipment and repair concrete basins at the Fort Thomas Treatment Plant. The replacements will increase capacity level and decrease the failure rate of the existing lines.

The District provides service to Campbell and Kenton counties and portions of Boone, Grant and Pendleton counties and is regulated by the Public Service Commission. Wholesale service is provided to the City of Walton and the Bullock Pen and Pendleton County Water Districts.

II. PROJECT BUDGET

	Total
Administrative Expenses	\$ 5,000
Legal Expenses	5,000
Land, Easements	11,000
Engineering Fees - Design	445,000
Engineering Fees - Const / Inspection	90,000
Construction	4,710,000
Contingency	468,000
Total	\$ 5,734,000

III. PROJECT FUNDING

	Amount	%
Fund F Loan	\$ 4,000,000	70%
Local Funds	1,734,000	30%
Total	\$ 5,734,000	100%

IV. KIA DEBT SERVICE

Construction Loan	\$ 4,000,000
Interest Rate	1.75%
Loan Term (Years)	20
Estimated Annual Debt Service	\$ 237,902
Administrative Fee (0.25%)	10,000
Total Estimated Annual Debt Service	\$ 247,902

V. PROJECT SCHEDULE

Bid Opening	March 2014
Construction Start	April 2014
Construction Stop	June 2015

VI. CUSTOMER COMPOSITION AND RATE STRUCTURE

A) Customers

<u>Customers</u>	<u>Current</u>
Residential	75,988
Commercial	4,734
Industrial	111
Total	80,833

B) Rates

	<u>Prior</u>	<u>Current</u>	<u>Approved</u>
Date of Last Rate Increase	01/01/12	01/01/13	01/01/14
Fixed Service Charge (Monthly Billing)	\$13.00	\$13.60	\$14.20
Fixed Service Charge (Quarterly Billing)	26.00	27.20	28.40
First 1,500 Cubic Feet (per hundred CF)	4.02	4.14	4.25
Next 163,500 Cubic Feet (per hundred CF)	3.27	3.40	3.53
Over 165,000 Cubic Feet (per hundred CF)	2.58	2.65	2.72
Cost for 4,000 gallons - Monthly Billing	\$34.50	\$35.74	\$36.93
Percent Increase	6.5%	3.6%	3.3%
Affordability Index (Rate/MHI)	0.7%	0.8%	0.8%
Cost for 4,000 gallons - Quarterly Billing	\$30.16	\$31.20	\$32.19
Percent Increase	11.2%	3.4%	3.3%
Affordability Index (Rate/MHI)	0.7%	0.7%	0.8%
Wholesale Rate	\$3.13	\$3.195	\$3.26
Percent Increase	2.6%	2.1%	2.0%

The district also has a Subdistrict Monthly Surcharge that ranges from \$8.55 to \$36.22 depending on location.

VII. DEMOGRAPHICS

Census data was taken from the American Community Survey 5-Year Estimate 2007-2011. The District provides service to Campbell and Kenton counties and portions of Boone, Grant and Pendleton counties.

<u>County</u>	<u>Population</u>	<u>MHI</u>
Kenton	159,008	\$53,375
Campbell	89,598	53,018
Boone	117,216	68,087
Grant	24,720	43,755
Pendleton	14,840	48,354
Total / Weighted MHI	405,382	\$56,799

The median household income for the Commonwealth is \$42,248. The District is a regional provider and the project will qualify for a 1.75% interest rate.

VIII. 2013 CAPITALIZATION GRANT EQUIVALENCIES

- 1) Green Project Reserve - The 2013 Drinking Water capitalization grant does not contain a "green" requirement.
- 2) Additional Subsidization – This project does not qualify for additional subsidization.

IX. FINANCIAL ANALYSIS (See Exhibit 1)

Financial information was obtained from the audited financial statements for the years ended December 31, 2011 and 2012. Amounts for 2013 are estimated. Interim financing balances were reclassified to long term debt for presentation since the amounts will ultimately be replaced by the issuance of bonds.

