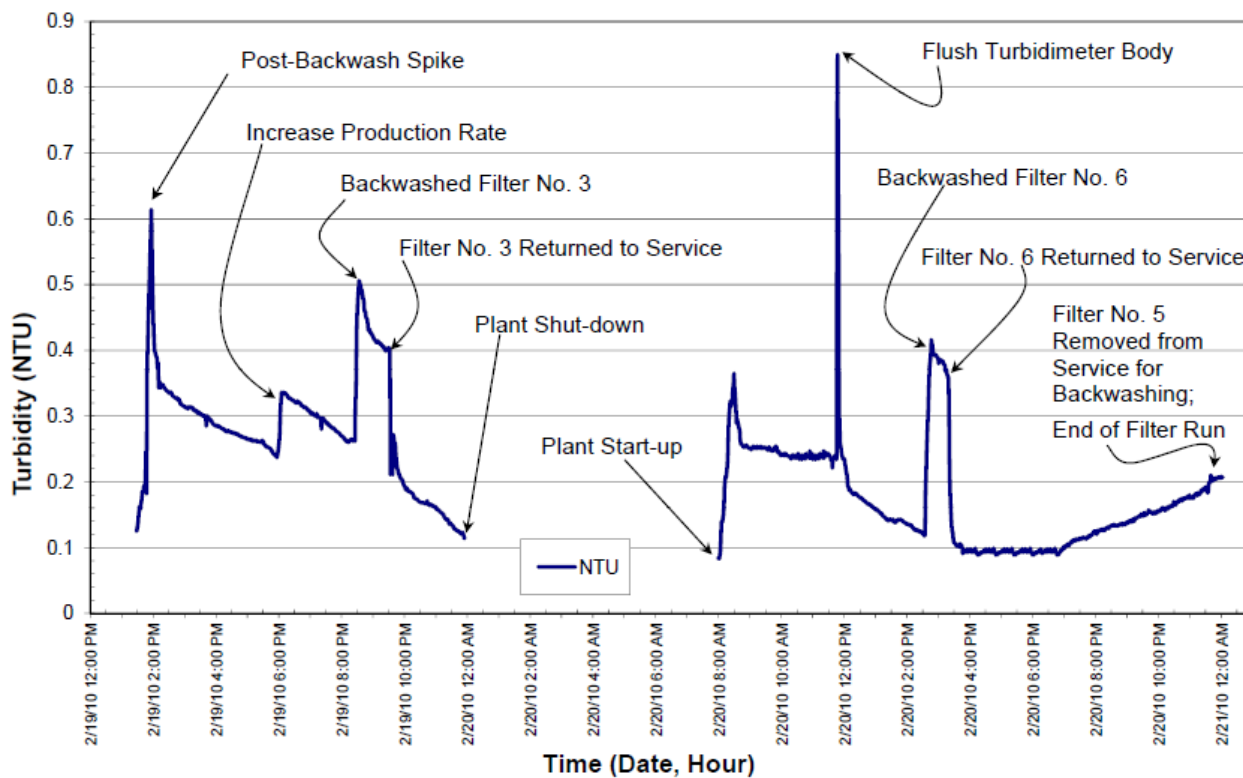


Appendix F: EXAMPLE OF A COMPLETED FPR AND FAR

Filter No. 5 Profile



Example of a Completed FAR

FILTER ASSESSMENT REPORT FOR INDIVIDUAL FILTERS

FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER THAT ARE REQUIRED TO CONDUCT AN INDIVIDUAL FILTER ASSESSMENT

PUBLIC WATER SYSTEM NAME: Aguaville WSC

PLANT NAME OR NUMBER: Schwartz Water Treatment Plant

PWS ID No.: 1234567

FILTER NUMBER: Filter No. 5

DESIGN SPECIFICATIONS							
FILTER TYPE	Gravity		OPERATING MODE: Constant Rate/Variable Level				
MEDIA BED DIMENSIONS		Diameter (ft)	Length (ft)	Width (ft)	Surface Area (ft ²)	Freeboard (ft)	Max Head Loss (ft)
			12.00	24.00	288.00	3.25	13.00
MEDIA TYPE		Multiple Media					
MEDIA SPECS		Material	Depth (inches)	Min. Size (mm)	Max. Size (mm)	UC	Specific Gravity
Layer 1 Material		Anthracite	24.00	0.90	1.20	1.60	Unknown
Layer 2 Material		Sand	12.00	0.45	0.55	1.40	Unknown
Layer 3 Material		Garnet	3.00	0.20	0.35	1.40	Unknown
Layer 4 Material							
TOTAL DEPTH (inches)		39.00					
L/D RATIO		1206.4					
UNDERDRAIN TYPE		Type-S with gravel					
		No. of Grades	Min. Size (in)	Max. Size (in)	Total Depth (in)		
SUPPORT GRAVEL		4	0.25	1.50	12.00		
TROUGHs		SUPPL. BACKWASH			Air Scour (retrofit)		
Number		5					
Separation (inches)		39.00			FILTER-TO-WASTE: No		
		Regulatory Std	Design	Typical	During Backwash	Maximum	App'd Exception
FILTER FLOW RATE (gpm)		1440	1400	1111	1333	1833	None
LOADING RATE (gpm/ft ²)		5.0	4.86	3.86	4.63	6.36	None
BW FLOW RATE (gpm)		3600 - 6278	5000	3800		5000	
BW LOADING RATE (gpm/ft ²)		12.5 - 21.8	17.36	13.19		17.36	
		Source	Controller	Meter	Turbidimeter		LOHG
FILTER INFLUENT			Fix. weir Splitter	Proportional	None		
FILTER EFFLUENT			None	None	Hach 1720D		Water Lvl Indicator
BACKWASH WATER		Filters & Pump	Mot. Valve (Auto.)	Ultrasonic	None		
<p>ADDITIONAL REMARKS: There flow distribution to the filter is controlled with a fixed-weir splitter box and a valve that is completely opened when the filter is on-line and is completely closed when the filter is out of service during backwash and the subsequent idle period.</p>							

