

# **Rapid Watershed Assessment for Sandy Run, Woodley Draft, and Stony Run: Tributaries to Drury Run, Clinton County**

## **Technical report provided by Hedin Environmental through the Trout Unlimited Technical Assistance Program TUTAG-02**

**Hedin Environmental  
March 24, 2006**

### **Project Tasks**

The purpose of this TAG project was to perform a rapid assessment on Sandy Run, Woodley Draft, and Stony Run, which are adjacent tributaries of Drury Run. These tributaries flow to Drury Run from the north. They form the final three tributaries before Drury Run reaches the West Branch of the Susquehanna River. This area is of special concern because the Renovo reservoir is located on Drury Run between Sandy Run and Woodley Draft.

Two rounds of sampling were completed. The first round was completed on October 21, 2005 during extremely low flow conditions. The second round was completed on March 7, 2006 during moderate flow conditions. The sampling data is attached. In the following discussion, calculated acidity is used to determine the condition of the stream. The calculated acidity is based on metals concentrations, pH, and alkalinity determined in the field.

Where possible, sample stations identified in the “Drury Run Watershed TMDL” (DEP, 2001) were used. The attached map shows the approximate locations of the sampling stations. This map was taken from the Tamarack and Renovo West USGS Quad maps. A total of 26 samples were submitted for laboratory analyses.

### **Sandy Run Assessment**

Sandy Run enters Drury Run upstream of the Renovo reservoir.

Three discharges to Sandy Run (D2, D3, and D5) were located and sampled. D2 and D3 originate as large kill zones well below the toe of the spoil. While the chemistry of these discharges was very poor, the flow rates were so low during the sampling events that they did not provide significant impact to Sandy Run. The flow rate of D2 was so low that only an acidified sample could be collected during the first sampling event, and no sample could be collected during the second sampling event.

D5 emerges as a clean-looking spring just above the camp access road. This discharge was the only discharge that had a significant flow rate. The discharge was moderately net acidic with low iron and moderate aluminum. This chemistry makes D5 amenable to passive treatment.

Station 6SR measured the main stem of Sandy Run above the third tributary. Station 7SR measured Sandy Run below this tributary. These stations are below D2 and D3 but above D5. The two sampling dates show very different chemistry at these two stations. On the first sampling day, during very low flow, the stream was slightly net acidic at both stations. On the second sampling day, during moderate flows, the stream was net alkaline at both stations. This indicates that this section of the stream is vulnerable during low flows.

Station 9SR measured Sandy Run just upstream of the camp tributary. This station is below all three sampled discharges. During the first sampling day, this station was net acidic with aluminum concentration of 0.7 mg/L. During the second sampling day, this station was weakly net alkaline with 0.5 mg/L. Again, these results indicate that this section of stream is more vulnerable during low flows.

Station SRtrib measured the mouth of the tributary that flows into Sandy Run just downstream of Station 9SR. This station was very low in metals and sulfate, indicating no mining impacts. However, the stream was slightly net acidic on the first sampling day and net alkaline on the second sampling day.

Station 11SR measured the mouth of Sandy Run. On both sampling dates, the mouth of Sandy Run was net alkaline to net neutral, with low metals. According to data taken in 1990 (contained in the TMDL report for Drury Run), the inflow of Sandy Run did not provide much impact on the quality of Drury Run. However, the 1990 data also indicated that the mouth of Sandy Run was net acidic most of the time. Sandy Run may have improved since the samples taken in 1990, or the two sampling events taken as part of this project did not capture the critical time in the hydrological cycle for the stream, which may still be net acidic at times.

### **Woodley Draft Assessment**

Woodley Draft is a small tributary that enters Drury Run between Sandy Run and Stony Run. It enters Drury Run just below the dam for the Renovo reservoir. Therefore, this tributary does not affect the water quality in the Renovo reservoir.

As shown in the attached table, Woodley Draft at the mouth is net acidic with low metals. Aluminum exceeded the in-stream standard on both sampling dates.

As shown on the attached map, mine spoils are present on both sides of Woodley Draft from its mouth to its headwaters. No reconnaissance of these individual mines was performed. It is not known if the pollution present at the mouth of Woodley Draft is coming from one source, from several sources, or from contaminated base flow.

## **Stony Run Assessment**

Stony Run is the last tributary to Drury Run before it enters the West Branch of the Susquehanna. Three sample stations were measured on Stony Run. Station 8ST sampled the mouth of Stony Run. “Slab Mouth” measured the mouth of Slab Hollow, a tributary to Stony Run. Stony above Slab measured the main stream above this tributary.

As shown in the data, these three stations were net acidic with low iron and moderate aluminum on both sampling dates. Unlike Sandy Run, Stony Run stations exhibited worse chemistry at during the higher flow sampling event. Chemistry indicates that additional pollution is reaching Stony Run between Slab Hollow and the Sandy Run mouth.

Based on these sampling events, Stony Run represents more loading to Drury Run than either Sandy Run or Woodley Draft.

## **Drury Run Assessment**

Drury Run was sampled at the outfall of the Renovo reservoir (Station 7DR). On both sampling dates, the stream was net alkaline (negative net acidic) with low metals.

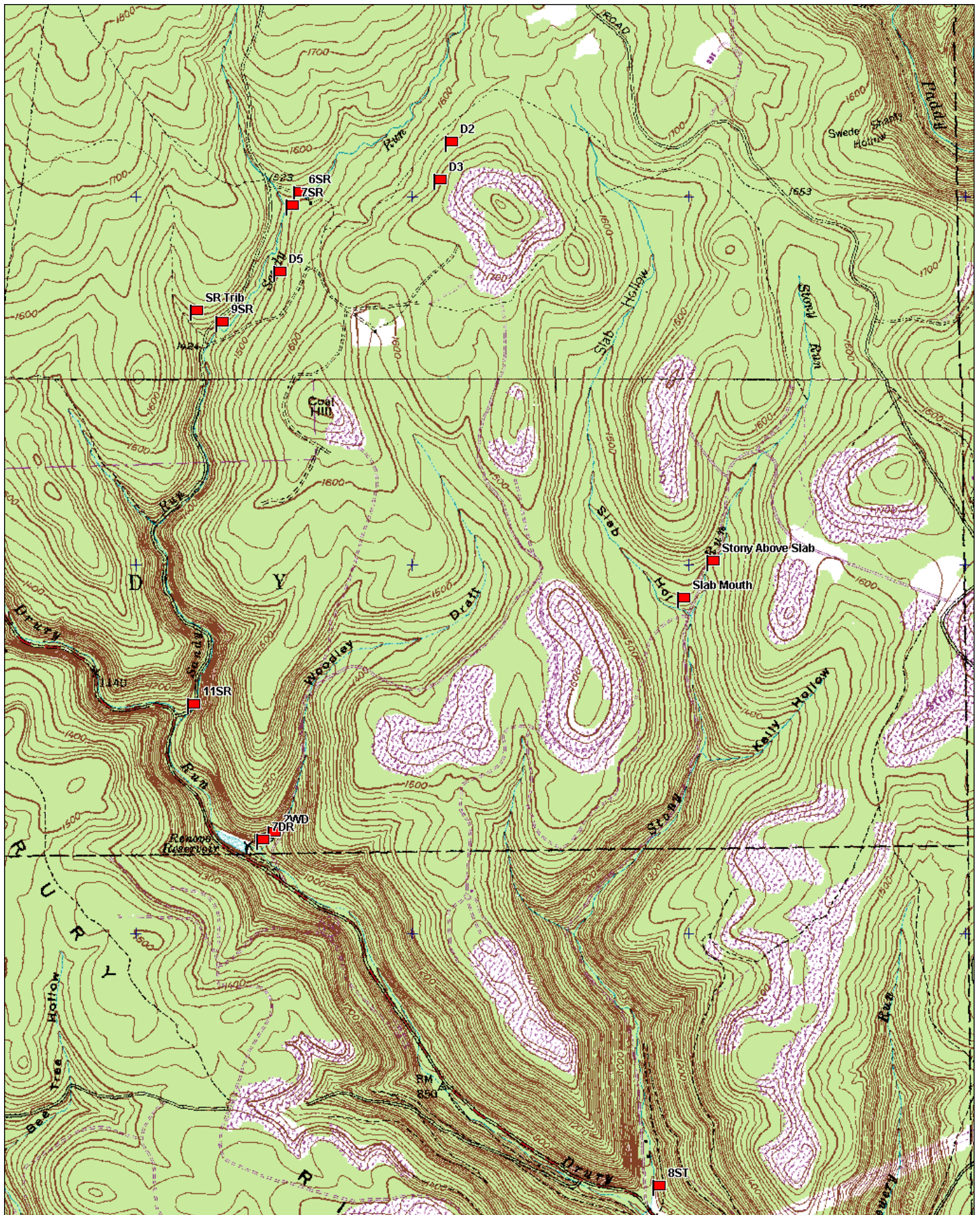
## **Recommendations**

The recommendations of this report vary depending upon the goals of the client.

If the main goal is to protect the drinking water supply for Renovo, then treatment of D5 with a passive system is recommended. This would also improve and protect Sandy Run downstream of the D5 discharge. This discharge is amenable to several types of passive treatment, including vertical flow ponds (VFPs), self-flushing limestone beds, and alkaline amended wetlands. The most appropriate type of treatment could be determined by continued monitoring of the flow rate and chemistry and mapping of the area surrounding the discharge. Treatment of the other Sandy Run discharges is not recommended because of their extremely low flows.

If the main goal is to improve and protect Drury Run, then Stony Run should be more closely examined for reclamation and/or treatment options. Sampling indicates that pollution is entering Stony Run above Slab Hollow, in Slab Hollow, and below Slab Hollow. Future work in this area should include a stream walk performed at moderate to high flows. The purpose of the stream walk would be to locate and sample all discharges and important in-stream points. Future work should also include the establishment and monitoring of stations on Drury Run above and below Stony Run.

Point	Date	Flow (gpm)	Field pH	Lab pH	Cond (uS)	Field Alk	Lab Alk	Net Acid, Meas	Net Acid, Calc	Fe	Mn	Al	SO4
6SR	21-Oct-05		4.7	5.7	29	0	3	3	2	0.0	0.0	0.1	5
7SR	21-Oct-05		4.8	5.9	37	0	4	5	3	0.0	0.0	0.3	6
D2	21-Oct-05					0				208.0	88.2	5.2	
D3	21-Oct-05		2.4	2.6	2660	0	0	518	623	82.7	44.0	19.3	1891
D5	21-Oct-05	12	3.1	4.1	300	0	0	26	63	0.0	4.8	2.5	168
SR9	21-Oct-05		3.8	4.4	110	0	0	12	14	0.0	1.0	0.7	56
SR TRIB	21-Oct-05	est. 5	4.4	5.8	21	0	3	5	2	0.0	0.0	0.0	3
SR11	21-Oct-05	>100	5.8	6.2	89	64	5	3	-63	0.0	0.0	0.1	39
6SR	07-Mar-06		6.5	5.9	25	38	3	6	-38	0.1	0.0	0.0	6
7SR	07-Mar-06		6.4	5.8	39	74	3	5	-73	0.1	0.0	0.1	7
D3	07-Mar-06	<2	4.7	3.2	1031		0	199		7.1	14.8	15.9	549
D2	07-Mar-06	<<<1											
D5	07-Mar-06	42	5.2	4.1	425	0	0	56	40	0.2	7.2	4.8	188
SR9	07-Mar-06		5.7	5.0	72	7	2	9	-3	0.1	0.6	0.5	23
SR TRIB	07-Mar-06		6.4	5.9	26	23	3	3	-23	0.1	0.0	0.0	6
SR11	07-Mar-06		5.8	5.0	70	3	2	10	0	0.1	0.3	0.3	23
7DR	07-Mar-06		4.9	6.2	65	39	5	2	-37	0.1	0.1	0.1	12
7DR	21-Oct-05		5.3	6.4	106	55	14	-4	-54	0.2	0.3	0.1	24
2WD	21-Oct-05	est. 15	3.8	4.3	225	0	0	20	24	0.0	1.3	2.3	126
2WD	07-Mar-06	est. 150	5.9	4.4	284	0	0	34	30	0.1	2.1	4.6	118
SLAB MOUTH	21-Oct-05	est. 60	3.8	4.4	370	0	0	20	33	0.1	5.9	2.4	215
STONY ABOVE SLAB	21-Oct-05		3.7	4.3	393	0	0	35	44	0.1	5.6	4.3	209
8ST	21-Oct-05	est. 200	3.4	4.2	536	0	0	38	60	0.0	4.6	5.3	331
SLAB MOUTH	07-Mar-06		5.7	4.6	605	0	1	66	43	0.1	5.9	5.7	347
STONY ABOVE SLAB	07-Mar-06		5.7	4.5	358	0	0	52	41	0.1	4.5	5.7	
8ST	07-Mar-06	est. 500	5.9	4.3	555	0	0	75	61	0.1	7.1	8.6	312



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 750 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84