

Response - **ORIGINAL**
RECEIVED Data Request 1

APR 04 2016

PUBLIC SERVICE
COMMISSION

For

**Certification of Public Convenience & Necessity
Construction of the Louisville Water Company Interconnect
PSC Case No. - 2016-00075**

Presented To:

**Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, KY 40602-0615**



Filed By:



1400 Rogersville Road
Radcliff, KY. 40160
Phone: 270-351-3222
Mr. Jim Bruce, General Manager

April 4, 2016

Hardin County Water District No. 1

Serving Radcliff and Hardin County for Over 60 Years

1400 Rogersville Road
Radcliff, KY. 40160

April 1, 2016

Hon. James Gardner
Acting Executive Director - Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, KY 40620-0615

**SUBJECT: Responses to Data Request No. 1
PSC Case No. 2016-00075
Application for Certificate of Public Convenience & Necessity
Louisville Water Company Interconnect Project Construction**

Dear Acting Director Gardner,

Enclosed please find an original and three copies of our responses to Data Request No. 1 for Case 2016-00075. The Commission issued an order in this case approving our request to file three copies in addition to an original. That order was dated February 26, 2016.

The second order requiring Data Request No. 1 was issued on March 29, 2016. This order requires our responses no later than April 5, 2016.

With these responses, we again request that the Commission issue a final order and approval no later than May 1, 2016. This will give us time to process the contractor's required documents and issue a Notice of Award and Notice to Proceed, before their bid expires.

If you have any questions, please do not hesitate to call me or our attorney, Mr. David Wilson II (Phone: 270-351-4404). We look forward to assisting your staff and the Commission in the quick approval of this project.

Sincerely,



Jim Bruce, General Manager

Cf; Mr. David Wilson II, HCWD1 Attorney

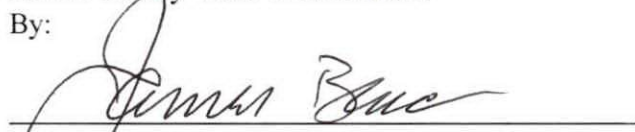
Encl. Responses to Data Request No. 1 (Including 3 Copies)

VERIFICATION

The undersigned, Mr. James S. Bruce, General Manager of the Hardin County Water District No. 1, hereby verifies that he has personal knowledge of the matters set forth in filed letter dated April 4, 2016, to PSC Case 2016-00075, and that he is duly designated by the Board of Commissioners of the Hardin County Water District No. 1 to sign and submit this information its behalf.

Hardin County Water District No. 1

By:


James S. Bruce, General Manager

CERTIFICATION

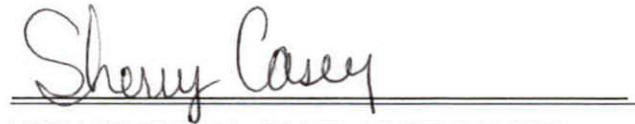
This is to certify that a true and correct copy of the foregoing was delivered on or about the 5th day of April, 2016 to Mr. James Gardner, Acting Executive Director, Kentucky Public Service Commission, 211 Sower Boulevard, Frankfort, KY. 40601-8204.



Mr. David T. Wilson II, ESQ.
Attorney for Hardin County Water District No. 1

STATE OF KENTUCKY
COUNTY OF HARDIN

I, the undersigned, a Notary Public, do hereby certify that on this 1 day of April, 2016, personally appeared before me, James S. Bruce and David T. Wilson, II, who, being by me first sworn subscribed to and acknowledged that they both represent the Hardin County Water District No. 1, a Kentucky Corporation, that they have signed the foregoing document as General Manager and Attorney of the Corporation.



NOTARY PUBLIC, STATE OF KENTUCKY

My Commission Expires; January 5, 2019

1. Respond to the following questions with regards to the Pirtle Spring Water Treatment Plant ("Pirtle WTP"):
 - a. What is the capacity rating of the Pirtle WTP?
 - b. How much water is produced for Hardin District customers at the Pirtle WTP?
 - c. How often does the Pirtle WTP operate above its capacity rating?
 - d. Is the Pirtle WTP able to be expanded for additional treatment capacity?

ANSWER 1:

- a. The current production capacity of the Pirtle Spring WTP (PSWTP) is 3.1 MG/d (See application page 7, first paragraph)
- b. In 2015, HCWD1 produced 1,011,403,000 gallons (1,011 MG) at its PSWTP
- c. The PSWTP does not operate above its rated capacity. In 2015, the average day production of the PSWTP was 2.771 MG/d and its maximum day production was 3.094 MG/d.
- d. The KY Division of Water construction permit (attached) which approved the plans and re-construction of the PSWTP, included a specific restriction that the new high service pumps capacity be limited to deliver 2,150 gpm or 3.096 MG/d. The PSWTP has had a long history and record of its raw source water supply being susceptible to drought impact and reduced supply.

Attached is an excerpt from the 2001 Hardin County Regional Water Feasibility Study, commissioned by the Lincoln Trail Regional Water Commission. The study documents historical limitations of the PSWTP source supply during significant drought events.

Also attached is an excerpt from a 1990 study by the U.S. Geological Survey. Page 17 summarizes the Pirtle Spring source and its history of reduced flow during a 1988 drought. Paragraph three states; "*This indicates that the discharge from the spring likely cannot meet the water-supply needs during prolonged drought conditions*".

An attached article published in the August 2013 issue of the Water, Environment & Technology (WE&T) magazine also provides a comprehensive history of the PSWTP and its raw water supply problems. When the PSWTP was re-built, parts of the internal piping and chemical feed systems were sized for 4.5 MG/d.

However, without an approval to increase its water withdrawal permits plus a significant capital investment to increase raw water and treatment components at PSWTP, the facility cannot expand its treatment capacity.

