

## **ENGINEERING EXHIBIT**

### **Application to Modify Digital Television Station Construction Permit BPCDT-19991029ADN** prepared for

**Gray Television Licensee, LLC**  
WTVY-DT Dothan, AL  
Facility ID 4152  
Ch. 36 1000 kW 564 m

*Gray Television Licensee, LLC* (“*Gray*”) is the licensee of television station WTVY(TV), analog Channel 4, Dothan, AL. *Gray* is authorized by a Construction Permit (“CP”, BPCDT-19991029ADN) to operate the paired WTVY-DT digital Channel 36 facility at 995 kW effective radiated power (“ERP”) and an antenna height above average terrain (“HAAT”) of 573 meters with a top-mount nondirectional antenna. WTVY-DT is currently operating on Channel 36 under Special Temporary Authority (“STA”) with a side mount antenna (BDSTA-20060629ADT, as extended). WTVY-DT will remain on its current digital Channel 36 for the post-transition period, as established in Appendix B of the Seventh Report and Order in MB Docket 87-268.

The operation specified in the CP requires that the existing side-mounted Channel 36 antenna be relocated to the top-mount position in place of the licensed WTVY analog Channel 4 antenna. Preparatory tower work has commenced to execute the antenna reconfiguration. Due to differences in length of the analog Channel 4 and digital Channel 36 antennas, once placed at the top-mount position the Channel 36 antenna’s center of radiation above ground level will be 6.4 meters below the authorized elevation. This is beyond the +2 and -4 meter tolerance permitted by §73.1690(c)(1). *Gray* herein seeks to modify the CP in order to specify the slight reduction in antenna height. An increase in ERP to 1000 kW is also proposed.

The antenna’s radiation center will be 563.6 meters height above ground, which is 6.4 meters below the currently authorized elevation (570 meters AGL). The proposed antenna HAAT is 564.3 meters, 8.7 meters below the 573 meters HAAT as currently authorized. The HAAT was

recalculated from the USGS 3-arc second terrain database due to a geographic coordinate correction of one second latitude and two seconds longitude. The coordinate correction corresponds to Antenna Structure Registration (“ASR”) data.

The shorter top-mount antenna’s length will result in a slight reduction in overall structure height, to 576.1 meters AGL. The FAA will be notified of the reduction in tower height and the corresponding FCC ASR (number 1056648) will be modified upon execution of the height reduction.

A map is supplied as **Figure 1**, which depicts the standard predicted coverage contours. This map includes the boundaries of Dothan, WTVY-DT’s principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1), as the entire principal community will be encompassed by the 48 dBμ contour.

The proposed WTVY-DT facility’s predicted service population provides a 99.4 percent match of the Appendix B facility, as detailed in the table below.

**Post-Transition Population Summary**

Population Summary (2000 Census) OET Bulletin 69 method	Appendix B	Proposed
Within Noise Limited Contour	891,736	889,180
Not affected by terrain losses	890,034	887,437
Lost to all interference	3,171	5,796
Net DTV Service	<b>886,863</b>	<b>881,641</b>
Match of Appendix B	---	<b>99.41%</b>

The map attached as **Figure 2** supplies a comparison of the 41 dBμ digital service contour corresponding to the proposed WTVY-DT facility (1000 kW / 564 m) and the Appendix B parameters (995 kW / 573 m). Since no extension in contour location beyond that of the allotment will result, interference analysis to other television facilities is not required.

The proposed 1000 kW ERP exceeds the maximum allowed for the proposed antenna HAAT of 564 meters currently permitted by §73.622(f)(8)(i), as is also the case with the Appendix B facility for WTVY-DT (995 kW at 573 m). Since the proposed WTVY-DT operation’s coverage

contour is contained within that of the WTVY-DT Appendix B facility, the proposed ERP/HAAT combination complies with §73.622(f)(5).

The nearest FCC monitoring station is 340 km distant at Powder Springs, GA. This exceeds the threshold minimum distances specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with “quiet” zones specified in §73.1030(a) and (b). There are no AM stations within 3.2 kilometers of the site, based on information contained within the Commission’s database. The site location is beyond the border areas concerning international coordination.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposed transmitting antenna’s installation will involve a reduction in overall tower height. Since no increase in height is proposed, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission’s rules.