HISTORY

Revenues increased 15% from \$44.4 million in 2011 to \$50.9 million in 2013 with the bulk of the increase being due to rate increases. Operating expenses increased 11% from \$23.0 to \$25.5 during the same period. Non-operating income, comprised primarily of investment income and capital contributions, averaged about \$3.5 million each year. The debt coverage ratio was 1.7 in 2011, 1.6 in 2012 and 1.5 in 2013. The slight decrease was the result of debt service costs increasing from \$15 million in 2011 to \$17 million and \$18.8 million in 2012 and 2013, respectively.

The balance sheet reflects a current ratio of 2.5 and a debt to equity ratio of 1.5. Months of operating expenses in unrestricted cash are 9.3. The District maintains various restricted accounts, primarily related to its bond covenants, and an Improvement, Repair and Replacement Reserve account. This account had a balance of \$11.6 million or 3% of in service fixed assets, at the end of 2013.

PROJECTIONS

Projections are based on the following assumptions:

- 1) Revenues will increase 4% for inflation (rates) and volume each year
- 2) Expenses will increase 3% for inflation and volume.
- 3) Debt service coverage is 1.5 in 2015 when principal and interest repayments begin.

Based on the proforma assumptions, the utility shows adequate cash flow to repay the KIA Fund F loan.

REPLACEMENT RESERVE

The District maintains an "Improvement, Repair and Replacement account to make major repairs and replacements and to pay the cost of construction of additions, extensions and improvements to the water system. During the past five years the balance has increased from \$2.6 million to \$11.6 million. As a percentage of in service fixed assets the balance has increased from .9% in 2008 to 3.0% in 2013. Based on the District's current reserve funding practice a reserve will not be required for this proposed loan.

X. DEBT OBLIGATIONS

	<u>Outstanding</u>	<u>Maturity</u>
Series 2003C Revenue Bonds	12,250,000	2020
Series 2004 Revenue Bonds	8,095,000	2029
Series 2006 Revenue Bonds	24,815,000	2031
Series 2009 Revenue Bonds	26,280,000	2033
Series 2011 Revenue Bonds	30,005,000	2035
2000 Rural Development Loan	1,987,000	2039
Taylor Mill Purchase Financing	925,000	2018
KIA Fund F Loan (F06-03)	3,304,508	2028
KIA Fund C Loan (C08-01)	4,939,349	2020
KIA Fund F Loan (F08-07)	4,000,000	2032
KIA Fund F Loan (F09-02, i/a/o \$24M)	23,500,000	2033
Deferred Note Payable	100,000	TBD
Series 2012 Revenue Bonds	54,840,000	2027
Series 2013A Revenue Bonds	26,400,000	2027
Series 2013B Revenue Bonds	24,120,000	2038
KIA Fund F Loan (F13-012, i/a/o \$4M)	0	TBD
Total	\$ 245,560,857	

Debt reflects refinance activity that occurred during fiscal 2013. .

XI. OTHER STATE OR FEDERAL FUNDING IN PAST FIVE YEARS

Project Title	Funding Source	Amount
Unserved and Underserved Projects	HB 608	\$500,000
Pike Street – Bromley	HB 608	300,000
Robbins Street Water Project	HB 608	300,000
Campbell Co. Unserved/Underserved Improvements	HB 608	1,000,000
Campbell Co. System Improvements	HB 608	1,200,000
Campbell Co. Unserved/Underserved Improvements	HB 608	750,000
Kenton County Unserved Water Project (sub district M)	RD	2,333,000
Kenton County Unserved Water Project (sub district M)	CDBG	1,000,000

XII. CONTACTS

Legal Applicant	
Name	Northern Kentucky Water District
Address	2835 Crescent Springs Road Erlanger, KY 41018
County	Kenton
Authorized Official	Jack Bragg (V.P. of Finance)
Phone	(859) 426-2758
Email	jbragg@nkwater.org

Project Contact – Applicant / Administrator	
Name	Richard Harrison, P.E.
Representing	V.P. of Engineering and Distribution
Address	2835 Crescent Springs Road Erlanger, KY 41018
Phone	(859) 578-5458
Email	rharr@nkwater.org

XIII. RECOMMENDATIONS

KIA staff recommends approval of the loan with the standard conditions.