WITNESS: Mr. Jim Bruce, General Manager, HCWD1



**ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

Ernie Fletcher
Governor

Division of Water
14 Reilly Road
Frankfort, Kentucky 40601-1190
www.kentucky.gov

Teresa J. Hill
Secretary

November 9, 2007

Jim Bruce, General Manager
Hardin County Water District No. 1
1400 Rogersville Road
Radcliff, KY 40160

RE: Hardin County Water District No. 1
AI # 1673, APE20070009
PWSID # 0470393-07-009
Pirtle WTP - Reconstruction
Hardin County, Kentucky

Dear Mr. Bruce:

We have reviewed the plans and specifications for the above referenced project. The plans include the reconstruction of Pirtle Water Treatment Plant. This will entail 4 rapid gravity sand filters, replacement of 2 high service pumps and 1 backwash pump, a chemical area with containment trench, associated equipment, housing and piping. This is to advise that plans and specifications covering the above referenced subject are APPROVED with respect to sanitary features of design as of this date with the following construction stipulations:

- ① The fluoride feed room should be a separate room and have a power fan vented to the outside atmosphere. This vent fan should be located close to the ceiling.
2. Fluorosilicic acid metering pumps shall be sized to operate in the mid-range of their capacity and mounted not more than 4 feet above the solution tank.
- ③ The fluorosilicic acid day tank should be about a two day supply and should be mounted on scales to record the daily weight loss of hydrofluosilicic acid. The day tank should be vented to outside atmosphere. Lines connected to the day tank should be flexible enough to allow the scales to work properly.
4. All fittings for feed of fluorosilicic acid shall be compatible with the chemical.
5. A berm should be built around the fluorosilicic acid bulk tank that would contain 110% of the bulk tanks contents
6. Bulk and day tanks shall have an overflow that is turn down, is screened, has a free fall discharge, and is located where noticeable.

Pirtle WTP - Reconstruction
 DW# 0470393-07-009, APE20070009
 November 9, 2007
 Page 2 of 3

7. Combined filter effluent turbidimeter taps shall be provided.
8. When this project is completed, contact Bob Murphy at (502) 564-3246 ext 3778 for Oral Health Program start-up approval.
9. If sanitary features of the approved plans are to be changed during construction, the engineer shall submit the revision to the Division of Water for approval prior to implementation of the modification. Written approval from the Division of Water must be granted prior to on-site work dedicated to the adjustment.
10. When this project is completed, the owner shall submit a written certification to the Division of Water that the above referenced water facilities have been constructed and tested in accordance with the approved plans. Such certification shall be signed by a licensed professional engineer.
11. When this project is completed, the engineer shall submit as-built drawings to the Division of Water.

Unless construction of this project is begun within 1 year from the issuance date of this permit, the permit shall expire. If requested prior to the permit expiration, an official extension from the Division of Water may be granted. If this permit expires, the original plans and specifications may be resubmitted for a new comprehensive review.

Once the treatment plant is completed, the following operating stipulations will apply until future construction, modification, or correspondence from the Division of Water changes the applicability of the stipulations. Further, if a stipulation is changed or deemed to be no longer applicable, unaffected stipulations shall not be voided.

1. Replacement parts for all chemical feed pumps shall be kept on-site.
2. The rated potable water production of Hardin County Water District No. 1's potable water treatment plant following construction shall remain unchanged.
3. Hardin County Water District No. 1's potable water treatment plant is designated as Class IVA and shall remain designated as Class IVA following construction.
4. The maximum potable water production, calculated from daily gallons of water treated and daily hours of operation, of Hardin County Water District No. 1's potable water treatment plant shall not exceed 2,150 gpm (due to high service pump capacity).
5. Standards contained in 401 KAR Chapter 8 applicable to community water systems serving at least 3,300 people, utilizing direct filtration, and utilizing chemical disinfection of surface water shall apply.

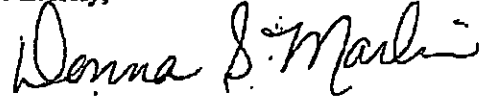
This approval has been issued under the provisions of KRS Chapter 224, and regulations promulgated pursuant thereto. Issuance of this approval does not relieve the applicant from the responsibility of obtaining any other approvals, permits or licenses required by this Cabinet and other

Pirtle WTP - Reconstruction
DW# 0470393-07-009, APE20070009
November 9, 2007
Page 3 of 3

state, federal and local agencies. Water withdrawal and KPDES permits are not included in this approval and are the responsibility of Hardin County Water District No. 1.

If you have any questions regarding this correspondence, please contact Terry Humphries at 502/564-8158, extension 518.

Sincerely,



Donna Marlin, Branch Manager
Drinking Water Branch
Division of Water

DM:TWH

C: HDR\Quest
Hardin County H.D.

Hardin County Water District No. 1

HCWD1 currently operates one WPT. The Pirtle Springs WTP draws raw water from either the Pirtle Spring or from the Gray Lane well. The raw water is pumped from either location directly to the WTP and into the head tank for chemical addition. Appendix A, Photographs A-7 and A-8, are representative of the existing raw water sources and pumping facilities.

The Pirtle Spring has a permitted capacity of 2,880,000 GPD. The Gray Lane well has a rated capacity of 720,000 GPD between June and September. During the remainder of the year, 120,000 GPD may be withdrawn. The source waters for the WTP are classified as GWUDI. Table 2-7 provides water quality details for the source waters as recorded by the WTP MORs.

Table 2-7
Pirtle Springs and Gray Lane Wells - Raw Water Characteristics
Hardin County Regional Water Group

<i>Item</i>	<i>Average Day (1999)</i>	<i>Maximum Day (1999)</i>
Flow (GPD ¹)	1,980,000	2,700,000
Turbidity (NTU ²)	11	174
Hardness (mg/L ³)	220	280

Notes: ¹GPD - Gallons per day
²NTU - Nephelometric turbidity units
³mg/L - Milligrams per liter

Based on the review of the MORs and discussions with operations personnel, Pirtle Springs and Gray Lane are generally able to produce the permitted capacity of the WTP. However, the drought of 1999 had a significant impact on Pirtle Springs and the resulting effect was that the WTP could only produce 2,200,000 GPD during the extremely dry periods in September. In addition, the WTP had to be shut down for 65 days in March, April and May due to a nearby oil spill at an elementary school that contaminated the springs.

Hardin County Water District No. 2

HCWD2 currently operates one WPT. The White Mills WTP draws raw water from Nolin River which is partially supplied by a spring. The raw water is pumped directly to the WTP and into the head tank for chemical addition. Appendix A, Photograph A-9, shows the existing raw water source.

HCWD2 is currently permitted to withdraw 3,500,000 GPD from Nolin River. This volume is anticipated to be increased to 8,100,000 upon completion of the current WTP expansion. The source water for the WTP is classified as a surface water. Table 2-8 provides water quality details for the source waters as recorded by the WTP MORs.

WATER AVAILABILITY AND VULNERABILITY OF GROUND WATER TO
CONTAMINATION IN NORTHWESTERN HARDIN COUNTY, KENTUCKY

By D.S. Mull, Robert J. Faust, and Gary R. Martin

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 90-4133

Prepared in cooperation with the
HARDIN COUNTY WATER DISTRICT NUMBER 1

Louisville, Kentucky

1990



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Pirtle Spring

Pirtle Spring is an alluviated blue hole, rise-pit type spring that drains to the head waters of Rough River. Rise-pit springs are frequently called a blue hole spring because of the blue color of the water in the central part of the pit. However, the blue color is frequently masked at Pirtle Spring because of the abundance of sediment. Sediment is reportedly more noticeable at Pirtle Spring since October 14, 1988 (William Smallwood, HCWD #1, oral commun., 1989). He reports that the water level in the pit dropped about 14 feet and there was a noticeable increase in sediment. Apparently there was a collapse or wash out of a sediment plug in the conduits which now drain a greater quantity of sediment to the spring.

Pirtle Spring discharges by way of a rise pool that is about 20 feet in diameter and issues at the base of a limestone ledge. The rise pool is about 635 feet above sea level. The rise pool is rimmed on the downgradient side with sand and small pebbles transported and deposited by the discharging water. The rise pool is about 35 feet deep and is apparently the mouth of a major conduit. During high flow, water issues from the conduit with sufficient force to cause a boiling effect as high as 8 inches above the water surface. The conduit is tapped by two wells, 65 feet deep, that supply part of the water used for public supply by the Water District. The wells are about 640 feet above sea level.

Discharge from Pirtle Spring flows about 0.5 mile to its confluence with Rough River in a channel that is incised about 8 feet below the surrounding land surface. At places, the channel is developed on limestone bedrock. Although the rise pool did not go dry, the channel draining from the rise pool was dry for several days during the drought of 1988. This indicates that the discharge from the spring likely cannot meet the water-supply needs during prolonged drought conditions.

Sanders Spring

Sanders Spring flows from the partially blocked mouth of a conduit at the base of a limestone cliff near the base of the St. Louis Limestone. The mouth of the spring is about 620 feet above sea level. Until August 1986, Sanders Spring supplied part of the water used by the Water District. At present (1989) water from the spring is unused. On August 29, 1989, discharge was estimated to be 700 gal/min (gallon per minute) and the specific conductance was 600 $\mu\text{S}/\text{cm}$ (microsiemens per centimeters at 25°C), which is relatively high. This indicates that at the time of this measurement, most of the water draining from the spring was from the ground-water reservoir rather than recent inflow from the surface.



Finding the right source and supply

Averting catastrophe

Amanda Spalding, Phil Clark, and Donnie Underhill

It was 2 a.m. one morning in March 1999. Jim Bruce, general manager at Hardin County (Ky.) Water District No. 1, drove through the night to the Prichard Pump Station, located on the U.S. military base at Fort Knox, Ky. Upon arriving, he quickly unlocked the gate and the door to the pump station. As he opened the door and heard the hum of the pump motors, he breathed a sigh of relief. The sound of the pumps meant that his customers and surrounding communities still had potable water.

From late winter and throughout the summer of 1999, a combination of bizarre, coincidental events required Bruce to make this type of trip several times and put the district in a situation in which no water utility wants to be – completely dependent on an auxiliary source of water. Summer 1999 wasn't the first time the district sought new sources of water nor would it be the last.

Triple trouble

On March 9, 1999, a valve ruptured on a furnace fuel tank at the Howe Valley Elementary School in Cecilia, Ky., and leaked about 1700 L (450 gal) of heating oil into the local groundwater table. The district's only active water plant at the time – the Pirtle Spring Water Treatment Plant (PWTP), a groundwater under the influence of surface water plant – sat less than 1.6 km (1 mi) from the school.

Ironically, a group of students from Howe Valley had planned to visit PWTP that day on a field trip. After the leak, school officials contacted PWTP personnel to let them know that they had to postpone the visit, but the fuel-oil leak was not mentioned. A short time later, treatment plant operators smelled raw petroleum and shut down the plant. However, a customer complaint early that afternoon confirmed that tiny amounts of the fuel had reached the distribution system.



For decades, Pirtle Spring has been one of the major sources of water for Hardin County (Ky.) Water District No. 1, but high demand and danger of contamination from surface waters prompted the district to seek additional sources to diversify its supply.

Michael D. Moseley

This contamination mandated shutdown of PWTP for the next 65 days as crews worked to flush the system, took dozens of water samples, and waited for regulators to be persuaded that the system was purged completely before allowing production to restart.

In June of the same year, Elizabethtown, Ky., a city 16 km (10 mi) to the south, began a dam-rebuilding project that required its Freeman Lake Water Treatment Plant to be shut down until the lake – the plant's source of water – could be refilled following construction. Hardin County Water District No. 2 (HCWD2), the district's sister utility in the same county, had been supplying Elizabethtown with extra water as needed. At this time, however, HCWD2 already had reached its current production capacity, was working on its own water plant expansion project, and was unable to meet Elizabethtown's additional demand.

Adding to these events, Kentucky was in the midst of a severe drought, causing high water demands. Elizabethtown's other water plant, City Springs, was producing less than its capacity, as its source springs were stressed due to the drought, requiring water conservation measures.

Luckily, the Prichard Pump Station – the one Bruce routinely checked during critical situations – had been completed in November 1998, and it performed to perfection. This pump station enabled the region to remain mostly unaffected by these extreme circumstances. Officials at Fort Knox allowed the district to purchase more than its contract limit, and the pump station was pushing out nearly 18.9 ML/d (5 mgd) to meet the water needs of the district, plus about half of Elizabethtown's demand. HCWD2 was able to receive the district's extra water and, combined with its own supply, could sell Elizabethtown enough water to avoid rationing or even-more-severe restrictions.

Early growth

The district's history includes numerous searches for a reliable water supply. The district formed in 1952 to serve the needs of a growing population in the northern portion of the county. The district's first plant was the Saunders Spring Water Treatment Plant, which had been deeded to the district by neighboring Fort Knox. This plant remained active until 1968, when the district developed a new well field at the West Point Aquifer along the Ohio River and built the Muldraugh Water Treatment Plant.

This groundwater plant had a 7.6-ML/d (2-mgd) capacity and became the primary supply for the district and HCWD2. For the next 22 years, the district would be the primary source of water for HCWD2 until it developed its own source, Nolin Spring, and constructed the White Mills Water Treatment Plant in 1990. As each water district expanded, Muldraugh could not keep up with



In 1999, a nearby fuel-tank leak contaminated the groundwater near the Pirtle Spring (Ky.) Water Treatment Plant and forced a shutdown. At the time, this facility was the district's only active water plant. During the past 14 years, the district has worked to diversify its supply. In 2009, renovation and complete reconstruction of this plant laid the groundwork for possible expansion to 17.0 ML/d (4.5 mgd).

demand, so PWTP was opened on the south side of the service area. PWTP treats groundwater under the influence of surface water and, at the time of its opening, had a treatment capacity of 11.7 ML/d (3.1 mgd).

Seeking sources

In 1988, during a severe drought, the district again faced a problem of source reliability, as Pirtle Spring was showing signs of strain and the water flow from the spring stopped. The district was able to obtain a water withdrawal permit for an additional spring known as Head of Rough that was not too far from PWTP. This relieved some of the pressure on Pirtle Spring. With approval from Fort Knox, the district also built a small interconnect pump station – the Wilson Road Pump Station – for emergency purposes. This interconnect provided a purchased-water source from Fort Knox of about 3.8 ML/d (1 mgd).

By the early 1990s, Muldraugh had fallen into disrepair, and because of water quality issues and lower cost options to rebuilding, the district decided to shut down this facility.

Once again, the district was searching for a new source. Wells, springs, and surface water sources were all options for consideration. A thoroughly researched *Water Resources Investigations Report* provided by the U.S. Geological Survey (USGS) was critical in assisting with the decision-making

process. This 1990 report, which was mandated because of the 1988 drought, revealed that groundwater sources in the alluvial aquifer, such as those that were feeding Muldraugh, should not be considered an option because of high chloride values caused by improperly sealed abandoned oil and gas test wells.

The report concluded that no matter where a new well may be drilled in this aquifer, the increased pumpage would cause the migration of brines toward the active well. USGS showed that within the study area, which includes most of the district's service area, Pirtle and the Head of Rough Springs were the largest springs – both already were being used – but both were vulnerable to contamination from surface sources.

Regarding potential surface water sources, USGS eliminated the possibilities of the Ohio and Rough rivers. Rough River's 7-day, 10-year low flow was not enough to meet demand. The Ohio River intake had to be eliminated because of governmental restrictions on placing public water supply intakes within 8 km (5 mi) downstream of wastewater outfalls.

Moving forward

One of the district's board members worked for the Fort Knox Water Department and was aware that the post had more water supply and treatment capacity than currently needed. There was only one problem: A federal law prohibited a U.S. Army post to



Several times, the Prichard Pump Station at Fort Knox, Ky., has been a lifeline to keep water flowing to customers of Hardin County (Ky.) Water District No. 1. Throughout the years, the district has expanded and diversified its water supply options to ensure flow to customers. Michael D. Moseley

sell water outside of its boundaries. The district decided to lobby legislators to change federal regulations. After Fort Knox was approved to sell water off post, the district signed a water purchase agreement with Fort Knox in September 1995.

The agreement allowed the sale of up to 10.2 ML/d (2.7 mgd) from Fort Knox. By November 1998, the Prichard Pump Station and the 4.7-ML (1.25-million-gal) ground storage tank were constructed on post. Little did district officials know that in a few short months, this interconnect would be a critical source of water for so many people.

Growth and partnerships

Since 1999, the district has continued to grow and change. In 2009, the district concluded a renovation and complete reconstruction of PWTP that laid the groundwork for possible future plant expansion to a capacity of 17.0 ML/d (4.5 mgd). The new design included internal piping, filter area, chemical feed, and pumping should the state agree to increase the district's withdrawal from Pirtle Spring and/or Head of Rough.

In 2008, the district and Louisville Water Co. (LWC) entered into a joint partnership to pursue a contract with the U.S. government to privatize the Fort Knox Water Utility with a 50-year agreement. The effort was successful, and the district took over ownership of the system in February 2012. The district owns the Fort Knox Water

System and operates the distribution system, while LWC operates the two treatment plants and maintains raw water facilities and regulatory compliance under an operations contract with the district.

The partnership was expanded in May 2012, when the district and LWC entered into a purchased water agreement allowing the district to purchase up to 13.2 ML/d (3.5 mgd) from LWC through a newly constructed transmission main and pump station, which will connect the two systems together near the city of West Point. The interconnect is due to be completed by early 2015. Having this additional backup source will enable the district to access LWC's immense supply, which is fed by the Ohio River, with nearly 379 ML/d (100 mgd) of reserve capacity.

The management of Hardin County Water District No. 1 has brought the district a long way. Even though it has been 14 years since Bruce spent his late nights at Prichard Pump Station, he still enjoys telling the story to new employees as a motivating factor in ensuring that the district's customers have a safe, reliable, drought-resistant water supply.

Amanda Spalding is water quality/measurement specialist, **Phil Clark** is Pirtle Spring Water Treatment Plant supervisor, and **Donnie Underhill** is Pirtle Spring Water Treatment Plant operator in Hardin County (Ky.) Water District No. 1.

2. Respond to the following questions with regards to the Fort Knox Water System supplying non-Fort Knox customers:

- a. How much water is produced for non-Fort Knox customers at each of the Fort Knox water treatment plants?
- b. What are the reasons for the exclusion of the Muldraugh Water Treatment Plant in the operation of the Fort Knox Water System ("FKWS") and its supply to non-Fort Knox customers?
- c. What purchased treated water source did the federal government select for Fort Knox?

ANSWER 2:

- a. The attached table shows each of the Ft. Knox WTP's production by month for 2015. Of this production, approximately 8% is for two off-post customers which are the City of Muldraugh and HCWD1 (Hardin County Water District No. 1) which systems used 4.2% and 3.8% respectively of the Ft. Knox WTP's combined production.
- b. The Government made its decision not to continue to supply water to HCWD1 in 2005 and subsequently did not renew the water purchase agreement. The Government has since been consistent in its discussions with HCWD1 that it expected HCWD1 to find a replacement source of purchased water. HCWD1 has not been party to or was involved the why the Government made this decision.
- c. To date, the Government has not obtained a purchased water source. In all discussions with the Government, HCWD1 has understood that the Government intends to reduce the WTP's on post from two to one, and by HCWD1 not purchasing water, this will free up the treatment capacity of the FKWS so it no longer needs to be sized or required to supply additional water off post to HCWD1.

HCWD1 has extended an offer to Ft. Knox to participate and help pay for oversizing the proposed LWC Interconnect Project ("Project"), so that a portion of that purchased supply could be dedicated to supply Ft. Knox.

An attached letter offers Ft. Knox a purchased water option by oversizing the Project, but as stated, HCWD1 does not believe Ft. Knox is interested nor will participate in the Project oversizing.

Based on recent discussions with Ft. Knox, HCWD1 believes that Ft. Knox is no longer interested in an off-post, purchased water source, but instead prefers to have the post's water demand be met solely by the WTP facilities and raw water sources owned by or located on post.

Attached is a February 25, 2016 local newspaper article where Kentucky Senator Rand Paul promotes Ft. Knox's accomplishment to become the Army's only completely self-sustaining post in relation to energy and other utility supply systems.

WITNESS: Mr. Jim Bruce, General Manager, HCWD1

**Comparison of Ft. Knox WTP Production to sold
to Non-Ft. Knox (off post) customers (2015)**

(Amounts shown in Million Gallons)

<u>MONTH</u>	<u>Ft. Knox MWTP</u>	<u>Ft. Knox CWTP</u>	<u>City of Muldraugh</u>	<u>HCWD1</u>	<u>Total Sold Non FK Cust</u>	<u>% Of FK WTP's</u>
J	4.023	45.556	2.193	0.077	2.270	4.6%
F	5.796	46.530	2.212	5.134	7.346	14.0%
M	9.247	48.730	2.550	7.117	9.667	16.7%
A	37.734	1.876	2.242	0.073	2.315	5.8%
M	0.740	66.940	2.172	4.015	6.187	9.1%
J	2.172	66.110	2.350	4.071	6.421	9.4%
J	6.025	63.620	2.115	2.786	4.901	7.0%
A	35.746	13.118	2.000	0.044	2.044	4.2%
S	9.752	49.405	1.844	0.199	2.043	3.5%
O	28.511	15.043	3.698	0.162	3.860	8.9%
N	0.000	50.573	1.958	0.834	2.792	5.5%
D	0.354	45.348	1.780	0.050	1.830	4.0%
Yr Total >	140.100	512.849	27.114	24.562	51.676	7.9%

Hardin County Water District No. 1

Serving Radcliff and Hardin County for Over 60 Years

1400 Rogersville Road
Radcliff, KY. 40160

February 8, 2016

Mr. Carl Silverstone
Contracting Officer
Defense Logistics Agency Energy
8725 John J. Kingman Road
Fort Belvoir, VA 22060-6222

Mr. Pat Walsh
Directorate of Public Works
125 6th Ave, Bldg 1110
Fort Knox, KY 40121-5719

SUBJECT: Purchased Water Option Opportunity

Mr. Silverstone & Mr. Walsh;

We have recently received bids for the construction of our Louisville Water Company (LWC) Interconnect project. This project has been in the planning and design stage for over seven years. This project will allow our County Water system to purchase water directly from LWC. Once constructed, we will no longer need to purchase water from the Government, through the Ft. Knox water system, which we have done since 1997.

As I have discussed with Mr. Walsh and Mr. Addison (COR) over the last few years, we had the design and bidding completed to allow for upsizing the "base" size of the project, so that a portion of the water supply could be made available, and dedicated, to the needs of Ft. Knox as a purchased water supply. This opportunity, we believe, would provide the off-post supply anticipated in attachment JA1 of the Utility Privatization Contract (UP);

(Page JA1-10) Given the high levels of chlorides in the raw water coupled with the age and relatively poor condition of the Muldraugh WTP facility, the Army is currently looking at purchasing potable water from a local municipality to replace the potable water capacity at the Muldraugh WTP facility.

As you know, our ISDC / CIP proposal submitted 4-September-2015 included keeping and renovating the higher capacity Muldraugh WTP (MWTP). If approved, the resulting capacity and reliability may have reduced the Government's need for a purchased water source. Also, the current water demand at Ft. Knox has dropped considerably since 2012, so this also may have reduced the current need for an outside source to supplement a single WTP's output.

However, if the Government did want to have a redundant and additional treated water supply available for Ft. Knox, we believe our project and cost would be the most economical, and certainly simplest, approach to securing that additional supply. We have had our engineer prepare the following table. This shows the different potential daily delivery amounts, and the Government's cost to secure this supply;

Continued

Row	16 Inch	20 Inch	24 Inch	
1	3.0	3.2	3.3	Maximum potential PS output / MG/d (using 14 inch HCWD1 main)
2	3.1	4.8	9.1	Maximum potential PS output / MG/d (using 24 inch FK main)
3	0	1.3	5.6	Max potential MG/d reserve for Ft. Knox needs (using 24" main)
4	\$5,971,840	\$6,468,944	\$6,912,105	Total Low Bid Amount \$ (Using Cleary Construction)
5	N/A	\$497,104	\$940,265	Incremental \$ Above Base bids
6	N/A	\$382,388	\$167,904	Ft. Knox / MG cost of potential available supply
NOTES: 1. All prices using Cleary bids 2. Hydraulic outputs assume LWC increases their available transmission capacity to match increased PS flow amounts 3. Using 24" assumes terminates at MWTP clearwell 4. Using 24" assumes HCWD1 pays for added piping to get 3 to 3.5 MG/d from MWTP clearwell west to existing 14 inch main to Prichard PS				

The three columns labeled; "16 Inch", "20 Inch" and "24 Inch" are the three sizes we solicited bids for. Each option changes the diameter of the transmission main as well as the pump sizes for the pump station.

This table shows several options that affect the available maximum flows to Ft. Knox. Row 1 assumes the potable water would be pumped through the existing 14 inch raw main, owned by HCWD1 is currently used to pump raw well field water to the Ft. Knox Central WTP as a supplemental source to the McCracken Spring source.

Row 2 is another option to deliver the potable source to the current MWTP, using the existing 24 inch raw main. This main is currently used to deliver raw well field water to only MWTP for treatment and delivery to the Ft. Knox Water System (FKWS) distribution system. Should this option be used, then the existing 14 inch could still be available to deliver well field water to the MWTP, but only up to 3 MG/d. Should the Government want to deliver a water volume to equal the future MWTP's maximum treatment capacity, another raw main would need to be installed.

It should be noted that both rows 1 and 2 show the "Maximum Potential" amounts for the FKWS. This is because the new facilities and amounts shown are those amounts that could be flowed from the connecting point of the LWC, which is a 16 inch main at Katherine Station Road, then through the new pipeline and pump station, pumped up either the 14 or 24 inch raw main. Since the current LWC supply point is only a 16 inch providing the maximum hydraulic benefit (or potential benefit) to Ft. Knox would require an additional investment to the LWC system.

While the LWC overall system certainly has a tremendous reserve treatment capacity, the single connecting point of our project does have a limited supply at that location. Still, as a long term supply for Ft. Knox, installing the larger HCWD1 facilities does provide additional "potential" supply of potable water through a purchased source. However, to maximize that available supply would require upsizing the LWC system, or possibly building a smaller package WTP near Katherine Station Road.

Row 5 shows the added cost above our bids received from Cleary Construction on 15-January. These costs are only the incremental cost we would ask the Government to pay. We have not added, or would ask the Government to pay, any other project related costs we have paid over the last four years. These costs,

Continued

which are upwards of \$400,000, include design, easements, permits, payment to the Imperiled Bat Conservation Fund and all other costs necessary to be able to bid the construction.

As you can see on row 6, there is a cost per million gallon of potential supply (should the LWC system limitations be resolved) for both the 20 and 24 inch new facilities including the larger pump costs. Each of these costs are attained at using the 24 inch raw main to deliver the potable water to the MWTP site, where it could then be pumped into the FKWS by the MWTP high service pumps at the clearwell.

Once the water was in the MWTP clearwell, HCWD1 would have to pay to connect the FKWS MWTP discharge piping west to intersect our existing 14 inch raw main. Once in the 14 inch main, it would then travel to our Prichard tank and pump station located on post. Once in that tank, we could then pump that supply into Radcliff for our retail and wholesale customer needs.

As our LWC Wholesale Purchase contract allows us to purchase up to 3.5 MG/d, this amount is subtracted from the maximum available delivery amount shown on row 2. The resulting supply dedicated for the FKWS needs is then shown on row 3. As you can see, using the 24 inch bid prices, and delivering water through the 24 inch raw main, potentially could provide the FKWS up to 5.6 MG/d, after HCWD1 had taken its 3.5 MG/d from the MWTP site and clearwell.

The cost per MG (row 6) then to the Government is either \$382,388 using the 20 inch bid pricing, or \$167,904 using the 24 inch bid pricing (56% less). Many engineers have recently used a rule of thumb number that building a new WTP facility (not counting raw water source costs) will cost about \$2 million per 1 million gallons, so the cost of this added supply, for Ft. Knox, would be considerably less per million gallon of supply, compared to constructing a new treatment facility.

The nominal amounts we would ask the Government to pay in order for us to construct the larger size facilities is shown on row 5. The rounded amounts would be \$500,000 (for the 20 inch size) or \$950,000 (for the 24 inch size). As we plan to issue a Notice to Proceed to the contractor around May 16, we would need the Government's commitment and method of payment before that date. As the contractor was required to submit bids for each size option, we could simply award one of the larger sizes and the cost would be locked in.

Of course, there is always potential for cost overruns for construction change orders or unforeseen conditions. We would ask the Government to provide assurance that they would pay a proportional amount of any of those additional costs, should they occur. The details of this could be included in a new agreement between the parties.

As described in a 05-November-2013 email to Mr. Walsh and Mr. Muse, we can still offer an interruptible wholesale water supply to the Government. This would not commit or guarantee any volume supply, but could provide emergency supply to the post from us, through our Prichard pump station (by reverse pumping from our system to the FKWS). This would be available on days we would not have need for the LWC supply for our County Water system. This would be available at anytime and we would use our existing uniform Wholesale User Agreement. (This option would also assumes the the FKWS treatment process has been converted to Chloramine in order to be compatible with ours and LWC's water).

Continued

Also, this letter is intended to resolve the future use of our 14 inch raw main for Ft. Knox benefit, as a supply main to the Central WTP. The following statement was also included in the UP, JA1 document;

(Page JA1-7) The Army has also notified HCWD No. 1 that, if privatization occurs, it intends to terminate the lease of the three wells and the 14-inch raw line upon conveyance of the utility system. Upon termination of the lease, the three wells and 14-inch line will revert back to HCWD No.1. As a result, these system components will not be included in the privatization action.

This explanation suggests that the 14 inch main and wells would revert back to HCWD1 and no longer be available for the Government's use or benefit. While it is true if we proceed with the base size construction project, the 14 inch main will be converted to a finish water main to deliver our LWC purchased water to our Prichard tank. As for the three HCWD1 wells, we would have no use for these (since would not be supplying water to a HCWD1 WTP for treatment) and these can continue to be used for the Government's benefit by supplying the MWTP. Years ago both the HCWD1 wells and the Ft. Knox wells had their discharge piping connected together. This will allow all the wells to supply water up either the 14 or 24 inch raw mains, regardless which stays in service.

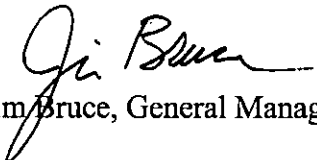
Therefore, HCWD1 is agreeable to continue to allow the FKWS to use its three wells as a supply to the MWTP in the future.

As for the oversizing options of the new facilities being built, we request that the Government and Ft. Knox provide us their answer no later than **15-April-2016**. This would provide us a few weeks to make up whatever legal agreement and documents are needed to proceed with the cost sharing arrangement during construction, and the obligations of both parties.

If we do not receive any answer by the requested date above, we will assume that the Government is not interested in assisting in oversizing this project, and we will proceed with constructing the base size, and taking back the 14 inch raw main in the future.

I realize this is a lot of information to absorb and respond to. We are certainly available to meet face to face or on a conference call, to answer any questions.

Sincerely,


Jim Bruce, General Manager

Cf; HCWD1 Board of Commissioners
Mr. David Wilson II, HCWD1 Attorney

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Breaking News: Firefighters on scene of Wilson Road blaze

Updated: 1:48 pm

Paul introduces Fort Knox Energy Security Act

Thursday, February 25, 2016 at 1:45 am (Updated: February 25, 2:01 am)

U.S. Sen. Rand Paul introduced the Fort Knox Energy Security Act as an amendment Tuesday to the Energy Policy Modernization Act of 2016.

Paul's office said the legislation specifically allows the U.S. Department of Defense to continue producing natural gas at Fort Knox, enabling the post to remain the only military installation capable of self-sustainment in the country.

Paul previously introduced the legislation as an amendment to the National Defense Authorization Act in June 2015.

For the past 20 years, Fort Knox has worked to become the first military installation to provide its own electricity, heat, gas, water and wastewater elimination all from on-post resources. In May 2015, Fort Knox successfully demonstrated its ability to fully operate without outside power assistance. But without government authorization, Paul said investments Fort Knox has made to become self-sustainable will cease and energy costs for the Army will increase.

3. Are any other water treatment plants supplying water to Hardin District's system? If so, which water treatment plants and how much water is being supplied by each?

ANSWER 3: No.

Hardin County Water District No. 2 is able to provide HCWD1 a limited supply of emergency back-up supply, however in 2015 HCWD2 supplied HCWD1 water only on three days, and the total combined amount supplied was 1 million gallons. HCWD1 does not have a current wholesale water purchase agreement with HCWD2.