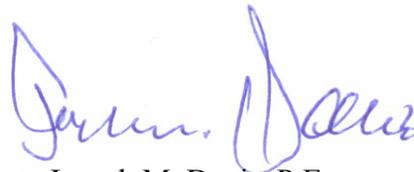
The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission’s OET Bulletin Number 65. Based on OET-65 equation (10), and considering 10 percent antenna relative field in downward elevations (pattern data shows less than 10 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $1.1 \mu\text{W}/\text{cm}^2$ , which is 0.3 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal’s contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC’s guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will

reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

### **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



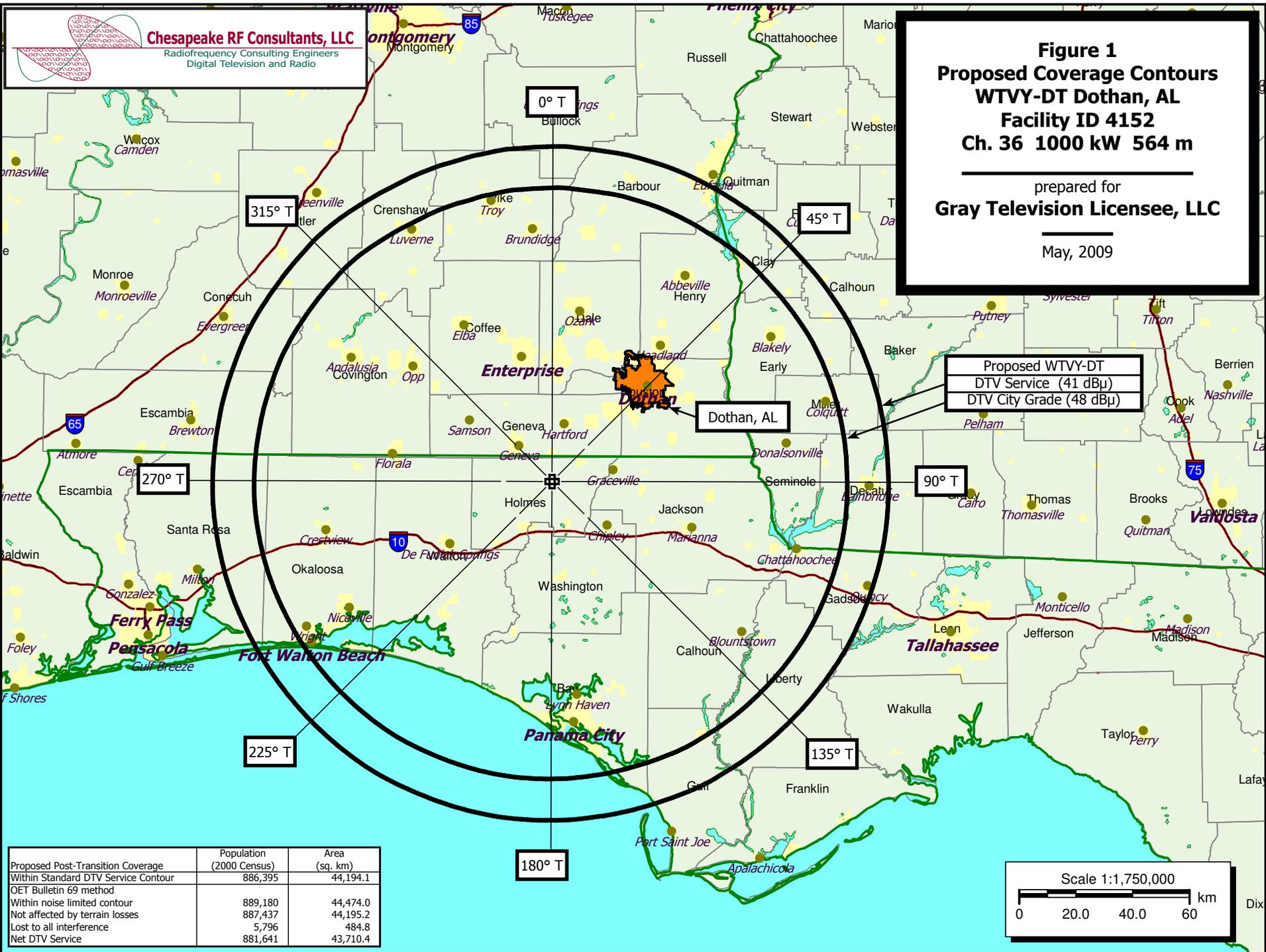
Joseph M. Davis, P.E.  
May 22, 2009

**Chesapeake RF Consultants, LLC**  
11993 Kahns Road  
Manassas, VA 20112  
703-650-9600

### List of Attachments

- |          |   |
|----------|---|
| Figure 1 | Proposed Coverage Contours  |
| Figure 2 | Coverage Contour Comparison   |
| Form 301 | Saved Version of Engineering Sections from FCC Form at Time of Upload |