**NORTHERN KENTUCKY WATER DISTRICT
BALANCE SHEETS (DECEMBER YEAR END)**

	Audited <u>2011</u>	Audited <u>2012</u>	Projected <u>2013</u>	Upon Completion <u>2015</u>
ASSETS				
<i>Current Assets</i>				
Cash and Cash Equivalents	14,822,171	18,846,682	19,725,809	18,803,109
Accounts Receivable	10,370,535	10,854,735	11,288,900	12,210,100
Assessments Receivable	98,760	104,778	105,000	105,000
Inventory	1,198,490	1,241,516	1,250,000	1,250,000
Prepaid Items	280,028	231,973	250,000	250,000
Total Current Assets	26,769,984	31,279,684	32,619,709	32,618,209
<i>Restricted Assets</i>				
Total Restricted Assets	68,677,903	57,109,581	57,609,581	57,609,581
<i>Utility Plant</i>				
Property, Plant and Equipment	354,073,466	388,571,927	397,821,927	426,235,927
Unclassified Plant - Construction in Progress	58,207,358	43,776,830	43,776,830	43,776,830
Less Accumulated Depreciation ()	(92,727,220)	(101,451,833)	(112,537,034)	(135,307,436)
Net Fixed Assets	319,553,604	330,896,924	329,061,723	334,705,321
<i>Other Assets</i>				
Deferred Charges	6,684,376	0	0	0
Total Other Assets	6,684,376	0	0	0
Total Assets	421,685,867	419,286,189	419,291,013	424,933,111
LIABILITIES				
<i>Current Liabilities</i>				
Bonded Indebtedness	7,974,000	7,926,000	8,218,000	9,717,000
Notes Payable	878,563	1,081,548	2,102,032	2,362,369
Accounts Payable	1,959,482	1,813,604	1,900,000	2,100,000
Accrued Payroll and Taxes	347,903	366,801	375,000	425,000
Other Accrued Liabilities	212,381	225,469	225,000	225,000
Total Current Liabilities	11,372,329	11,413,422	12,820,032	14,829,369
<i>Liabilities Payable - Restricted Assets</i>				
Accounts Payable	5,846,148	1,084,940	1,100,000	1,250,000
Accrued Interest Payable	3,994,015	3,703,241	3,700,000	3,700,000
Total Liabilities Payable - Restricted Assets	9,840,163	4,788,181	4,800,000	4,950,000
<i>Long Term Liabilities</i>				
Bonded Indebtedness	194,412,000	177,976,000	195,373,000	176,321,000
Notes Payable	54,659,908	35,687,309	34,085,277	37,492,370
Notes Payable (Interim Financing)	0	25,615,000	0	0
Miscellaneous Deferred Charges	0	2,371,462	2,221,462	1,921,462
Total Long Term Liabilities	249,071,908	241,649,771	231,679,739	215,734,832
Total Liabilities	270,284,400	257,851,374	249,299,771	235,514,201
<i>Retained Earnings:</i>				
Invested in Capital Assets Net of Related Debt	61,629,133	82,611,067	89,283,414	108,812,582
Restricted	58,837,740	52,321,400	52,609,581	52,609,581
Unrestricted	30,934,594	26,502,348	28,098,247	27,996,747
Total Retained Earnings	151,401,467	161,434,815	169,991,242	189,418,910
Total Liabilities and Equities	421,685,867	419,286,189	419,291,013	424,933,111
Balance Sheet Analysis				
Current Ratio	2.4	2.7	2.5	2.2
Debt to Equity	1.8	1.6	1.5	1.2
Days Sales in Accounts Receivable	85.1	80.8	80.8	80.8
Months Operating Expenses in Unrestricted Cash	7.7	9.3	9.3	8.2

**EXHIBIT 1
NORTHERN KENTUCKY WATER DISTRICT
CASH FLOW ANALYSIS (DECEMBER YEAR END)**

	Audited 2011	% Change	Audited 2012	% Change	Projected 2013	Projected 2014	Projected 2015	Projected 2016	Projected 2017	Projected 2018
Operating Revenues										
Water Sales	42,826,733	10%	47,243,674	4%	49,133,421	51,098,758	53,142,708	55,268,416	57,479,153	59,778,319
Forfeited Discounts	740,506	13%	837,746	4%	871,256	906,106	942,350	980,044	1,019,246	1,060,016
Rents From Property	533,666	5%	562,966	4%	585,485	608,904	633,260	658,590	684,934	712,331
Other Water Revenue	370,150	-1%	365,295	4%	379,907	395,103	410,907	427,343	444,437	462,214
Total Revenues	44,471,055	10%	49,009,681	4%	50,970,069	53,008,871	55,129,225	57,334,393	59,627,770	62,012,880
Operating Expenses										
Operating Expenses	23,003,045	6%	24,384,581	5%	25,500,000	26,625,000	27,423,750	28,246,463	29,093,857	29,966,673
Depreciation	9,498,005	5%	10,010,201	11%	11,085,201	11,285,201	11,485,201	11,685,201	11,885,201	12,085,201
Total Expenses	32,501,050	6%	34,394,782	6%	36,585,201	37,910,201	38,908,951	39,931,664	40,979,058	42,051,874
Net Operating Income	11,970,005	22%	14,614,899	-2%	14,384,868	15,098,670	16,220,274	17,402,729	18,648,712	19,961,006
Non-Operating Income and Expenses										
Investment Income	811,145	3%	831,929	-4%	800,000	800,000	800,000	800,000	800,000	800,000
Other Non-Operating Income / (Expense)	(239,673)		(384,846)		(300,000)	(300,000)	(300,000)	(300,000)	(300,000)	(300,000)
Capital Contributions	2,861,766		3,079,510		3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Total Non-Operating Income & Expenses	3,433,238	3%	3,526,593	-1%	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
Add Non-Cash Expenses										
Depreciation	9,498,005	5%	10,010,201	11%	11,085,201	11,285,201	11,485,201	11,685,201	11,885,201	12,085,201
Cash Available for Debt Service	24,901,248	13%	28,151,693	3%	28,970,069	29,883,871	31,205,475	32,587,930	34,033,913	35,546,207
Debt Service (enter as positive #s)										
Existing Principal	7,740,824		8,852,563		9,498,482	10,320,032	11,565,538	12,079,369	12,531,164	12,739,275
Existing Interest	7,245,334		8,224,085		9,342,460	9,781,646	9,430,830	9,058,687	8,615,403	8,190,200
Proposed KIA Loan	0		0		0	0	0	247,902	247,902	247,902
Total Debt Service	14,986,158		17,076,648		18,840,942	20,101,678	20,996,368	21,385,958	21,394,469	21,177,377
Income After Debt Service	9,915,090		11,075,045		10,129,127	9,782,193	10,209,107	11,201,972	12,639,444	14,368,830
Debt Coverage Ratio	1.7		1.6		1.5	1.5	1.5	1.5	1.6	1.7

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

SCHEDULE OF MORTGAGES, BONDS, NOTES, AND
OTHER INDEBTEDNESS

Northern Kentucky Water District
Bonds & Notes
2/28/2014

Bonds		
USDA 2000	\$1,913,000	
Series 2006	\$22,105,000	
Series 2009	\$24,030,000	
Series 2011	\$27,380,000	
Series 2012	\$49,440,000	
Series 2013A	\$25,155,000	
Series 2013B	\$20,200,000	
Series 2014B	\$13,805,000	
	\$184,028,000	
KIA Currently Servicing		
F06-03	\$2,958,784	
C08-01	\$3,716,267	
F08-07	\$3,634,945	
F9-02	\$22,512,420	
Total KIA	\$32,822,416	
Notes		
Taylor Mill	\$575,000	Non-Interest Note
Deferred Note	\$100,000	