WITNESS: Mr. Jim Bruce, General Manager, HCWD1

4. Respond to the following questions with regards to the Base Realignment and Closure ("BRAC") grant from the Economic Development Cabinet:

- a. What is the purpose and/or reason for receiving a BRAC grant?
- b. Explain the economic development that has occurred or will occur within Hardin District's service area due to the receipt of the BRAC grant.
- c. What impact on water demand will this economic activity create?

ANSWER 4:

- a. HCWD1 did not solicit nor was involved in applying for, creating or requesting a BRAC grant for its Project. All of the BRAC grants were approved in two rounds by the Kentucky Legislature (and funded by bond sales) in response to major mission changes planned at Ft. Knox as a result of the sixth round (2005) of Base Realignment and Closure actions by Congress.

An attached press release (September 4, 2009) from former Governor Beshear's office explains the purpose and status of the BRAC grants, approved by the Kentucky Legislature. The Commission is also referred to page 205 of Exhibit 2, of HCWD1's application, which included a copy of the specific BRAC grant for this project, issued by the Kentucky Cabinet for Economic Development, which provides the purpose and reason for the BRAC grants and funding for projects.

- b. Attached are two publication articles from 2010 which discuss the economic growth in the region and any attribution to the BRAC activity.
- c. The impacts of any economic activity caused by the BRAC grants is mostly past and completed. HCWD1 saw a peak of construction activity in 2006 resulting in the addition of 337 new water taps. Over the last two years (2014 & 2015), HCWD1 has added 49 and 35 new taps, respectively.

In August 2010, HCWD1 peaked at its maximum 10,230 active water taps, which has since declined to 10,086 in March, 2016. Whatever impact this economic activity has had on HCWD1's water demand, that impact has past and peaked and HCWD1 does not expect any future impact.

WITNESS: Mr. Jim Bruce, General Manager, HCWD1

BRAC Transportation, Infrastructure Projects on Schedule

Press Release

Re: [Steve Beshear \(/candidate/public-statements/272/steve-beshear\)](http://candidate/public-statements/272/steve-beshear)

Sept. 4, 2009

Location: Frankfort, KY

Task force meets to determine future needs for realignment

With the major realignment at Ft. Knox in full preparations, the Governor's Military Task Force on Base Realignment and Closure (BRAC) met to determine what remains to be done to support growth in the region, review what has already been accomplished for the realignment and confirm current transportation and infrastructure projects are on schedule.

I am pleased that after the Task Force met they determined that transportation and infrastructure projects are on schedule for the realignment at Ft. Knox, Gov. Steve Beshear said. It is vital we remain dedicated to the community and continue to support the growth that this region will experience with BRAC.

The task force reviewed construction costs for completing the ongoing transportation projects and additional, high-priority infrastructure projects for the region surrounding Ft. Knox. Those costs will be coordinated and submitted for inclusion in the next biennial budget.

In the last biennium, \$100 million in economic development and transportation bonds were appropriated by the legislature to support the growth. In March 2009, Gov. Beshear announced \$100 million of state approved projects for Hardin and Meade counties. To date, all the transportation projects and the water, sewer and public school infrastructure projects using that money are running on schedule.

It is an incredible achievement that the \$100 million in transportation and infrastructure projects are all on track in Hardin and Meade counties, said Special Assistant to the Governor for BRAC, Col. Ret. Mark D. Needham. The Commonwealth has shown its commitment and support of national defense and will continue to recognize the importance this realignment is to the Ft. Knox region.

The Task Force also reviewed the results of the BRAC planning exercise conducted in Elizabethtown in March 2009. The table-top exercise brought together community leaders, school superintendents, county judge-executives, mayors, legislators and business leaders to develop a strategic plan for leveraging the unique opportunities and challenges presented by the multiple new missions of the famed military post in Hardin County.

In 2005, the Army announced a major realignment of Ft. Knox. New units including an Infantry Brigade Combat Team, the Army Human Resources Command, Army Accession's Command, along with many others have or will relocate to Ft. Knox between 2006 and September 2011. In total, there will be an increase of about 2,500 military, more than 2,000 civilians and as many as 1,000 permanent contractors. In addition, about 7,700 family members will also move to Kentucky, meaning the region will gain about 13,000 in population in a short period of time.

Source: <http://governor.ky.gov/pressrelease.htm?PostingGUID={1DEB5093-B562-4780-9D5E-52E01D32CD40}>
(<http://governor.ky.gov/pressrelease.htm?PostingGUID={1DEB5093-B562-4780-9D5E-52E01D32CD40}>)

BUSINESS FIRST

Friday, February 5, 2010

Fort Knox transformation great for region

Business First of Louisville

Citizens of Greater Louisville need to pay more attention to the wonderful things going on in the southwestern part of our region. The transformation going on at Fort Knox in Hardin County will have a significant economic impact on the entire area.

Under the terms of the 2005 Base Realignment and Closure process, Fort Knox lost the Army Armor Center but gained the 3rd Brigade, 1st Infantry Division and the U.S. Army's Human Resources Command.

As a result of these changes, the base's total population will increase from about 45,000 at the beginning of the year to roughly 53,000 as the result of the initiatives.

By 2011, the base will have a net gain of about 5,000 full-time civilian and permanent military personnel. More than 4,200 military personnel, civilians and contractors will work at the base's new 883,180-square-foot Human Resources Center of Excellence when it opens in June. The Army is in the process of hiring 1,500 civilians to work at the facility.

The transformation going on at Fort Knox is great news for the region for several reasons.

Those coming to work at the base will be high-ranking officers and civilians who will have more disposable income than the basic trainees who used to come for temporary training. Many will buy homes, cars and other durable goods across the region.

Area companies and laborers already have benefited from the massive construction that has been going on at the base. Tens of millions of dollars have been spent on building materials, 70 percent coming from suppliers within 100 miles of the base.

During the last year and a half, an average of 650 craft laborers were working each day on base construction projects. That figure doesn't include those workers building the houses, schools and retail businesses going up in the area because of the change.

By 2012, 7,800 new jobs in the region — on and off base — with an annual payroll of \$322 million will result from the changes at Fort Knox. Those jobs will generate about \$25 million in new annual tax revenue for the state. Those are the preliminary findings of an economic impact report being compiled by U of L economist Paul Coomes.

Five years ago, when the BRAC commission was considering which bases should close and which should stay open, there was no guarantee how Fort Knox would fare.

As it turns out, our region has enjoyed an incredible amount of construction during a recession and the influx of thousands of jobs because of the base realignment.