*This material was entered May 22, 2009 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*



**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

**Figure 1**  
**Proposed Coverage Contours**  
**WTVY-DT Dothan, AL**  
**Facility ID 4152**  
**Ch. 36 1000 kW 564 m**

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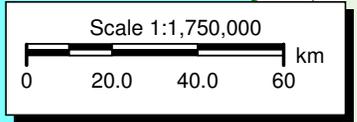
prepared for  
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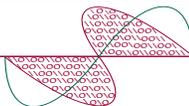
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May, 2009

Proposed WTVY-DT  
 DTV Service (41 dBμ)  
 DTV City Grade (48 dBμ)

Proposed Post-Transition Coverage	Population (2000 Census)	Area (sq. km)
Within Standard DTV Service Contour	886,395	44,194.1
OET Bulletin 69 method		
Within noise limited contour	889,180	44,474.0
Not affected by terrain losses	887,437	44,195.2
Lost to all interference	5,796	484.8
Net DTV Service	881,641	43,710.4





**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

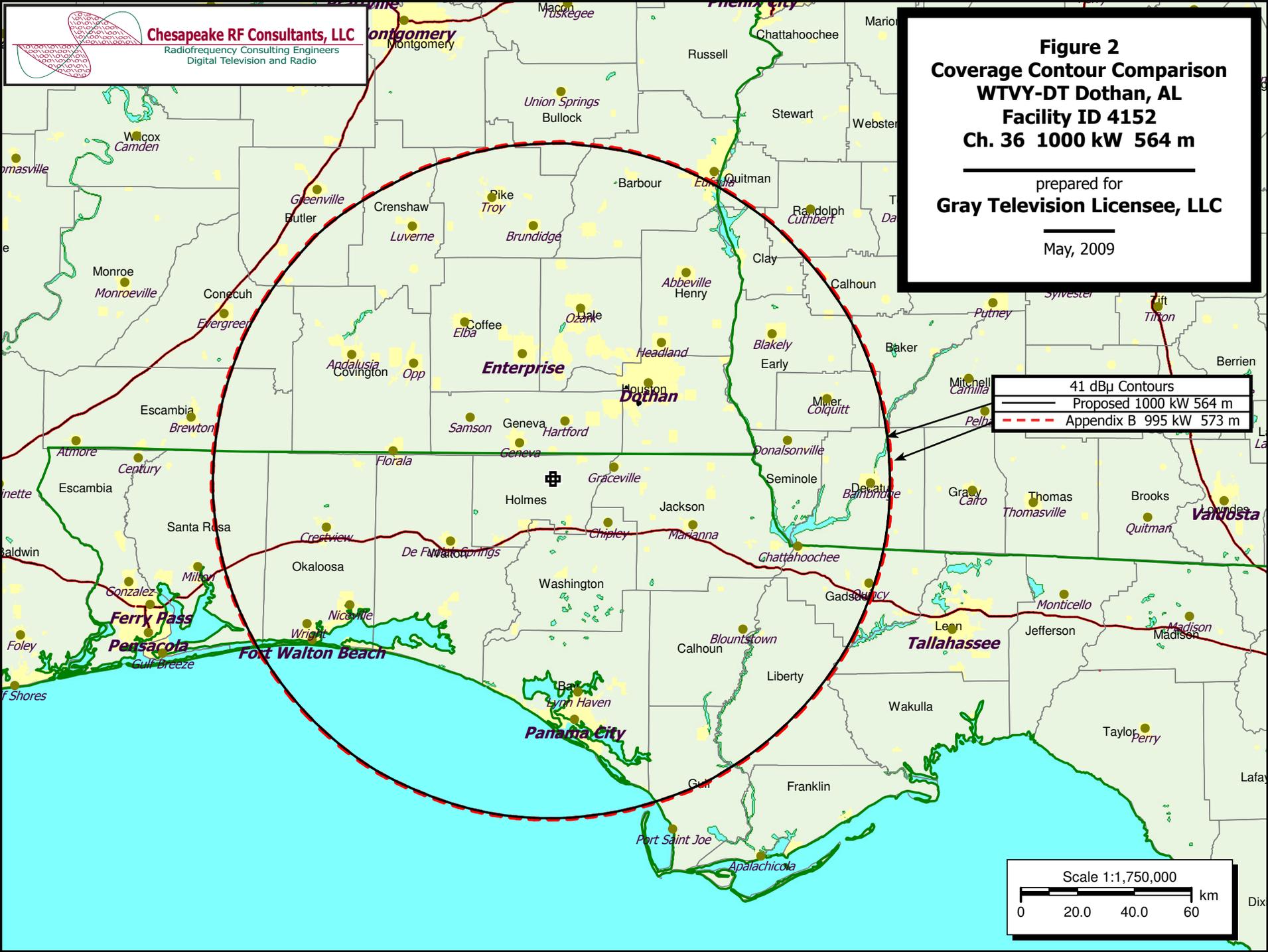
**Figure 2**  
**Coverage Contour Comparison**  
**WTVY-DT Dothan, AL**  
**Facility ID 4152**  
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**Gray Television Licensee, LLC**

