

Exhibit No. _____
Issues: Routing Process,
Routing Study,
Routing Study Addendum
Witness: James G. Puckett
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Sponsoring Party: Grain Belt Express Clean
Line LLC
Case No.: EA-2016-0358
Date Testimony Prepared: August 30, 2016

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO: EA-2016-0358

DIRECT TESTIMONY OF

JAMES G. PUCKETT

ON BEHALF OF

GRAIN BELT EXPRESS CLEAN LINE LLC

August 30, 2016

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1 **I. QUALIFICATIONS**

2 **Q. Please state your name, present position and business address.**

3 A. My name is James G. Puckett. I am the Practice Lead for Geospatial Analysis and
4 Cartography for the Louis Berger Group, Inc. (“Louis Berger”). My business address is
5 565 Taxter Road, Suite 510, Elmsford, New York 10523.

6 **Q. What are your duties and responsibilities as Practice Lead, Geospatial Analysis and
7 Cartography of Louis Berger?**

8 A. I work in the Applied Sciences practice group. In that capacity, I oversee the Geospatial
9 Analysis and Cartography practice, which provides expertise and oversight of GIS services
10 throughout Louis Berger.

11 I am also an environmental scientist and planner by training and experience. I serve
12 as the project manager for Louis Berger for the Grain Belt Express Clean Line transmission
13 project (“Grain Belt Express Project” or “Project”), and as a member of the Routing Team,
14 described below. As a Routing Team member, I was directly involved in the development
15 and analysis of routes, public outreach efforts, coordination with state and federal agencies,
16 comparison of alternatives, preparation of the Missouri Route Selection Study (“Routing
17 Study”) attached as **Schedule JGP-1**, and Missouri Route Selection Study Addendum
18 (“Routing Study Addendum”), which is attached to my testimony as **Schedule JGP -2**.

19 **Q. What is the purpose of your testimony in this docket?**

20 A. I am testifying on behalf of Grain Belt Express Clean Line LLC (“Grain Belt Express” or
21 “Company”), and the purpose of my testimony is to describe the proposed Grain Belt
22 Express Project route in Missouri. My testimony describes in detail the routing process
23 and serves to sponsor the Routing Study and Routing Study Addendum.

1 **Q. Please summarize your education and professional background.**

2 A. My *curriculum vitae* is attached to this testimony as **Schedule JGP-3.**

3 **Q. Have you previously testified before any regulatory commissions?**

4 A. Yes, I have previously provided testimony before the Florida Public Service Commission.

5 **II. OVERVIEW OF THE ROUTING STUDY**

6 **Q. What is the Grain Belt Express Project?**

7 A. As described in more detail in the testimony of Company witness Michael Skelly, the
8 Project is an approximately 780-mile, overhead, multi-terminal ± 600 kilovolt (“kV”) high
9 voltage direct current (“HVDC”) transmission line and associated facilities, running from
10 a new 345 kV substation in Ford County, Kansas to an intermediate delivery point in Ralls
11 County, Missouri, and on to an ultimate delivery point near the Sullivan 345 kV substation
12 in Sullivan County, Indiana.

13 **Q. Please provide an overview of the Routing Study.**

14 A. The Routing Study documents the route selection methodology, public and agency
15 outreach process, and the Proposed Route identification process for the Missouri portion
16 of the Grain Belt Express Project that extends from the Missouri River south of St. Joseph,
17 Missouri on the Kansas/Missouri border to the Mississippi River crossing point near
18 Saverton, south of Hannibal in Ralls County on the Missouri/Illinois border.

19 The overall goal of the Routing Study was to gain an understanding of the
20 opportunities and constraints in the Study Area for the Project, to develop feasible
21 Alternative Routes, to evaluate potential impacts, and to identify a reasonable and sound
22 Proposed Route for the Project. Grain Belt Express defined the Proposed Route as the
23 route that minimizes the overall effect of the transmission line on the natural and human

1 environment and that avoids unreasonable and circuitous routes, unreasonable costs, and
2 minimizes special design requirements.