Fort Knox always has played an important role in the region's economy. That role takes on even more importance with the changes occurring. All of us will benefit from the new Fort Knox footprint.

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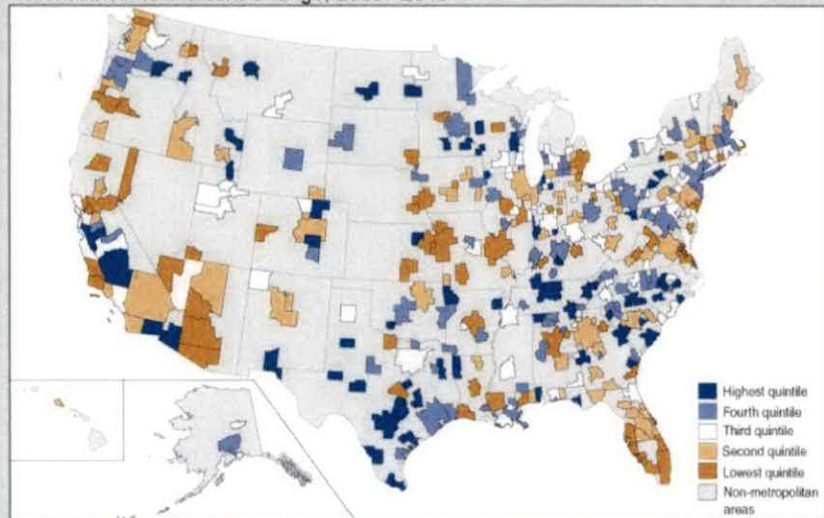
EMBARGOED FOR RELEASE: 8:30 A.M. ET, Tuesday,
 August 9, 2011

BEA 11-40

Personal Income for Metropolitan Areas, 2010

WASHINGTON DC, August 9, 2011 – Personal income rose in 2010 in all but four of the nation's 366 metropolitan statistical areas (MSAs), according to estimates released today by the U.S. Bureau of Economic Analysis. Personal income in the metropolitan portion of the United States rose 2.9 percent in 2010 after falling 1.9 percent in 2009. Personal income growth in 2010 ranged from 10.1 percent in Elizabethtown, Kentucky to -0.9 percent in Grand Junction, Colorado. Inflation, as measured by the national price index for personal consumption expenditures, accelerated to 1.8 percent in 2010 from 0.2 percent in 2009.

Personal Income: Percent Change, 2009 - 2010



U.S. Bureau of Economic Analysis

In 2010, earnings grew 2.3 percent and property income grew 0.6 percent as the metropolitan portion of the United States continued to recover from the recession which ended in June 2009. In 2009, these components of personal income fell 4.0 percent and 6.1 percent, respectively. The growth of personal current transfer receipts (including unemployment compensation and social security benefits) slowed to 7.8 percent in 2010 from 13.7 percent in 2009.

Earnings by industry. Earnings grew in the

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government sector and in 18 out of 21 private industries in 2010. In two of these industries—professional services and the management of companies—the 2010 earnings increase was sufficient for them to recover from the earnings declines in 2008 and 2009. The health care and educational services industries (which are not cyclical) continued to expand in 2010, growing 3.3 percent and 6.2 percent, respectively. In the other 14 private industries that grew in 2010 (including durable goods manufacturing, nondurable goods manufacturing, and finance) earnings grew 2.8 percent (on average) in 2010 after falling 6.5 percent in 2009.

In 2010, earnings continued to decline in the construction and real estate industries. A 4.5 percent decline brought construction earnings to their lowest level since 2001 and a 2.1 percent decline brought real estate earnings to their lowest level in the ten-year history for the data. Earnings also fell 0.1 percent in the utilities industry following a 1.4 percent increase in 2009.

Earnings by MSA. Private-sector earnings grew in 2010 in each of the 15 largest MSAs (accounting for 48 percent of this sector's earnings in the metropolitan portion of the United States). In two of these MSAs—San Jose, California and Washington, D.C.—the rebound in 2010 brought their earnings to new highs after falling in 2008 and 2009. In the other 13 large MSAs, earnings grew 2.8 percent (on average) in 2010 after falling 5.9 percent in 2009.

Among the other 351 MSAs, private-sector earnings grew in 301 metropolitan areas, declined in 46, and remained unchanged in 4. On average, private-sector earnings in these smaller MSAs grew 2.0 percent in 2010 after falling 4.6 percent in 2009.

Among the 20 MSAs with the fastest earnings growth, the mining industry (including oil and gas extraction) contributed more than any other industry to earnings growth in Midland, Texas; Odessa, Texas; and Williamsport, Pennsylvania (in the Marcellus Shale region). The durable goods industry contributed the most to earnings growth in Elkhart, Indiana; Columbus, Indiana; and Oshkosh, Wisconsin.

In the four MSAs having the fastest personal income growth rates in 2010—Elizabethtown, Kentucky; Lawton, Oklahoma; Manhattan, Kansas; and Hinesville, Georgia—government earnings growth, particularly for the military, was strong. In these four MSAs military earnings grew 14 percent or more in 2010.

NOTE.—MSA names in the text are abbreviated; full names are provided in Table 1.

Definitions

5. Respond to the following questions with regards to alternative analysis:

- a. Was a preliminary engineering report prepared for this project?
- b. What were the alternatives considered?
- c. If one was prepared, file a copy of the preliminary engineering report.

ANSWER 5:

- a. Yes. Exhibit 3 (page 231) of HCWD1's application should be considered the Preliminary Engineering Report, which is labeled a "Technical Memorandum"
- b. The Hardin County Regional Water Feasibility Study, commissioned by the Lincoln Trail Regional Water Commission (LTRWC) in 2001, should be considered an exhaustive study of alternatives for supply and treatment for all water systems of the LTRWC.

HCWD1 believes its explanation provided in its application, pages 1 – 5, and Exhibit 1 (Facts for Public Necessity) provide a discussion of alternatives considered, and lack of other alternatives, for HCWD1 to choose other alternatives for raw water and treated or purchased water supplies.

Given its 60 plus year history operating the HCWD1 water system, HCWD1's staff and Board do not believe there are other feasible, cost effective alternatives to supply water to its customers, other than a supplemental purchased water source (which adds to its own PSWTP production source) which we believe the LWC Interconnect Project and Water Purchase Agreement (which agreement has already been approved by the Commission) provide the best alternative for its required and necessary purchased water supply.

- c. See answer to 5.a above.

WITNESS: Mr. Jim Bruce, General Manager, HCWD1