NORTHERN KENTUCKY
WATER DISTRICT

Project
Fort Thomas Treatment Plant
Basin Improvements

Campbell County
184-0477

CURRENT BALANCE SHEET AND
INCOME STATEMENT



Balance Sheet
As of December 31, 2014

Assets	2014	2013
Current Assets		
Cash and Cash Equivalents	\$20,796,630	\$21,351,218
Accrued Interest Receivable	\$3,053	\$3,080
Accounts Receivable Customers	\$5,558,816	\$5,119,190
Accounts Receivable Unbilled Customers	\$5,900,000	\$5,700,000
Accounts Receivable Other	\$88,762	\$73,361
Assessments Receivable	\$117,464	\$110,953
Inventory Supplies for New Installation and Maintenance, at Cost	\$1,631,421	\$1,537,704
Prepaid Expenses	<u>\$2,218,753</u>	<u>\$1,211,935</u>
Total Current Assets	\$36,314,899	\$35,107,441
Restricted Assets		
Bond Proceeds Fund	\$5,289,664	\$8,728,561
Debt Service Reserve Account	\$18,463,061	\$18,400,340
Debt Service Account	\$15,679,859	\$14,751,172
Improvement, Repair, & Replacement	\$3,269,166	\$12,826,064
Boone/Florence Settlement Account	<u>\$308,392</u>	<u>\$307,729</u>
Total Restricted Assets	\$43,010,142	\$55,013,866
Non Current Assets		
Miscellaneous Deferred Charges	(\$5,348,071)	(\$5,214,355)
Capital Assets:		
Land, System, Buildings, and Equipment	\$438,243,125	\$428,578,572
Construction in Progress	\$22,260,422	\$14,441,478
Total Capital Assets before Accumulated Depreciation	\$460,503,547	\$443,020,050
Less: Accumulated Depreciation	<u>(\$120,945,977)</u>	<u>(\$111,130,615)</u>
Capital Assets Net of Accumulated Depreciation	\$339,557,570	\$331,889,435
Total Noncurrent Assets	<u>\$334,209,499</u>	<u>\$326,675,080</u>
Total Assets	<u>\$413,534,540</u>	<u>\$416,796,387</u>



Balance Sheet
As of December 31, 2014

Liabilities and Retained Earnings	2014	2013
Current Liabilities		
Current Portion of Long Term Debt	\$11,231,588	\$10,930,031
Accounts Payable	\$2,449,834	\$2,173,950
Accrued Payroll & Liabilities	\$449,708	\$404,832
Other Accrued Liabilities	<u>\$236,072</u>	<u>\$227,061</u>
Total Current Liabilities	\$14,367,202	\$13,735,874
Current Liabilities From Restricted Assets		
Accounts Payable	\$1,548,495	\$1,176,843
Accrued Interest Payable	<u>\$3,582,507</u>	<u>\$3,815,314</u>
Total Current Liabilities From Restricted Assets	\$5,131,002	\$4,992,157
Long Term Debt		
Long Term Portion of Bonded Indebtedness	\$214,935,756	\$226,902,344
Bond Anticipation Notes Payable	\$0	\$0
Note Payable-Taylor Mill Purchase	\$400,000	\$575,000
Deferred Note Payable	<u>\$100,000</u>	<u>\$100,000</u>
Total Long Term Debt	\$215,435,756	\$227,577,344
Total Liabilities	\$234,933,960	\$246,305,375
Retained Earnings	<u>\$178,600,580</u>	<u>\$170,491,012</u>
Total Liabilities and Retained Earnings	<u>\$413,534,540</u>	<u>\$416,796,387</u>

Northern Kentucky Water District

Income and Expense Report Summary For the Twelve Months ending December 31, 2014

Current Period	December 2014	December 2013	December Budget	Variance Over (Under) %
Total Income	\$5,148,129	\$5,077,858	\$4,851,523	6.1%
Total O&M Expenses	\$2,291,597	\$2,015,520	\$2,140,499	7.1%
Transfer to Debt Service	\$1,590,000	\$1,600,000	\$1,590,000	0.0%
Available for Transfer to Operating Capital	\$1,266,532	\$1,462,338	\$1,121,024	13.0%

Year to Date	YTD 2014	YTD 2013	YTD Budget	Variance Over (Under) %	2013 Annual Budget
Total Income	\$51,446,840	\$49,586,692	\$52,625,911	-2.2%	\$52,625,911
Total O&M Expenses	\$25,369,578	\$23,227,311	\$26,689,942	-4.9%	\$26,689,942
Transfer to Debt Service	\$19,080,000	\$19,200,000	\$19,080,000	0.0%	\$19,077,967
Available for Transfer to Operating Capital	\$6,997,262	\$7,159,381	\$6,855,969	2.1%	\$6,858,002