3 **Q. Who conducted the Routing Study?**

4 A. The Routing Study was conducted by an interdisciplinary Routing Team. Members of the
5 Routing Team have experience in transmission line route planning and selection, impact
6 assessment for natural resources, land use assessment and planning, cultural resource
7 identification and assessment, impact mitigation, and transmission engineering, design,
8 and construction. **Appendix A of Schedule JGP-1** lists the Routing Team members, their
9 business affiliation, and their respective areas of responsibility.

10 **III. DESCRIPTION OF THE ROUTING PROCESS**

11 **a. 2014 Routing effort**

12 **Q. Please describe the Missouri routing process that was utilized in Grain Belt Express’
13 filing 2014 in Case No. EA-2014-0207 (“2014 Case”).**

14 A. The Routing Team employed a process to identify the Proposed Route that included
15 evolutionary and iterative phases of developing routes, reviewing routes with respect to
16 information gathered from state and federal regulatory agencies, community leaders, and
17 the general public, and revising the routes with more specific alignments.

18 Initial route development efforts started with the identification of large area
19 constraints and opportunity features across the entire project Study Area. Examples of
20 large area constraints in Missouri included Pershing State Park, Swan Lake National
21 Wildlife Refuge, Mark Twain Lake and development associated with St. Joseph, Kansas
22 City, Columbia, Jefferson City, and St. Louis. Examples of opportunity features in
23 Missouri included an array of existing linear features including pipeline corridors, electric

1 transmission lines, and section/parcel boundaries. Using this information, the Routing
2 Team developed a range of Conceptual Routes, which were approximate alignments that
3 served to focus the early data gathering, field reconnaissance, and public outreach efforts
4 of the Routing Team.

5 As the Routing Team continued to collect information, coordinate with government
6 agencies, and gather additional information, the assemblage of Conceptual Routes was
7 narrowed and refined. These refinements ultimately eliminated the Conceptual Routes in
8 the southern and central portions of the Study Area from further consideration due to
9 challenges associated with a range of routing constraints, including large areas of federal
10 land ownership, large complexes of reservoirs and recreational lakes, dense and
11 interspersed development, and a lack of suitable crossings of the Mississippi River. The
12 remaining routes extended northeast from Ford County, Kansas, crossed the Missouri River
13 south of St. Joseph, Missouri, crossed the Mississippi River north of St. Louis, and
14 continued to the Sullivan Substation on paths south of Springfield, Illinois.

15 Due to the multi-state nature of the Project, Alternative Routes were first developed
16 to determine the proposed route in Kansas. Once the Proposed Route was selected in
17 Kansas, Potential Routes in Missouri were further refined based on the known location of
18 the Missouri River crossing. These Potential Routes were then presented to public officials
19 and to members of the general public in a series of public open house meetings (“Open
20 Houses”) in Missouri.

21 Following the Open Houses, the Routing Team assembled and reviewed the input
22 that was gathered at the Open Houses and through comments submitted through the Grain
23 Belt Express web site, and revised the Potential Routes. In addition, a review and analysis

1 of the five potential Mississippi River crossing locations was conducted to determine the
2 preferred crossing location. Input from the public and government agencies, as well as
3 engineering and natural resource considerations were factored into the selection of the
4 Mississippi River crossing south of Hannibal. Due to the elimination of the other potential
5 river crossing locations, several Potential Routes were removed from further consideration.
6 A series of nine Alternative Routes was compiled from the remaining Potential Routes for
7 analysis and comparison in the Missouri Siting Study.

8 The Routing Team divided the Alternative Routes into two distinct segments that
9 had common beginning and end points: Segment 1 and Segment 2. Alternative Routes in
10 each segment were compared against one another, and the most reasonable route from each
11 segment was selected for compilation of the Proposed Route. In Segment 1, Alternative
12 Routes A through C were compared and in Segment 2, Alternative Routes D through I
13 were compared.

14 **Q. How was agency input incorporated into the process?**

15 A. The Routing Team coordinated with numerous federal and state agencies and local officials
16 to gather information for the route planning process. Initial agency coordination efforts
17 focused on introductions to the Project, data gathering, and discussions concerning likely
18 permitting and consultation requirements. Discussions aided in the identification of
19 routing constraints and informed the development of initial routing guidelines. A list of
20 the agencies consulted during the process is provided in Section 3 to **Schedule JGP-1**.

21 In addition, agency coordination was an integral component for the selection of the
22 Mississippi River crossing location. The U.S. Fish and Wildlife Service, U.S. Army Corps
23 of Engineers (St. Louis and Rock Island Districts), Missouri Department of Conservation,

1 Missouri Department of Natural Resources, Missouri State Historic Preservation Office,
2 and Illinois Department of Natural Resources were contacted for advice and comment on
3 the five potential Mississippi River crossing locations that were under consideration. The
4 input from these agencies was included in the analysis that resulted in the selection of the
5 Mississippi River crossing south of Hannibal.

6 **Q. How was public input incorporated into the process?**

7 A. The Routing Team led a community outreach program that was designed to educate the
8 public about the purpose and benefits of the Project, inform community leaders and the
9 public about the regulatory process and Project timeline, and gather general comments on
10 the Project and specific information that would refine the siting effort. Company witness
11 Mark Lawlor provides a detailed description of the public outreach process in his direct
12 testimony.

13 Two key components of the public outreach process that related to determining the
14 Proposed Route were Community Leader Roundtables (“Roundtables”) and Open Houses.

15 **Q. Please describe the Roundtable process.**

16 A. The main goal of the Roundtables was to coordinate with and gain valuable information
17 from local leaders in each county in the Study Area. Community leaders included county
18 and municipal elected officials, local government planners, community and business
19 leaders, economic development experts, local utilities and cooperatives, as well as federal
20 and state agency officials. At each meeting, members of the Routing Team presented an
21 overview of the Project and described the routing process. After the presentation, attendees
22 and members of the Routing Team met in small working groups to review an aerial map
23 of the county they represented. Attendees provided information about sensitive features,

1 planned development, and existing infrastructure in their community, and were also
2 encouraged to draw route suggestions on the aerial maps that the Routing Team should
3 consider in the study. In Missouri, 24 Roundtables were held, with more than 250
4 participants attending from more than 40 counties.

5 **Q. What was the purpose of Open Houses?**

6 A. The main goal of the Open Houses was to inform the general public and potentially affected
7 landowners about the Project and to present a series of Potential Routes for their
8 consideration and comment. At the Open Houses, attendees signed in and were given a
9 guided presentation about the Project by members of the Routing Team. At the end of the
10 tour, the Routing Team assisted attendees in locating their property or other features of
11 concern on aerial photography maps displaying the array of Potential Routes under
12 consideration. Attendees were encouraged to submit written comments about their
13 observations, recommendations or concerns. More than 1,200 people attended the 13 Open
14 Houses.

15 Following the Open Houses, the Routing Team assembled and reviewed the input
16 gathered at the public meeting, revised the Potential Routes where necessary, and compiled
17 a series of nine Alternative Routes for detailed analysis and comparison. The Routing
18 Team divided the Alternative Routes into two distinct segments that had common
19 beginning and end points: Segment 1 in western Missouri (A through C) and Segment 2 in
20 central and eastern Missouri (D through I). Alternative Routes in each segment were
21 compared against one another, and the most reasonable route from each segment was
22 selected for compilation of the Proposed Route.

1 **Q. How did the Routing Team analyze the Alternative Routes as part of the process that**
2 **led to the selection of the Proposed Route?**

3 A. The nine Alternative Routes (Alternative Routes A through I) were assessed and compared
4 with respect to their potential impacts on natural resources (water resources, wildlife and
5 habitats, special status species, and geology and soils), human uses (agricultural use,
6 populated areas and community facilities, recreational and aesthetic resources, and cultural
7 resources), and with respect to any noted engineering or construction challenges
8 (transportation, existing utility corridors, other existing infrastructure, and the Mississippi
9 River crossings).

10 From that analysis, the Routing Team recommended a combination of Alternative
11 Routes B and D as the Proposed Route for the Project. This combination of Alternative
12 Routes met the overall goal of minimizing impacts on the natural, human, and historic
13 resources along the route, while best utilizing existing linear rights-of-way and avoiding
14 non-standard design requirements.

15 **Q. Please describe Alternative Route B.**

16 A. Alternative Route B was selected in Segment 1. As shown in Section 6.2 to the Routing
17 Study (**Schedule JGP-1** to my testimony), Alternative Route B parallels a combination of
18 gas pipelines, an existing electric transmission line, and parcel boundaries. Initial
19 alignments cross the eastern floodplain of the Missouri River in Buchanan County and
20 enter the rolling hills beyond along the pipeline. Approximately 3 miles beyond the eastern
21 bluffs of the river, the route turns southeast adjacent to an existing transmission line to
22 avoid residential development along the pipeline and the town of Agency in Buchanan
23 County. The route continues due east from this point eventually joining the pipeline

1 corridor. Alternative Route B has a range of benefits over other Alternatives. It has no
2 residences located within 250 feet of the route centerline, avoids the residential congestion
3 located farther east along the pipeline corridor, and avoids crossing through Agency.
4 Alternative Route B has the least impact on forested areas (including forested riparian and
5 riparian areas) and parallels existing linear infrastructure, thereby reducing fragmentation
6 of potential habitat for the Indiana bat and northern long-eared bat. Alternative Route B
7 also reduces the fragmentation of area land use, by locating the line adjacent to existing
8 utility infrastructure.

9 **Q. Please describe Alternative Route D.**

10 A. Alternative Route D was selected in Segment 2. As shown in Section 6.2.2 to the Routing
11 Study (**Schedule JGP-1**), Alternative Route D is aligned adjacent to existing linear utility
12 infrastructure for a significant portion of its length, paralleling the Rockies
13 Express/Keystone pipelines for 44.6 miles and existing electric transmission lines for
14 another 10.3 miles. Although other Alternative Routes may parallel more existing linear
15 infrastructure, Alternative Route D has the overall fewest residences within 250 and 500
16 feet, reducing impacts to landowners and residences in the area. Alternative Route D is 5
17 miles south of the Swan Lake National Wildlife Refuge in Chariton County, which is an
18 important migratory bird area and wetland complex. In addition, Alternative Route D
19 minimizes impacts to potential Indiana bat and northern long-eared bat habitat by crossing
20 fewer acres of forested habitat. Because Alternative Route D parallels a large extent of
21 existing linear infrastructure, new fragmentation of both habitat and land use will be
22 reduced compared to other Alternative Routes.

1 **Q. Describe how the combination of Alternative Routes B and D compares to the other**
2 **possible Alternative Route combinations.**

3 A. The combination of Alternative Routes B and D to create the Proposed Route is reasonable
4 and sound because the combined route best minimizes the overall effect of the Project on
5 the natural and human environment while avoiding unreasonable and circuitous routes,
6 unreasonable costs, and special design requirements. It was developed by an
7 interdisciplinary team with input from numerous government agencies, local officials, and
8 the general public.

9 **b. Landowner Requested Route Variations**

10 **Q. Please describe the landowner route variation process.**

11 A. Following the selection of the Proposed Route and filing of the Application in 2014, Grain
12 Belt Express had many constructive discussions with landowners along the route regarding
13 the location of the route on their individual properties. In some cases these discussions led
14 to minor revisions in the route, which were reviewed from routing, environmental, and
15 engineering perspectives. Some of these revisions impacted only one landowner's
16 property, while others led to minor shifts on adjacent parcels. These minor revisions were
17 reviewed in the context of updated datasets to ensure that they did not introduce additional
18 impacts to the human or natural environment or violate the Routing Guidelines described
19 in the Missouri Route Selection Study. Revisions from landowner feedback were included
20 in the route shown to stakeholders during the Public Landowner Meetings held in June
21 2016.

22 **Q. Did Grain Belt Express incorporate these variations into the updated Proposed Route**
23 **that it is presenting to the Commission in this proceeding?**

1 A. Yes, 16 variations were incorporated into the Proposed Route. These revisions are
2 described in the Missouri Route Selection Study Addendum, **Schedule JGP-2**. Generally,
3 these revisions involved minor shifts of the alignment to avoid landscape features identified
4 by specific landowners on their property. These variations were typically no more than a
5 few hundred feet from the original alignment. In most instances the overall length of the
6 reroute was less than a mile, however some exceed a few miles in length when that was
7 necessary to avoid adding unnecessary diversions to the route alignment that would create
8 greater impacts.

9 **c. 2016 Routing Update**

10 **Q. Please summarize the 2016 Routing Study Addendum.**

11 A. The Routing Study Addendum describes the process of reviewing the Proposed Route that
12 was filed in the 2014 Case in relation to more current datasets and the public and agency
13 outreach meetings that have occurred since the 2014 Case. The Routing Study Addendum
14 includes a list of the GIS datasets that were updated, a summary of the public landowner
15 meetings and the agency coordination discussions, and the process for reviewing the
16 Proposed Route in the context of the updated information.

17 **Q. Please describe the additional data that was incorporated into the routing update.**

18 A. Many of the publicly available GIS datasets that were used during the initial routing of the
19 Project were updated and reviewed for changes in preparation of the 2016 Routing Study
20 Addendum, which is attached as **Schedule JGP-2. Appendix B** to this addendum contains
21 a complete list of the updated GIS datasets. The Routing Team performed field
22 verifications of the updated datasets along the Proposed Route in May 2016. Additionally,
23 parcel ownership information was updated based on a review of tax cards held with each

1 county tax assessor's office. Tax cards provide information about the legal entity that owns
2 a particular parcel of land.

3 **Q. What was the result of the initial data refresh and review?**

4 A. The initial data refresh indicated that no new landscape features represented by the publicly
5 available datasets would be impacted by the 2014 Proposed Route. At one location in
6 Monroe County an existing transmission line has been rebuilt with a slightly different
7 alignment. In order to maintain a parallel alignment adjacent to the existing line, the
8 Proposed Route has been shifted to match the change in the existing line.

9 The ensuing outreach to federal and state agencies, and to local and regional non-
10 governmental organizations was conducted to make sure that the route did not impact any
11 newly designated or protected features that fall under the authority or area of concern of
12 those entities. In some instances these entities maintain databases of sensitive features
13 (such as threatened species occurrence locations) which are not available publicly.

14 **Q. Please describe the Routing Team's efforts to coordinate with government agencies
15 and non-governmental organizations ("NGO").**

16 A. The Routing Team coordinated with numerous federal and state agencies, and
17 environmental NGO groups to gather information for the route review process. Agency
18 coordination efforts focused on updates on the status of the Project, data gathering, and
19 discussions concerning likely permitting and consultation requirements. Discussions aided
20 in verifying that newly established or identified resources are not impacted by the Proposed
21 Route. A list of the agencies consulted during the preparation of the Missouri Route
22 Selection Study Addendum is provided in Section 2 of **Schedule JGP-2**. Several agencies
23 and NGOs conducted detailed reviews of the Proposed Route to ensure that no new impacts

1 were identified. These reviews were similar in scope to reviews conducted during the
2 original routing effort in Missouri.

3 **Q. Was public input taken into account during this process?**

4 A. Yes. Two primary avenues for public input were used during this process: landowner
5 discussions and public landowner meetings. Discussions with individual landowners along
6 the Proposed Route occurred during the 2014 Case and more recently. Some of these
7 conversations included specific feedback regarding localized impacts on properties that
8 can be ameliorated with micro-siting revisions. A number of these types of revisions are
9 discussed in the Siting Study Addendum, **Schedule JGP-2**.

10 Public landowner meetings were held in each of the eight counties along the
11 Proposed Route. The meetings had two primary objectives, which were to inform
12 landowners of Proposed Route revisions and to ask for comments regarding the Proposed
13 Route in relation to their individual properties. Attendees were encouraged to submit
14 written routing-specific comments during the meetings.

15 **Q. Please discuss the Route modifications that were made to the Proposed Route since
16 the 2014 Case.**

17 A. The Missouri Siting Study Addendum, **Schedule JGP-2**, includes a description of 16
18 revisions to the Proposed Route since the 2014 Case. Fifteen of these revisions resulted
19 from discussions with landowners regarding impacts to specific landscape features on their
20 properties which could be minimized or avoided by minor shifts in the route alignment.
21 One additional revision resulted from a shift in an existing transmission line paralleled by
22 the Proposed Route.

1 The revisions represent localized modifications to the route to improve siting of the
2 Project on specific properties. As a result, the rationale for selecting the Proposed Route
3 presented in the Siting Study, **Schedule JGP-1**, remains applicable and the general level
4 of impacts described in that report still apply. Incorporating the 16 revisions described in
5 the Siting Study Addendum, **Schedule JGP-2**, results in a Proposed Route that is 0.6 miles
6 longer but has 10 fewer residences within 500 feet, crosses fewer parcels, has 11 fewer
7 known archaeological sites within 1,000 feet, and does not introduce significantly different
8 impacts in other areas.

9 **Q. Please identify the Proposed Route that is being presented to the Commission in this**
10 **proceeding.**

11 A. The Proposed Route is comprised of Alternative Route Segments B and D as described in
12 the Routing Study (**Schedule JGP-1**), along with the minor revisions outlined in the
13 Routing Study Addendum (**Schedule JGP-2**).

14 **VI. DESCRIPTION OF THE PROPOSED ROUTE**

15 **Q. Does the Routing Study contain a description of the entire length of the Proposed**
16 **Route?**

17 A. Yes. A general description of the Proposed Route is set forth in Figure 1 of **Schedule JGP-**
18 **2**. Generally, the Proposed Route will begin at a crossing of the Missouri River south of
19 St. Joseph, Missouri and cross through Buchanan, Clinton, Caldwell, Carroll, Chariton,
20 Randolph, Monroe, and Ralls Counties to the proposed crossing location of the Mississippi
21 River south of Saverton, Missouri in Ralls County. The intermediate converter station will
22 be located in Ralls County in proximity to Ameren's Montgomery – Maywood 345 kV
23 transmission line which will facilitate the interconnection to the MISO market.

1 **Q. Did the process of choosing the Proposed Route include compiling a list of all electric**
2 **and telephone lines, railroad tracks and underground facilities in Missouri that the**
3 **Project will cross?**

4 A. Yes. During the comparison of Alternative Routes, the number of electric line crossings,
5 pipeline crossings, and railroad crossings was compared across Alternative Routes. When
6 the Proposed Route was selected, a list of such entities was prepared for each county
7 crossed by the Proposed Route and is attached as Exhibit 3 to the Application.

8 **Q. Given the process followed by the Routing Team, what is your final assessment of the**
9 **Proposed Route for the Grain Belt Express Project?**

10 A. The Proposed Route for the Project is a reasonable and sound route that was derived from
11 a robust route selection process that integrates input from government agencies, local
12 officials, and the general public into the route development, analysis, and selection process.
13 Given the extensive nature of these efforts, I believe the Proposed Route best minimizes
14 the overall effect of the Grain Belt Express transmission line on the natural and human
15 environment while avoiding unreasonable and circuitous routes, unreasonable costs, and
16 special design requirements.

17 **Q. Does this conclude your direct testimony?**

18 A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Grain Belt Express)
Clean Line LLC for a Certificate of Convenience and)
Necessity Authorizing it to Construct, Own, Control,)
Manage, Operate and Maintain a High Voltage, Direct)
Current Transmission Line and an Associated Converter)
Station Providing an Interconnection on the Maywood-)
Montgomery 345 kV Transmission Line)

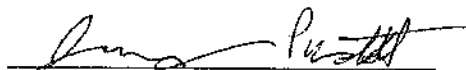
Case No. EA-2016- 0350

AFFIDAVIT OF JAMES G. PUCKETT

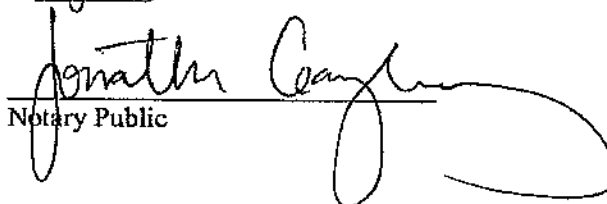
STATE OF New York)
COUNTY OF Westchester) ss

James G. Puckett, being first duly sworn on his oath, states:

1. My name is James G. Puckett. I am the Practice Lead for Geospatial Analysis and Cartography for the Louis Berger Group, Inc.
2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Grain Belt Express Clean Line LLC consisting of 18 pages, having been prepared in written form for introduction into evidence in the above-captioned docket.
3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.


James G. Puckett

Subscribed and sworn before me this 27 day of August, 2016.


Notary Public

My commission expires: March 9, 2019