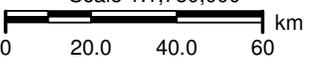
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May, 2009



**41 dB $\mu$  Contours**  
 — Proposed 1000 kW 564 m  
 - - - Appendix B 995 kW 573 m

Scale 1:1,750,000



SECTION III-D - DTV Engineering	
<b>Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.</b>	
<p><b>Pre-Transition Certification Checklist:</b> An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to change pre-transition facilities. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.</p> <p><b>Post-Transition Expedited Processing.</b> An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.</p>	
1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:	
(a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.	<input checked="" type="radio"/> Yes <input type="radio"/> No
(b) It will operate a pre-transition facility from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input type="radio"/> No
(c) It will operate a pre-transition facility with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input type="radio"/> No
(d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
(e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. Applicant must <b>submit the Exhibit</b> called for in Item 13.	<input checked="" type="radio"/> Yes <input type="radio"/> No
3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community.	<input checked="" type="radio"/> Yes <input type="radio"/> No
4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable.	<input checked="" type="radio"/> Yes <input type="radio"/> No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	<input checked="" type="radio"/> Yes <input type="radio"/> No

SECTION III-D - DTV Engineering	
<b>TECHNICAL SPECIFICATIONS</b>	
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.	
<b>TECH BOX</b>	
1. Channel Number:	DTV 36 Analog TV, if any 4
2. Zone:	<input type="radio"/> I <input type="radio"/> II <input checked="" type="radio"/> III
3. Antenna Location Coordinates: (NAD 27)	Latitude: Degrees 30 Minutes 55 Seconds 11 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 85 Minutes 44 Seconds 30 <input checked="" type="radio"/> West <input type="radio"/> East
4. Antenna Structure Registration Number: 1056648	<input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level:	41.1 meters
6. Overall Tower Height Above Ground Level:	576.1 meters
7. Height of Radiation Center Above Ground Level:	563.6 meters
8. Height of Radiation Center Above Average Terrain :	564.3 meters
9. Maximum Effective Radiated Power (average power):	1000 kW

10.	<p>Antenna Specifications:</p> <p>a. Manufacturer AND Model ATW30H3-HCO-36S</p> <p>b. Electrical Beam Tilt: 0.75 degrees <input type="checkbox"/> Not Applicable</p> <p>c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable</p> <p>Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). <span style="float: right;">[Exhibit 43]</span></p> <p>d. Polarization: <input checked="" type="radio"/> Horizontal <input type="radio"/> Circular <input type="radio"/> Elliptical</p> <p>e. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional)</p> <p>[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.] [Relative Field Values]</p> <hr/> <p>If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. <b>Exhibit required.</b> <span style="float: right;">[Exhibit 44]</span></p>
11.	<p>Does the proposed facility satisfy the pre-transition interference protection provisions of 47 C.F.R. Section 73.623(a) (Applicable only if <b>Certification Checklist</b> Items 1(a), (b), or (c) are answered "No.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616? <span style="float: right;"><input checked="" type="radio"/> Yes <input type="radio"/> No</span></p> <p style="text-align: right;">[Exhibit 45]</p> <p>If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.</p>
12.	<p>If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if <b>Certification Checklist</b> item 3 is answered "No.") <span style="float: right;">[Exhibit 46]</span></p>
13.	<p><b>Environmental Protection Act. Submit in an Exhibit</b> the following: <span style="float: right;">[Exhibit 47]</span></p> <p>If <b>Certification Checklist</b> Item 2 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.</p> <p>By checking "Yes" to <b>Certification Checklist</b> Item 2, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p> <p>If <b>Certification Checklist</b> Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.</p>
<p><b>PREPARERS CERTIFICATION ON SECTION III MUST BE COMPLETED AND SIGNED.</b></p>	

### SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.		Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature		Date 5/22/2009	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 11993 KAHNS ROAD			
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20112 -	
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM		