



# Incident Report

Report Number : 201600119

Incident Type : Complaint  
 Category : APS - Water Quality / 2L  
 Incident Started : 10/20/2015  
 Country : Haywood  
 City : \_\_\_\_\_  
 Farm # : \_\_\_\_\_

On-Site Contact :  
 First/Mid/Last Name : \_\_\_\_\_  
 Company Name : \_\_\_\_\_  
 Phone : \_\_\_\_\_  
 Pager/Mobile Phone : \_\_\_\_\_ / \_\_\_\_\_

**Responsible Party :**

Owner : \_\_\_\_\_  
 Permit : \_\_\_\_\_  
 Facility : \_\_\_\_\_  
 First Name : \_\_\_\_\_  
 Middle Name : \_\_\_\_\_  
 Last Name : \_\_\_\_\_  
 Address : \_\_\_\_\_  
 City/State/Zip : \_\_\_\_\_  
 Phone : \_\_\_\_\_

**Reported By :**

First/Mid/Last Name : Ruffin Shackelford  
 Company Name : \_\_\_\_\_  
 Address : 2514 Fie Top Rd  
 City/State/Zip : Maggie Valley NC 28751  
 Phone : (828)926-3252  
 Page/Mobile Phone : \_\_\_\_\_ / \_\_\_\_\_

<u>Material Category:</u>	<u>Estimated Qty:</u>	<u>UOM:</u>	<u>Chemical Name</u>	<u>Reportable Qty.lbs.</u>	<u>Reportable Qty.kgs.</u>
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<b>Latitude :</b>	<u>DD:MM:SS</u> <u>35° 33' 04"</u>	<u>Decimal</u> <u>35.551110</u>	<b>Position Method :</b>	<u>Remote Sensing</u>	
<b>Longitude :</b>	<u>-83° 05' 38"</u>	<u>-83.093800</u>	<b>Position Accuracy :</b>	<u>Nearest 10th Of A Second</u>	
<b>Location of Incident :</b>	<u>Ruffin Shackelford Residence</u>				
<b>Address :</b>	<u>3062 Fie Top Rd</u>				
<b>City/State/Zip :</b>	<u>Maggie Valley</u> <u>NC</u> <u>28751</u>				

**Position Datum :** Unknown

**Cause/Observation :**

On October 20, 2015, I (Brett Laverty) was contacted by Dennis Wolrick with Western Carolina Water Treatment (Waynesville) concerning a residential water supply well in Maggie Valley (Haywood County). Mr. Wolrick had recently responded to a well complaint at 3062 Fie Top Road because of unpalatable drinking water. One of the water tests conducted by Mr. Woolrick detected high salinity levels. He mentioned that the nearby Cataloochee Ski Area maintains a road salt pile less than 1000 feet from the residential water supply well. I encouraged Mr. Wolrick to have the residents call me directly and file a formal complaint.

A few days later Ruffin Shackelford, owner of the water supply well at 3062 Fie Top Road, called to complain about the quality of his drinking water. He said the house, which is not his primary residence, is used to temporarily house visitors to his Outdoor Mission Church Camp. He also said the water supply well services another lodging house at 3190 Fie Top Road. Over the last few years, the various lodgers have complained about the taste of the water. Mr. Shackelford is currently providing bottled water for both lodging houses.

I conducted an initial site visit on October 28, 2015. The water supply well at 3062 Fie Top Road is located at the top of Buck Mountain, which is in the headwaters of Fie Creek. A 1.5 acre gravel parking lot owned by the Cataloochee Guest Ranch is located immediately east of the Shackelford's property. On the north-end of the parking lot is an area used to store road salt and sand. The salt/sand mix is used by the Cataloochee Ski Area to keep Fie Top Road open during the winter skiing season. According to the General Manager Chris Bates, the ski area can go through 100 tons to 400 tons of road salt per year depending on the severity of the winter weather. The road salt has been stored at this location for more than twenty years. The storage area appears to be underlain by a cement pad that has numerous cracks in it. The general manager indicated that the road salt pile is rarely covered because of frequent high winds.

The water supply well at 3062 Fie Top Road is located approximately 860 feet from the road salt pile. Both the well and road salt pile appear to be located at an elevation of 5,000 feet above sea level. The surrounding terrain can be described as steep topography.

**Action Taken :****Directions :**

From exit 55, take I-40 west. Take exit 103 from US-74 W. Take exit 103 for US 19 toward Maggie Valley/Cherokee. Stay on US 19 and drive through the Maggie Valley business district. Fie Top Road is on the right at the far end of town. Follow Fie Top Road all the way to the top of the ridge. Turn right into the gravel parking lot. The driveway for 3062 Fie Top Road is on the far end of the parking lot.

**Comments :**

I (Brett Laverty) conducted a site visit to the water supply well at 3062 Fie Top Road on October 28, 2015. The well had no sampling port and a well tag could not be found. I purged and sampled the water supply well at the kitchen faucet. The water sample was analyzed for boron, chloride, sulfate, and various metals.

I (Brett Laverty) conducted additional water sampling on November 16, 2015. Water samples were collected at three water supply wells located at 3062 Fie Top Road (Ruffin Shackelford), 2654 Fie Top Road (Jeffery Borick), and 2514 Fie Top Road (Ruffin Shackelford). Surface water samples were also collected at two locations along Fie Creek, which includes locations 334 feet and 1,015 feet down gradient of the road salt pile. The water samples were analyzed for chloride, sulfate, and various metals.

I (Brett Laverty) conducted a well camera survey of the water supply well at 3062 Fie Top Road on December 8, 2015. Mr. Shackelford had contacted Price Well Drilling to determine the viability of a well packer/liner system as means of improve water quality. I also collected additional water samples at a spring box next to 3062 Fie Top Road (Ruffin Shackelford) and a water supply well at 2375 Fie Top Road (Bill Thompson). The water samples were analyzed for chloride, sulfate, and various metals.

I (Brett Laverty) returned to the 3062 Fie Top Road water supply well on December 21, 2015 to evaluate groundwater quality post installation of the packer/liner system. The evaluation was conducted with a Hydrolab DS5X datasonde. No water samples were collected at this time.

On January 8, 2016, I (Brett Laverty) referred this entire complaint to Collin Day with the North Carolina Inactive Hazardous Sites Branch, as they have jurisdiction over this type of groundwater contamination.

I (Brett Laverty) returned on January 12, 2016 to collect water samples at the 3062 Fie Top Road water supply well post installation of the packer/liner system. The water samples were analyzed for chloride, sulfate, and various metals.

The analytical results for water samples collected at the 3062 Fie Top Road water supply well on October 28, 2015 and November 16, 2015 indicated chloride concentrations (960 mg/l; 930 mg/l) above the 2L standard (250 mg/l). The sodium concentration (160 mg/l) was above the North Carolina Public Health Goal of 20 mg/l. The specific conductivity ranged between 3,111  $\mu\text{S}/\text{cm}$  and 2,960  $\mu\text{S}/\text{cm}$ . A camera survey of the well on December 8, 2015 revealed a water table elevation of approximately 200 feet below the land surface and a significant water bearing fracture at approximately 150 feet below the land surface. Mr. Shackelford and Price Well Drilling decided to move forward with a packer/liner system that would extend past this upper water bearing fracture.

I (Brett Laverty) returned on December 21, 2015 to document any changes in water quality post installation of the packer/liner system. I purged the well for one hour and monitored water quality with a Hydrolab DS5X datasonde. The specific conductivity ranged between 1,592  $\mu\text{S}/\text{cm}$  and 1,133  $\mu\text{S}/\text{cm}$ . I returned on January 12, 2016 to collect water samples. I purged the well for one hour and monitored water quality with a Hydrolab DS5X datasonde. The specific conductivity ranged between 774  $\mu\text{S}/\text{cm}$  and 672  $\mu\text{S}/\text{cm}$ . I collected water samples at the beginning and end of the purge. The water samples were analyzed for chloride, sulfate, and various metals. I told Mr. Shackelford that it was quite possible that sodium chloride levels were likely in decline based on the specific conductivity. The analytical results will be forth coming.

It is important to note that an active spring is located near the 3062 Fie Top Road water supply well. I collected a water sample from this spring on December 8, 2015. The analytical results indicated no detectable chloride (< 1 mg/l) and a sodium concentration of 1.4 mg/l. This likely represents the natural background levels for sodium and chloride in groundwater.

Water samples collected at three downgradient water supply wells (2654 Fie Top Road, 2514 Fie Top Road, and 2514 Fie Top Road) exhibited chloride concentrations ranging from 190 mg/l to 36 mg/l. Sodium concentrations ranged from 120 mg/l to 15 mg/l. Although not above the applicable standards, there does appear to be some measurable impact at all three wells as compared to the natural background levels detected at the spring. The highest concentration was detected at the water supply well located at 2375 Fie Top Road.

Water samples collected along Fie Creek indicate sodium and chloride concentrations that are comparable to nearby water supply wells. Chloride concentrations ranged from 130 mg/l to 86 mg/l. Sodium concentrations ranged from 81 mg/l to 42 mg/l. It is important to note that the highest sodium and chloride concentrations in Fie Creek occurred at the surface water site closest to the road salt pile.

As of January 12, 2016, the groundwater investigation was turned over to the North Carolina Division of Waste management's Inactive Hazardous Sites Branch. The primary contact is Cathy Jacobs.

#### Incident Questions :

Did the Material reach the surface Water? Unknown Conveyance : \_\_\_\_\_  
 Surface Water Name ? \_\_\_\_\_  
 Did the Spill result in a Fish Kill? Unknown Estimated Number of fish? \_\_\_\_\_  
 If the Spill was from a storage tank indicate type : \_\_\_\_\_ (Above Ground or Under Ground)  
 Containment? Unknown  
 Cleanup Complete? Unknown  
 Water Supply Wells within 1500ft : Yes Groundwater Impacted : Yes

Event Type	Event Date	Due Date	Comment
Report Received			
Referred to Regional Office - Primary Contact			
Report Entered	2016/01/15 11:46:36		
Incident Start	2015/10/20 10:00:00		

**Standard Agencies Notified :**

Agency Name	Phone	First Name	M.I.	Last Name	Contact Date
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**Other Agencies Notified :**

Agency Name	Phone	First Name	M.I.	Last Name	Contact Date
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**DWQ Information :**

Report Taken By:	Report Entered By:	Regional Contact:
<u>Brett Lavery</u>	<u>Brett Lavery</u>	<u>Brett Lavery</u>
Phone: _____	_____	_____
Date/Time: _____	<u>2016/01/15 11:46:36AM</u>	_____
Referred Via: _____	_____	_____

Did DWQ request an additional written report? \_\_\_\_\_

If yes, What additional information is needed?