

(REFERENCE COPY - Not for submission)

# FCC Form 399: Reimbursement Request

57840 Service: DTV Call **WSLS-TV** Channel: 34 (UHF) Facility Sign:

ID:

File 0000027856

Number:

FRN: 0025636598 Date 12/03

> Submitted: /2018

#### **Applicant** Information

#### **Applicant Name, Type, and Contact Information**

Applicant	Address	Phone	Email	Applicant Type
GRAHAM MEDIA GROUP, VIRGINIA, LLC Doing Business As: d/b/a WSLS-TV	Ricky Williams 401 Third Street SW Roanoke, VA 24011 United States	+1 (540) 512-1542	rwilliams@wsls. com	Limited Liability Company

# Reimbursement Contact Name and Information Reimbursement Contact Information

Applicant	Address	Phone	Email	
[Confidential]				

#### **Preparer** Contact Information

#### **Preparer Contact Name and Information**

Applicant	Address	Phone	Email
William T Godfrey , Jr Consulting Engineers Kessler and Gehman Associates, Inc.	William T. Godfrey, Jr. Kessler and Gehman Associates, Inc. 507-D NW 60th Street Gainesville, FL 32607 United States	+1 (352) 332-3157	jeff@kesslerandgehman. com

#### Broadcaster Information and Transition Plan

Question	Response
Will the station be sharing equipment with another broadcast television station or stations (e.g., a shared antenna, co-location on a tower, use of the same transmitter room, multiple transmitters feeding a combiner, etc.)? If yes, enter the facility ID's of the other stations and click 'prefill' to download those stations' licensing information.	No
Briefly describe transition plan	Replace main and aux transmitters. Replace old analog antenna system with new antenna system designed for assigned channel. Operate existing main through assigned phase. Replace aux antenna and line. Map and analyze tower; design and modify if needed.

#### **Transmitters**

Section	Question	Response
Transmitter Related Expenses	Do you have transmitter related expenses?	Yes

# Auxiliary Transmitter

#### **Add Transmitter Information**

Section	Question	Response
Existing Transmitter Description	Type of change	Purchase New
	Use	Auxiliary (Backup)
	Description of Use	Auxiliary
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is this transmitter currently shared with another station?	No
	Is this transmitter currently in operating condition?	Yes
Existing Transmitter	Manufacturer	
Manufacturer and Type	Model	Diamond
	Year	2007
	Туре	Solid State
	Solid State Cooling	Air Cooled
	Solid State Power Capacity	1.8 kW

# Auxiliary Transmitter

#### **New Transmitter Costs**

Section	Question	Response
New Transmitter	Use	Auxiliary (Backup)
	Change Type	Purchase New
	Is this a request for upgraded equipment?	No
	Manufacturer	
	Model	TBD
	Transmitter Type	Solid State
	Solid State Cooling	Air Cooled
	Solid State Power capacity	1.8 kW
	Justification for New Transmitter	The manufacturer of the existing transmitter advises that the transmitter cannot be retuned to the assigned channel. See attachment.

#### Auxiliary Transmitter

#### **Other Transmitter Costs**

Section	Question	Response
Electrical Service	Service Entrance (3 phases 800A 208V)	No
	Switchgear (industrial 800 amp)	Yes
	Transformer (480V)	Yes
	Power	150 kVA
	Rigid Conduit and Wiring	Yes

	Size	3 inches
	Length	100.0 feet
	Other Electrical Service	No
	Description	N/A
HVAC Service	Does the replacement transmitter require HVAC Service?	No
	Туре	N/A
	Size	N/A
	Other Size	N/A
Transmitter Building Addition/Modification or Leasehold Improvement	Does the Transmitter Building require an addition, modification, other leashold improvement?	No
	Size	N/A
Channel 14 Costs	Is an RF Consulting Engineer needed?	N/A
	Is a channel 14 Mask Filer needed?	N/A
	Is additional field engineering time needed?	N/A
	Number of Days	N/A

Auxiliary Transmitter **Other Transmitter Cost Not Listed** 

**Transmitter** Information not provided.

# **Existing Transmitter Information**

Section	Question	Response
Existing Transmitter Description	Type of change	Purchase New
	Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is this transmitter currently shared with another station?	No
	Is this transmitter currently in operating condition?	Yes
Existing Transmitter	Manufacturer	
Manufacturer and Type	Model	Sigma
	Year	2007
	Туре	Inductive Output Tube
	IOT Power Type	Two
	Power Capacity	30 kW

#### **New Transmitter Costs**

Section	Question	Response
New Transmitter	Use	Primary (Main)
	Change Type	Purchase New
	Is this a request for upgraded equipment?	No
	Manufacturer	
	Model	DCX Paragon 2
	Transmitter Type	Inductive Output Tube
	IOT Power Type	Two
	Power capacity	50 kW
	Justification for New Transmitter	The manufacturer of the existing IOT transmitter advises that the transmitter cannot be retuned to the assigned channel. A new Comark Paragon MSDC IOT transmitter is the basis for a replacement as suggested by the FCC. See attachment.

#### **Other Transmitter Costs**

Section	Question	Response
Electrical Service	Service Entrance (3 phases 800A 208V)	No
	Switchgear (industrial 800 amp)	Yes
	Transformer (480V)	Yes
	Power	150 kVA
	Rigid Conduit and Wiring	Yes
	Size	3 inches
	Length	100.0 feet
	Other Electrical Service	Yes
	Description	Additional electrical service needed for the new transmitter and RF plumbing installation.
HVAC Service	Does the replacement transmitter require HVAC Service?	Yes
	Туре	Heating and Cooling
	Size	10 tons
	Other Size	N/A
Transmitter Building Addition/Modification or Leasehold Improvement	Does the Transmitter Building require an addition, modification, other leashold improvement?	Yes
	Size	700.0 square feet
Channel 14 Costs	Is an RF Consulting Engineer needed?	N/A
	Is a channel 14 Mask Filer needed?	N/A
	Is additional field engineering time needed?	N/A

Number of Days	N/A
. rumber er zage	

# Other Transmitter Cost Not Listed

Name	Description
Additional Interior RF System	Interior RF System Existing Transmitter to Interim Transmission line

#### **Antennas**

Section	Question	Response
Antenna Related Expenses	Do you have antenna related expenses?	Yes

#### **Add Antenna Information**

Section	Question	Response
Existing Antenna Description	Type of change	Purchase New
	Antenna Use	Auxiliary (Backup)
	Description of Use	Auxiliary
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is this antenna currently shared with any other stations?	No
	Is this antenna directional?	Yes
	Is antenna in operating condition?	Yes
	Is antenna located on or in close proximity to an antenna farm?	Yes
Existing Antenna	Class	Full Power
Manufacturer and Type	Mounting	Side Mount
	Antenna position in stack	Not in Stack
	Polarization	Horizontal
	Туре	Slotted Coaxial
	Number of Stations Supported	N/A
	Number of Panels	N/A
	Design power capacity in use	N/A
	Lower Limit	N/A
	Upper Limit	N/A
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	65.0 kW

Manufacturer	
Model	TLP-24H
Year	2001

#### **New Antenna Costs**

Section	Question	Response
New Antenna Description	Use	Auxiliary (Backup)
	Description of Use	Auxiliary
	Change Type	Purchase Nev
	Is this a request for upgraded equipment?	No
	Ownership	Owned
	Owner	N/A
	Is antenna shared?	No
	Is antenna directional?	Yes
	Will antenna be located on or in close proximity to an antenna farm?	Yes
New Antenna	Class	Full Power
Manufacturer and Types	Mounting	Side Mount
	Antenna position in stack	Not in Stack
	Polarization	Horizontal
	Туре	Slotted Coaxial
	Number of Stations Supported	N/A
	Number of Panels/Bays	N/A
	Lower Limit	N/A
	Upper Limit	N/A
	Design power capacity in use	N/A
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	65.0 kW
	Manufacturer	
	Model	TBD

Year	2018
Justification for New Antenna	The existing primary antenna is a single channel slotted coaxial which cannot accommodate the assigned channel.

#### **Other Antenna Costs**

Section	Question	Response
Combiner for Shared Antenna	Do you need a Combiner for a Shared Antenna?	No
	Туре	
	Number of channels supported	N/A
	Frequencies of channels supported	N/A
	Frequency	N/A
	Do you need a combiner output splitter /switcher for dual feed lines?	N/A
Elbow Complex	Do you require the separate purchase of the Elbow Complex?	No
	Broadband or Single Channel?	N/A
	Feed Line Size	N/A
Side Mount Brackets	Do you require the separate purchase of side mount brackets for a high power antenna?	Yes
Pattern Scatter Analysis	Do you require separate purchase of pattern scatter analysis for a side mount high or medium power antenna?	Yes
Sweep Test	Do you require the sweep testing of transmission line and antenna?	Yes

**Other Antenna Cost Not Listed** 

Information not provided.

#### **Existing Antenna Information**

Section	Question	Response
Existing Antenna Description	Type of change	Purchase New
	Antenna Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is the existing antenna shared with another station or stations?	No
	Is the existing antenna directional?	Yes
	Is antenna in operating condition?	Yes
	Is antenna located on or in close proximity to an antenna farm?	Yes
Existing Antenna	Class	Full Power
Manufacturer and Type	Mounting	Side Mount
	Antenna position in stack	Not in Stack
	Polarization	Horizontal
	Туре	Slotted Coaxial
	Number of Stations Supported	N/A
	Number of Panels	N/A
	Design power capacity in use	N/A
	Lower Limit	N/A
	Upper Limit	N/A
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	1000.0 kW

Manufacturer	
Model	TFU- 30DSC-R- C170
Year	2006

#### **New Antenna Costs**

Section	Question	Response
New Antenna	Use	Primary (Main)
Description	Description of Use	N/A
	Change Type	Purchase New
	Is this a request for upgraded equipment?	Yes
	Ownership	Owned
	Owner	N/A
	Is antenna shared?	No
	Is antenna directional?	Yes
	Will antenna be located on or in close proximity to an antenna farm?	Yes
New Antenna	Class	Full Power
Manufacturer and Types	Mounting	Top Mount
	Antenna position in stack	Not in Stack
	Polarization	Elliptical
	Туре	Slotted Coaxial
	Number of Stations Supported	N/A
	Number of Panels/Bays	N/A
	Lower Limit	N/A
	Upper Limit	N/A
	Design power capacity in use	N/A
	Other Antenna Type	N/A
	ERP: (Effective Radiated Power)	930.0 kW
	Manufacturer	
	Model	TFU-30DSC /VP-R C170

Year	2018
Justification for New Antenna	The existing primary antenna is a single channel slot which cannot accommodate the assigned channel. The proposed antenna is epol which is considered an upgrade with a 15% delta in costs according to manufacturer. However, the 399 is budgeted for h-pol.

#### **Other Antenna Costs**

Section	Question	Response
Combiner for Shared Antenna	Do you need a Combiner for a Shared Antenna?	No
	Туре	
	Number of channels supported	N/A
	Frequencies of channels supported	N/A
	Frequency	N/A
	Do you need a combiner output splitter /switcher for dual feed lines?	N/A
Elbow Complex	Do you require the separate purchase of the Elbow Complex?	Yes
	Broadband or Single Channel?	Single Channel

	Feed Line Size	4 1/16 inches inches
Side Mount Brackets	Do you require the separate purchase of side mount brackets for a high power antenna?	Yes
Pattern Scatter Analysis	Do you require separate purchase of pattern scatter analysis for a side mount high or medium power antenna?	No
Sweep Test	Do you require the sweep testing of transmission line and antenna?	Yes

#### **Other Antenna Cost Not Listed**

Name	Description
Mounting Support Pole	Required for top mounting main antenna (first priority station)

Transmission Seffien	Question	Response
Transmission Line Related Expenses	Do you have transmission line related expenses?	Yes

# Auxiliary Transmission

# **Add Transmission Line**

Section Section	Question	Response
Existing Transmission Line Description	Type of change	Utilize Existing
	Use	Auxiliary (Backup)
	Description of Use	Auxiliary
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is this transmission currently shared with any other stations?	No
	Is Transmission Line in operating condition?	Yes
Existing Transmission	Manufacturer	ERI
Line Manufacturer and Type	Туре	Flexible Air
	Diameter	Other
	Other Diameter	2 1/4 inches
	Segment Length	N/A
	Other Segment Length	N/A
	Number of parallel runs	1
	Length	200 feet per run

# Auxiliary Transmission

# Other Transmission Line Expenses Not Listed

n <mark>Laine</mark>	Description
Sweep Tests	Sweep test to verify performance on assigned channel.

# Primary Transmission Line

#### **Existing Transmission Line**

Section	Question	Response
Existing Transmission Line Description	Type of change	Purchase New
	Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Owner	N/A
	Site	N/A
	Is the existing transmission line shared with another station or stations?	No
	Is Transmission Line in operating condition?	Yes
Existing Transmission	Manufacturer	
Line Manufacturer and Type	Туре	Rigid
	Diameter	4 1/16 inches
	Other Diameter	N/A
	Segment Length	19 1/2 inches
	Other Segment Length	N/A
	Number of parallel runs	1
	Length	225 feet per run

#### **New Transmission Line**

Primary Transmissio

	New Transmission Line		
OI	Section	Question	Response
	New Transmission Line Costs	Use	Primary (Main)
		Description of Use	Primary
		Change Type	
		Is this a request for upgraded equipment?	No
		Туре	Rigid
		Diameter	6 1/8 inches
		Other Diameter	N/A
		Segment Length	20 inches
		Other Segment Length	N/A
		Number of parallel runs	1
		Length	
		Justification for New Transmission Line	line for top mount antenna must be larger diameter to achieve assigned ERP. This must be done to recover lost coverage area since the station will receive in excess of

# Other Transmission Line Expenses Not Listed

Primary
Transmission of provided.

# Tower Equipment And Rigging Costs

Section	Question	Response
Tower Equipment or Rigging Costs Changes	Do you have tower equipment or rigging costs changes?	Yes

### Primary Tower

# **Existing Tower**

Section	Question	Response
Existing Tower Description	Type of change	Modify Existing
	Tower Use	Primary (Main)
	Description of Use	N/A
	Ownership	Owned
	Is this tower consider Complex?	Terrain Constrained
	Is this tower currently shared with any other stations?	No
	One or more FM, AM or TV radio broadcaster(s)	N/A
	Others Types of Users	N/A
	Is tower documented for structural analysis?	Yes
	Is tower compliant with Rev G?	No
Existing Tower Structure	Do you have a tower registration number?	Yes
Registration	ASR Number	1024381
Coordinates (NAD83 ( North American Datum of	Latitude (NAD83)	37° 12' 03.3" N-
1983))	Longitude (NAD83)	080° 08' 52.8" W-
	Overall Structure Height	242.78 feet
	Support Structure Height	170.93 feet

Ground Elevation Above Mean Sea Level (AMSL)	3720.10 feet
Structure Type	TOWER - Free Standing or Guyed Structure
Tower Owner	Graham Media Group, Virginia, LLC
Date Constructed	01/01/1980

#### Primary Tower

#### **Tower Modification Costs**

Section	Question	Response
Engineering Study	Please what type of engineering study is required, if any:	Study needed for documented tower
Tower Reinforcements	Please select whether tower reinforcements are needed:	Serious Reinforcements needed

#### Primary Tower

#### **Tower Rigging Costs**

Section	Question	Response
Tower Rigging Costs	Complex Tower	Terrain constrained
Helicopter Services Required	Are helicopter services required?	Yes

#### Primary Tower

#### **Other Tower Expenses Not Listed**

Information not provided.

Outside Professional

Section	Question	Response
Services Costs Outside Project Management Services	Do you require outside project management services?	Yes
	Number of Hours	600
	Explanation	It will be necessary to schedule and coordinate multiple vendors, complete progress reports, and update Schedule 399. Station does not have available personnel or personnel trained in project management for such complex projects.
Outside RF consulting Engineering Services	Perform engineering study for new channel assignment and antenna development	Yes
	Prepare engineering section of Form FCC Construction Permit Application	Yes
	For Auxiliary Facility	Yes
	For Main Facility	Yes
	Prepare engineering section of Form FCC License to Cover Application	Yes
	For Auxiliary Facility	Yes
	For Main Facility	Yes
	Prepare request for Special Temporary Authority	Yes

	Quantity	2
	Do you have Distributed Transmission System engineering services?	N/A
	Critical Facility	N/A
	Terrain-Shielded Facility	N/A
Attorney and Other Outside Consulting	Prepare and file Form FCC Construction Permit Application	Yes
Services	For Auxiliary Facility	Yes
	For Main Facility	Yes
	Prepare and file Form FCC License to Cover Application	Yes
	For Auxiliary Facility	Yes
	For Main Facility Yes	Yes
	Prepare request for Special Temporary Authority	Yes
	Quantity	2
	NEPA Section 106 environmental review	Yes
	Environmental Assessment	Yes
	ASR Modification	Yes
	FAA Consultation (including preparation of FAA Form 7460)	Yes
	Negotiation of Lease and other Matter for Shared Locations	No
	Prepare or Review FCC Form 399 for Reimbursement	Yes
	Address transition timing and coordination issues w/ other stations and wireless providers	Yes
RF Field Engineering Services	Comprehensive coverage verification via field study	Yes
	RF exposure measurements	Yes
	Additional Field Engineering Service	Yes

Number of Days	45
Justification	It will be necessary to survey the site, plan the equipment, develop specifications for purchasing, and oversee multiple vendor RF projects. Station does not have available personnel or personnel trained in such services.

#### Outside Professional

# Other Professional Services Expenses Not Listed

Services Costs	Description
Other Engineering Services	Fewer Project Management "PM" tasks are required & Other Engineering Services "OES" are required, therefore the PMthe PM total has been reduced to 600 hrs (\$90,000 at \$150/hr), & a new OES category has been created & funded with the money removed from PM.
Other Legal Services	Other Legal Services related to the DTV Repack
Architectural and Engineering	Architectural and Engineering for New Transmission Facility. See Quote attached to Osborn inv 29014

# Other Expenses

Section	Question	Response
AM Pattern Disturbance	Is an Impact Study needed?	No
	Is Remediation needed?	No
Facility Expenses	Name	N/A
	Other Distributed Transmission System Expenses Not listed	N/A
	Name	N/A
	Is Notification of a Medical Facility required as a result of DTV broadcasting?	Yes
Permit and Filing Costs	Local Zoning	No
	Non-zoning permits	Yes
	BLM or NFS Coordination	No
	FCC Construction Permit Minor Change	Yes
	FCC License to Cover Application	Yes
	FCC Special Temporary Authority Application	Yes
Other Miscellaneous Expenses	Does this relocation require paying Disposal Costs (for equipment and other waste, net of any salvage value)?	Yes
	Does this relocation require Equipment Delivery or Handling Charges not otherwise included in individual item costs?	Yes
	Does this relocation require Equipment Storage?	Yes
	Does this relocation require the Development and Airing of an Announcement regarding an upcoming channel change?	Yes
	Does this relocation require MVPD  Notification of a Channel Change?	Yes

Other Expenses Not Listed

**Expenses** Information not provided.

# **Cost Information**

#### **Transmitters**

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Primary Transmitter DCX Paragon 2	\$1,373,450.00	\$1,801,470.00		\$258,923.83	
Additional Interior RF System	\$140,000.00	\$140,000.00	N/A	\$750.00	N/A
Other Building Addition Size: 700.0	\$50,000.00	\$50,000.00	Need pad for new heat exchangers and beam supplies and also need ice shield.	\$17,307.32	See attached Osborn Engineering Quote and summary page for additional details.
Switchgear - industrial 800 amp	\$38,200.00	\$36,300.00	N/A	N/A	N/A
Two IOT system (50 kW)	\$954,000.00	\$1,388,470.00	This is the cost for a new 2-tube, DCX Paragon-2 MSDC-IOT digital UHF transmitter from the most recent Comark price list.	\$233,750.00	N/A
Transformer 3 phase /480v - 150 KVA	\$25,550.00	\$24,300.00	N/A	N/A	N/A

3" Rigid Conduit and Wiring (Cost per foot)	\$5,200.00	\$4,900.00	N/A	N/A	N/A
Other Electrical Service: Additional electrical service needed for the new transmitter and RF plumbing installation.	\$100,000.00	\$100,000.00	N/A	\$7,116.51	See attached Osborn Engineering Quote and summary page for additional details.
10 Ton system	\$60,500.00	\$57,500.00	N/A	N/A	N/A
Auxiliary Transmitter TBD	\$194,950.00	\$185,500.00		\$20,141.25	
UHF - Air Cooled Solid State Transmitter 1 - 2.5 kW	\$126,000.00	\$120,000.00	N/A	\$20,141.25	N/A
Switchgear - industrial 800 amp	\$38,200.00	\$36,300.00	N/A	N/A	N/A
Transformer 3 phase /480v - 150 KVA	\$25,550.00	\$24,300.00	N/A	N/A	N/A
3" Rigid Conduit and Wiring (Cost per foot)	\$5,200.00	\$4,900.00	N/A	N/A	N/A
Sub-total	\$1,568,400.00	\$1,986,970.00	N/A	\$279,065.08	N/A
Total for all systems	\$4,788,311.00	\$4,827,135.90	N/A	\$1,076,371.03	N/A

# Components

Actual Information  Description	File Name	
Description	riie Naiile	
Additional Interior RF		
System	Component Description:	Developed a
		Solution for
		Transmitter & Mask
		Filter on New
		Channel - Also See
		attached "KGA
		Quote"
	Amount:	\$750.00
Other Building Addition		
Size: 700.0	Component Description:	Inv 1034840 WSLS
		Professional
		Services
		UL20180511jgv1
	Amount:	\$494.50
	Component Description:	Osborn inv #25404
		Facility Building
		Survey and
		Condition
		Assessment
	A	UL20181203jgv3
	Amount:	\$5,375.00
	Component Description:	Osborn inv #28226
	r	Prof Srvs 1-27-18
		to 2-23-18
		UL20181101jgv1
	Amount:	\$11,191.82
	Component Description:	Osborn inv #29392
		In house printing
		UL20181101jgv1
	Amount:	\$246.00
Switchgear - industrial 800	Information not provided.	
amp		

Two IOT system (50 kW)	Component Description	Inv: WSLS
	Component Description:	THU9EVO-24 transmitter 25% down pmt
	Amount:	UL20180312 \$233,750.00
Transformer 3 phase/480v - 150 KVA	Information not provided.	
3" Rigid Conduit and Wiring (Cost per foot)	Information not provided.	
Other Electrical Service: Additional electrical service needed for the new transmitter and RF plumbing installation.	Component Description:	Osborn inv #25404 Facility Elec Survey and Condition Assessment UL20181203jgv3
	Amount:	\$6,616.51
	Component Description:	WSLS Osborn inv #29669 Prof Srvs through 7-29-18 UL20180726jgv1
	Amount:	\$60,252.10
	Component Description:	Developed a Solution for Electrical and HVAC on New Channel - Also See attached "KGA Quote"
	Amount:	\$500.00
10 Ton system	Information not provided.	

UHF - Air Cooled Solid State Transmitter 1 - 2.5 kW	Component Description:	Inv: WSLS TMU9-3 aux transmitter 25%
		down pmt UL20180313
	Amount:	\$20,141.25
Switchgear - industrial 800 amp	Information not provided.	
Transformer 3 phase/480v - 150 KVA	Information not provided.	
3" Rigid Conduit and Wiring (Cost per foot)	Information not provided.	

#### **Antennas**

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Primary Antenna TFU-30DSC /VP-R C170	\$491,966.00	\$443,549.00		\$344,319.30	
Sweep test of existing antenna	\$6,730.00	\$6,400.00	N/A	\$2,880.00	N/A
Elbow complex, single channel, at antenna input, per 4 1/16. feedline (if needed)	\$9,570.00	\$12,383.00	Elbow complex is actually 6-1 /8". See attached Dielectric quote.	\$11,144.70	N/A
Side mount brackets for high power antennas (if not included in antenna base cost)	\$23,150.00	\$21,750.00	N/A	\$9,787.50	N/A

Pattern	\$5,260.00	\$5,000.00	N/A	N/A	N/A
scatter					
analysis for					
side mount					
high/med					
power antennas					
(if not					
included in					
antenna					
base cost)					
Side mount	\$23,150.00	\$22,000.00	N/A	N/A	N/A
brackets					
for high					
power					
antennas					
(if not included in					
antenna					
base cost)					
UHF -	\$89,400.00	\$85,000.00	N/A	N/A	N/A
Lower					
Power					
Side					
Mount,					
One					
station					
antenna -					
medium					
power (50- 200 kW),					
horizontally					
polarized					
	<b>*</b>	Φο 400 00	NI/A	NI/A	N/A
Sween test	\$6 730 00	\$6 400 nn	IXI/A	ΙΝ/ Δ	
Sweep test of existing	\$6,730.00	\$6,400.00	N/A	N/A	IN/ <i>F</i>

UHF -	\$89,400.00	\$28,816.00	***System	\$28,816.00	N/A
Lower			Notice:		
Power			Estimate		
Side			adjusted and		
Mount,			locked		
One			because line		
station			has been		
antenna -			superseded.		
medium			***		
power (50-					
200 kW),					
horizontally					
polarized					
Sub-total	\$705,906.00	\$590,765.00	N/A	\$373,135.30	N/A
Total for	\$4,788,311.00	\$4,827,135.90	N/A	\$1,076,371.03	N/A
all					
systems					

Actual Information Description	File Name	
Sweep test of existing antenna	Component Description:	Inv MAN00430 WSLS Sweep tests 45 perc pmt 2
	Amount:	UL20180713jgv1 \$2,880.00
Elbow complex, single channel, at antenna input, per 4 1/16. feedline (if needed)	Component Description:	Inv MAN00325 WSLS Elbow Complex
	Amount:	UL20180423jg \$5,572.35
	Component Description:	Inv MAN00430 WSLS Elbox comp 45 perc pmt 2 UL20180713jgv1
	Amount:	\$5,572.35

Cido mount brooksts for		
Side mount brackets for high power antennas (if not included in antenna base cost)	Component Description:	Inv MAN00430 WSLS Side mt
,		brckts 45 perc pmt
	Amount:	2 UL20180713jgv1 \$9,787.50
	Amount.	ψ3,707.30
Mounting Support Pole		
	<b>Component Description:</b>	Inv MAN00430
		WSLS Support pole
		45 perc pmt 2
	Amaunt	UL20180713jgv1
	Amount:	\$46,800.00
	Component Description:	WSLS Die inv
	- zpaam zadanpuom	#MAN00607 Mt
		pole mod 45 pct
		pmt 2
		UL20181105jgv2
	Amount:	\$26,557.20
	Common and Docarindian	WOLC Dia inv
	Component Description:	WSLS Die inv #MAN00606 Mt
		pole mod 45 pct
		pmt 1
		UL20181105jgv2
	Amount:	\$26,557.20
UHF - High Power Top		
Mount (200-1000 kW), One station antenna ,	Component Description:	Inv MAN00430
elliptically or circularly		WSLS Main ant 45
polarized		perc pmt 2
•	Amazinti	UL20180713jgv1
	Amount:	\$80,562.60
	Component Description:	Inv MAN00325
	- Simpononi Dosoriptioni	WSLS TFU-30DSC
		VP-R C170 etc
		Main Antenna
		Main Antenna UL20180423jg

Pattern scatter analysis for side mount high/med power antennas (if not included in antenna base cost)	Information not provided.	
Side mount brackets for high power antennas (if not included in antenna base cost)	Information not provided.	
UHF - Lower Power Side Mount, One station antenna - medium power (50-200 kW), horizontally polarized	Information not provided.	
Sweep test of existing antenna	Information not provided.	
UHF - Lower Power Side Mount, One station antenna - medium power (50-200 kW), horizontally polarized	Component Description:	Inv: WSLS TLP-24H (C)VP aux antenna 50 percent down pmt UL20180316
	Amount:	\$28,816.00

#### **Transmission Line**

Where no predetermined cost estimate is available, any estimate provided will also become the predetermined cost (displayed in italics).

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Primary Transmission Line	\$54,540.00	\$51,840.00		\$49,459.50	
Rigid Transmission Line - copper, 6 1/8"	\$54,540.00	\$51,840.00	N/A	\$49,459.50	N/A
Auxiliary Transmission Line	\$6,400.00	\$6,400.00		\$0.00	
Sweep Tests	\$6,400.00	\$6,400.00	N/A	N/A	N/A
Sub-total	\$60,940.00	\$58,240.00	N/A	\$49,459.50	N/A
Total for all systems	\$4,788,311.00	\$4,827,135.90	N/A	\$1,076,371.03	N/A

<b>Actual Information</b>		
Description	File Name	

copper, 6 1/8"		
• • •	Component Description:	Inv MAN00325
		WSLS
		Transmission Line
		UL20180423jg
	Amount:	\$20,643.53
	Component Description:	Die inv #202001
		Nitrogen generator
		UL20181102jgv1
	Amount:	\$8,172.44
	Component Description:	Inv MAN00430
		WSLS Trans line 45
		perc pmt 2
		UL20180713jgv1
	Amount:	\$20,643.53
Sweep Tests	Information not provided.	

#### **Tower Equipment and Rigging Costs**

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cost Justification
Primary Tower TOWER	\$1,735,600.00	\$1,377,970.00		\$231,325.56	
Serious tower reinforcement /modifications	\$1,052,000.00	\$700,000.00	N/A	\$97,667.06	N/A
Complex Tower (includes, for example, those with candelabras and/or stacked antennas)	\$421,000.00	\$400,000.00	N/A	\$105,688.50	N/A
Tower Helicopter Lift	\$250,000.00	\$250,000.00	N/A	N/A	N/A
Structural engineering tower load study for well documented tower	\$12,600.00	\$27,970.00	The tower studies and modifications have turned out to be more complicated than originally anticipated (20180815jgv1)	\$27,970.00	The initial tower study was performed, and a potential issue with the top plate on the tower was discovered which required additional analysis.
Sub-total	\$1,735,600.00	\$1,377,970.00	N/A	\$231,325.56	N/A

Total for all	\$4,788,311.00	\$4,827,135.90	N/A	\$1,076,371.03	N/A
systems					

Actual Information		
Description	File Name	
Serious tower reinforcement/modifications	Component Description:	ERI inv #WSLS-TV- 003 Tower mods 50 pct pay 1
	Amount:	UL20181102jgv1 \$54,360.00
	Component Description:	WSLS ERI inv #WSLS-002 Tower work 50 perc dp UL20180731jgv2
	Amount:	\$22,664.56
	Component Description:	ERI inv #WSLS-001 Tower work 50 perc pmt 1 UL20181101jgv1
	Amount:	\$20,642.50
Complex Tower (includes, for example, those with candelabras and/or stacked antennas)	Component Description:	ERI inv #WSLS-001- 1 Ant and line install 50 pct pmt 1 UL20181127jgv2
	Amount:	\$105,688.50
Tower Helicopter Lift	Information not provided.	
Structural engineering tower load study for well documented tower	Component Description:	Inv: WSLS Structural Analysis UL20180305
	Amount:	\$4,500.00

Component Description: Coordinate Tower

Modifications - Also See Attached "KGA

Quote"

**Amount:** \$1,250.00

Component Description: Develop an

Upgrade or Replacement solution for Tower -Also See Attached "KGA Quote"

**Amount:** \$750.00

Component Description: Inv: WSLS Tower

Data Collection UL20180402 \$2,720.00

**Amount:** \$2,720.00

Component Description: WSLS Malouf inv

#1805084V3

Structural Analysis UL20180815jg v1

**Amount:** \$3,500.00

Component Description: Coordinate Tower

mapping & analyses
- Also See Attached
"KGA Quote"

**Amount:** \$750.00

Component Description: Inv 1805084V1

WSLS Mod Design and Structural Analysis

UL20180424jg v1

**Amount:** \$7,500.00

Component Description: WSLS Malouf inv

#1805084V4

Structural Analysis UL20180816jg v1

**Amount:** \$7,000.00

#### **Outside Professional Services**

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Cos Justificatio
Outside Professional Services	\$522,275.00	\$618,605.90		\$143,385.59	
Architectural and Engineering	\$68,350.00	\$68,350.00	Architectural and Engineering for New Transmission Facility. See Quote attached to Osborn inv 29014	\$8,967.04	N/A
Other Legal Services	\$1,000.00	\$1,000.00	Other Legal Services related to the DTV Repack	\$68.40	N/A

Other Engineering Services	\$97,500.00	\$97,500.00	Fewer Project Management "PM" tasks are required & Other Engineering Services "OES" are required, therefore the PM total has been reduced to 600 hrs (\$90,000 at \$150/hr), & a new OES category has been created & funded with the money removed from PM.	\$75,640.00	N/A
Additional Field Engineering Service, 45 Days	\$90,000.00	\$90,000.00	N/A	\$7,200.00	N/A
Comprehensive coverage verification via field study, if needed	\$84,200.00	\$80,000.00	N/A	\$0.00	N/A
FAA consultant, including cost of preparing FAA Form 7460 (Notice of Proposed Construction), if needed for height increase	\$2,105.00	\$2,000.00	N/A	\$550.00	N/A

ASR modification (prepare FCC Form 854)	\$2,105.00	\$2,000.00	N/A	N/A	N/A
Environmental Assessment, if triggered by NEPA Section 106 review or for certain structures over 450 feet	\$10,520.00	\$10,000.00	N/A	N/A	N/A
NEPA Section 106 environmental review, if needed	\$6,310.00	\$6,000.00	N/A	N/A	N/A
Attorney Fees - Prepare and File FCC Form 2100 (main), License to Cover Application	\$2,365.00	\$2,250.00	N/A	N/A	N/A
Attorney Fees - Aux Antenna, prepare and File Form 2100 Construction Permit or License Application	\$4,210.00	\$4,000.00	N/A	N/A	N/A
Attorney Fees - Prepare and File FCC Form 2100 (main), Construction Permit Application	\$5,260.00	\$5,000.00	N/A	N/A	N/A
Prepare request for Special Temporary Authorization	\$4,100.00	\$3,000.00	N/A	N/A	N/A

RF Consulting Engineer Fees- Aux Antenna: Prepare engineering section of FCC Form 2100, License to Cover Application	\$1,580.00	\$1,500.00	N/A	N/A	N/A
Prepare engineering section of FCC Form 2100 (main), License to Cover Application	\$1,580.00	\$1,500.00	N/A	N/A	N/A
RF Consulting Engineer Fees- Aux Antenna: Prepare engineering section of FCC Form 2100, Construction Permit Application	\$2,105.00	\$2,000.00	N/A	N/A	N/A

the transition  RF Exposure  Measurements	\$21,050.00	\$20,000.00	N/A	N/A	N/A
Project management of	\$94,800.00	\$187,500.00	N/A	\$26,749.25	N/A
			\$1,295.00		
			60781604		
			Burling		
			Covington		
			shortly:		
			applied		
			which will be		. oquilot
			invoice		required
			following 4th		has bee
			component plus the		anticipate
form			this		that originall
reimbursement			applied to		beyond
review			invoices		assistand
Prepare and or	\$2,630.00	\$5,505.90	See 3	\$4,210.90	Legal
			reimbursed.		
			be		
			facilities will		
			expanded		
			window for		
			priority		
			the 1st		
			reasonably incurred in		
			where costs		
			DA 17-106		
			pursuant to		
			window		
			priority filing		
			the 1st		
			facilities in		
			expansion		
Application			for		
Permit			and \$3,000		
Construction			application		
(main),			CP		
Form 2100			initial 90-day		
engineering section of FCC			the 1% expansion		
Prepare	\$3,155.00	\$6,000.00	\$3,000 for	\$6,000.00	N/A

Perform	\$7,360.00	\$14,000.00	\$7,000 for	\$14,000.00	N/A
engineering	ψ1,300.00	ψ14,000.00	the 1%	ψ14,000.00	IN//A
study for new			expansion		
channel			initial 90-day		
assignment			CP		
and antenna			application		
development			and \$7,000		
acvelopment			for		
			expansion		
			facilities in		
			the 1st		
			priority filing		
			window		
			pursuant to DA 17-106		
			where costs		
			reasonably incurred in		
			the 1st		
			priority window for		
			expanded		
			facilities will		
			be reimbursed.		
			reimbursea.		
Address	\$2,630.00	\$2,500.00	N/A	N/A	N/A
transition					
timing and					
coordination					
issues w/ other					
stations and					
wireless					
Attorney Fees -	\$7,360.00	\$7,000.00	N/A	N/A	N/A
Prepare and	+ ,	+ ,			•
File request for					
Special					
Temporary					
Authorization					
Sub-total	\$522,275.00	\$618,605.90	N/A	\$143,385.59	N/A
Total for all systems	\$4,788,311.00	\$4,827,135.90	N/A	\$1,076,371.03	N/A

Actual Information	
Description	File Name

Architectural and		
Engineering	Component Description:	Osborn inv #29014
		Prof Srvs thru 4-27-
		18 UL20181105jgv1
	Amount:	\$8,967.04
Other Legal Services		
	Component Description:	WSLS Covington
	·	inv #60812707
		Review and file
		2018 Q2 Progress
		Report
		UL20181019jgv1
	Amount:	\$68.40
Other Engineering Services		
	Component Description:	Inv 947-75 WSLS
		Actual Cost
		UL20180705jgv1
	Amount:	\$1,687.50
	Component Description:	Inv 947-88 WSLS
		OES Jan18 - Jun18
	Amazont	UL20180720jgv1
	Amount:	\$44,325.00
	Component Description:	KGA inv #947-113
		OES Jul18 - Oct18
		UL20180720jgv1
	Amount:	\$27,400.00
	Component Description:	KGA inv #947-104
		Actual Cost invs
		180607 - 180905
		UL20180720jgv1
		\$2,227.50

Additional Field Engineering Service, 45 Days

Additional Field **Component Description:** 

> Engineering Services (On Site

Equipment

inventory & facilities survey) - Also see Attached "KGA

Quote"

\$5,400.00 Amount:

**Component Description:** Inv: WSLS R&S

> manufacturer visit UL20180316

Amount: \$1,800.00

**Component Description:** Inv 947-49 WSLS

> CAS planning procurement and oversight; site visit UL20180412jg

Amount: \$5,400.00

**Component Description:** Inv: WSLS GatesAir

> manufacturer visit UL20180316

\$1,800.00 Amount:

Comprehensive coverage verification via field study, if needed

**Component Description:** Partial Completion

of Comprehensive

coverage

verification via field study - see "KGA Quote" for fixed price fee.

\$38,200.00

Amount:

Component Description:  Amount:	Inv 947-71 WSLS FAA 7460 UL20180531jgv1 \$550.00
Information not provided.	
	Information not provided.  Information not provided.

RF Consulting Engineer Fees- Aux Antenna: Prepare engineering section of FCC Form 2100, Construction Permit Application  Prepare engineering section of FCC Form 2100 (main), Construction Permit Application  Component Description:  Amount:  Component Description:	
section of FCC Form 2100 (main), Construction Permit Application  Component Description:  Amount:	
	Engineering Portion of 1% Expansion CP application for Initial 90-Day Filing Window - Also see "KGA Quote".
Component Description:	
	Expanded Facilities - Prepare engineering section of Form 301 FCC First Priority Filing Window CP Application to compensate for IX in excess of 1%. Reimbursable pursuant to DA 17- 106.
Amount:	\$3,000.00

Prepare and or review		
reimbursement form	Component Description:	Prepared FCC 399 reimbursement form (Initial Filing) - Also see attached "KGA Quote"
	Amount:	\$2,500.00
	Component Description:	Covington inv #60775905 Various legal UL20181120jgv3
	Amount:	\$1,197.90
	Component Description:	Inv: WSLS Reimburse review etc UL20180305
	Amount:	\$513.00
	Component Description:	Inv: WSLS Various legal UL20180329 rev'd 20180329jg
	Amount:	\$1,197.90
	Component Description:	Covington inv #60781604 Various legal UL20181127jgv2
	Amount:	\$1,070.00

Project management of the transition

Component Description: Inv 60768465

WSLS Various legal UL20180514 jgv1

**Amount:** \$1,559.25

Component Description: Inv 947-65 WSLS

Proj Mgt 2017 Aug -

Dec

UL20180625jgv2

**Amount:** \$20,190.00

Component Description: Inv 947-81 WSLS

2018Q2 387 UL20180713jgv1

**Amount:** \$300.00

**Component Description:** KGA inv #947-81

Form 387 2018 Q2 UL20180720jgv1

**Amount:** \$300.00

Component Description: Inv: WSLS 2017Q4

387 UL20180302

**Amount:** \$300.00

Component Description: Project

Management - Also see attached "KGA Quote" Hours: 23-1 /3 Rate: \$150/hr Time Period: 8/1/17

- 8/31/17 \$3,500.00

Amount:

**Component Description:** 

Inv: WSLS 2017Q3 387 UL20180302

**Amount:** \$300.00

Component Description: Inv 947-57 WSLS

2018Q1 387 UL20180622jgv1

**Amount:** \$300.00

	Component Description:  Amount:	KGA inv #947-109 Form 387 2018 Q3 UL20180720jgv1 \$300.00
RF Exposure Measurements	Information not provided.	
Perform engineering study for new channel assignment and antenna development	Component Description:  Amount:	1% Expansion Engineering Studies and Coordination for Initial 90-CP application - Also see "KGA Quote". \$7,000.00
	Component Description:  Amount:	Expanded Facilities - Performed engineering studies for increased coverage and antenna development in 1st Priority Filing Window to compensate for IX in excess of 1%. Reimbursable pursuant to DA 17- 106. \$7,000.00
Address transition timing and coordination issues w/ other stations and wireless	Information not provided.	
Attorney Fees - Prepare and File request for Special Temporary Authorization	Information not provided.	

#### **Other Expenses**

Description	Predetermined Cost Estimate	Estimated Cost	Estimated Cost Justification	Actual Cost	Actual Co
Other Expenses	\$195,190.00	\$194,585.00		\$0.00	
Develop and air announcement of upcoming channel change	\$100,000.00	\$100,000.00	It is expected that the station will spend at least \$100,000 developing and airing the required announcements.	N/A	N/A
Equipment Storage	\$10,000.00	\$10,000.00	N/A	N/A	N/A
Equipment Delivery and Handling Charges	\$50,000.00	\$50,000.00	N/A	N/A	N/A
Disposal Costs (for equipment and other waste, net of any salvage value)	\$10,000.00	\$10,000.00	N/A	N/A	N/A
FCC Filing Fees - Special Temporary Authorization request	\$195.00	\$190.00	An STA will be required for interim operation while the main facility is being builtout.	N/A	N/A
DTV Medical Facility Notification	\$11,550.00	\$11,000.00	N/A	N/A	N/A

FCC Filing Fees - Form 2100 minor change CP application	\$1,110.00	\$1,070.00	A minor change of CP application may be required after structural analysis results are received.	N/A	N/A
FCC Filing Fees - Form 2100 license to cover application	\$335.00	\$325.00	A license application may be required after structural analysis results are received which would require a CP mod application and then the license application.	N/A	N/A
Non-zoning permits	\$10,000.00	\$10,000.00	N/A	N/A	N/A
MVPD Notification of Channel Change	\$2,000.00	\$2,000.00	N/A	N/A	N/A
Sub-total	\$195,190.00	\$194,585.00	N/A	\$0.00	N/A
Total for all systems	\$4,788,311.00	\$4,827,135.90	N/A	\$1,076,371.03	N/A

Information not provided.

#### **Grand Total**

	Predetermined Cost Estimate	Estimated Cost	Actual Cost
Total for all systems	\$4,788,311.00	\$4,827,135.90	\$1,076,371.03

Reimbursem	entestatus	Response
	The facility has ceased operating on its pre- auction channel.	No
	Construction of final facilities or all necessary modifications are complete.	No
	All receipts for reimbursement have been submitted no further costs are expected to be incurred. Note this will lock the Form 399 from further editing and begin close-out procedures with the Fund Administrator.	No

Section Question Response

## Submission of Estimated Expenses Statements

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND /OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a) (1), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503), AND ANY FALSE STATEMENTS COULD SUBJECT THIS ENTITY TO LIABILITY UNDER THE FALSE CLAIMS ACT.

- 1. The Authorized
  Person signing
  below certifies that he
  /she is authorized to
  submit this TV
  Broadcaster
  Relocation Fund
  Reimbursement
  Form on behalf of
  the above-named
  entity.
- 2. The above-named entity acknowledges that all certifications and attached documentation are considered material representations.
- 3. The above-named entity acknowledges the submission of the information herein creates no obligation on the part of the government to pay any amount.

- 4. The above-named entity certifies that the equipment and services paid for with money from the TV Broadcaster Relocation Fund are necessary to change channels (broadcasters) or to continue to carry the signal of a broadcaster that changes channels (MVPD).
- 5. The above-named entity certifies that all payments from the TV Broadcaster Relocation Fund (Fund) received by the entity listed on this form will be used only for expenses that are eligible for reimbursement from the Fund.
- 6. The above-named entity certifies that it will maintain and provide to the Commission detailed records, including receipts, of all costs eligible for reimbursement actually incurred.
- 7. The above-named entity acknowledges that overpayments or payments in error must be promptly refunded to the Commission.

8. The above-named entity certifies that it is in full compliance with all statutes, rules, regulations and governmental requirements for which compliance is a pre-requisite for obtaining the payments herein requested.

I declare, under penalty of perjury, that I am an authorized representative of the abovenamed applicant for the Authorization(s) specified above. Jeffrey C Gehman Engineering Associate

12/03/2018

Section Question Response

# Submission of Actual Cost Documentation Statements

WILLFUL FALSE, FRAUDULENT, OR FICTITIOUS STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND /OR IMPRISIONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a) (1), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503), AND ANY FALSE AND/OR FRAUDULENT STATEMENTS COULD SUBJECT THIS ENTITY TO LIABILITY UNDER THE FALSE CLAIMS ACT (U.S. CODE, TITLE 31, SECTIONS 3729-3733).

- 1. The Authorized
  Person signing
  below certifies and
  represents that he
  /she is authorized to
  submit this TV
  Broadcaster
  Relocation Fund
  Reimbursement
  Form on behalf of
  the above-named
  entity.
- The above-named entity certifies that the statements in this form and attached documentation are true, complete, and correct.
- The above-named entity acknowledges that all certifications and attached documentation are considered material representations.

- 4. The above-named entity acknowledges the submission of the information herein creates no obligation on the part of the government to pay any amount.
- 5. The above-named entity certifies that the equipment and services paid for with money from the TV Broadcaster Relocation Fund are necessary to change channels (full power and Class A stations) and/or otherwise modify a television station's facility as a result of the spectrum repack (LPTV/TV Translator stations); or to minimize service disruption resulting from a repacked television station (FM stations); or to continue to carry the signal of a broadcaster that changes channels (MVPD).
- 6. The above-named entity certifies that all payments from the TV Broadcaster Relocation Fund (Fund) received by the entity listed on this form will be used only for expenses that are eligible for reimbursement from the Fund.
- 7. The above-named entity certifies that the cost information /documents submitted reflect costs actually incurred.

- 8. The above-named entity acknowledges that overpayments or payments in error must be promptly refunded to the Commission.
- 9. The above-named entity certifies that it is in full compliance with all statutes, rules, regulations and governmental requirements for which compliance is a prerequisite for obtaining the payments herein requested.

I declare, under penalty of perjury, that I am an authorized representative of the abovenamed applicant for the Authorization(s) specified above. Jeffrey C Gehman Engineering Associate

12/03/2018

#### **Attachments**