OPERATING PROCEDURES					
CALIBRATION	Flow Meter	Backwash Meter	Mech. ROFC	NTU (Primary)	NTU (Secondary)
Method	Ultrasonic	Ultrasonic		Formazin	Comparison
Frequency	Annual	Annual		Quarterly	Weekly
Date of Last	June 13, 2010	June 13, 2011		January 24, 2012	February 14, 2012
BACKWASH	Turbidity (NTU)	LOH (ft)	Run Time (hr)	Run Volume (gal)	Filtration Rate
Criteria	1.0 NTU	10.00	48.00	NA	NA
Monitoring Interval	5 min	8 hrs	Each Shift		
WRITTEN SOPs		ADDITIONAL REMARKS: We are creating a Filter Inspection SOP as part of this Filter Assessment.			
Plant Start-up	Complete				
Filter Start-up	Complete				
Plant Shutdown	Partial				
Filter Shutdown	Partial				
Filter Backwash	Complete				
Filter Inspection	None				

I certify that I am familiar with the information contained in this report and that, to the best of my knowledge, the information is true, complete, and accurate.

Operator's Signature: Más Papeleo

Operator's Name (printed): Más Papeleo

Certificate No. and Class: 987-65-4321

Date: February 23, 2012

Submit Report to TCEQ/Water Supply Division (MC-159), ATTN: SWTR Coordinator, P.O. Box 13087, Austin, TX 78711-3087
The report is due the 10th of the following month

FILTER ASSESSMENT REPORT FOR INDIVIDUAL FILTERS

FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER THAT ARE REQUIRED TO CONDUCT AN INDIVIDUAL FILTER ASSESSMENT

PUBLIC WATER SYSTEM NAME: Aguaville WSC
 PWS ID No.: 1234567

PLANT NAME OR NUMBER: Schwartz Water Treatment Plant
 FILTER NUMBER: Filter No. 5

CURRENT CONDITIONS						
DATE	TIME	TURBIDITY (NTU)	LOH (ft)	FLOW RATE (gpm)	RUN TIME (hr)	RUN VOLUME (gal)
17-Feb-12	6:00 AM	0.32	7.00	1,100	18.75	Unknown
PHYSICAL CONDITION		ADDITIONAL REMARKS: Some of the indicator marks on the LOHG ruler are not legible.				
Walls	Good					
Troughs	Minor Damage					
Suppl. Backwash	Fully Operational					
Flow Meter						
ROFC	Fully Operational					
Flow Control Valve	Fully Operational					
Turbidimeter	Fully Operational					
LOHG	Slight Malfunction					

MEDIA SURFACE CONDITIONS					
	Before BW	After BW		Before BW	After BW
MOUNDS			RETRACTION		
Number	3	1	Number	1	0
Length (inches)	6 - 12	12	Length (inches)	18	
Width (inches)	6 - 9	12	Width (inches)	1	
Height (inches)	1 - 2.5	1.0	Depth (inches)	1.5	
DEPRESSIONS			CRACKS		
Number	6	0	Number	6	0
Length (inches)	18 - 36		Length (inches)	6 - 15	
Width (inches)	5 - 6		Width (inches)	0 - 0.5	
Depth (inches)	1.5 - 3.75		Depth (inches)	0 - 0.5	
ACCUMULATED FLOC			MUDBALLS		
Thickness (inches)	0 - 0.25	Minimal	No. per ft ²	>10	0
Distribution	Uniform	Uniform	Size (inches)	0.25 - 0.75	
			Distribution	Localized	

ADDITIONAL REMARKS: The largest depressions are located adjacent to the backwash troughs. With the exception of one slight mound in the southwest corner of the filter, all of the anomalies were eliminated by the backwash cycle.

BACKWASH CONDITIONS		ADDITIONAL REMARKS: In one area of the filter, a severe jet was observed but we classified it as moderate because it did not seem to affect the backwash effectiveness in other parts of the filter.
BW FLOW RATE (gpm)	2800	
RISE RATE (inches/minute)	15.60	
LOADING RATE (gpm/ft²)	9.72	
DURATION (minutes)	12.00	
TOTAL VOLUME (gallons)	39,200	
TROUGHS		
Levelness	Slightly Unlevel	
Flooding	None	
SUPPL. BACKWASH		
Duration (minutes)	5.0	
Effectiveness	Adequate	
JETTING		
No. of Sites	2	
Severity	Moderate	
BW WATER DISTRIBUTION	Even/Uniform	
SPENT BWW TURBIDITY	2.98	
EXPANSION (inches)	12.00	
EXPANSION (percent)	35.29411765	
YIELD (percent)	Unknown	

Submitted by: Más Papeleo

Date: February 23, 2012

FILTER ASSESSMENT REPORT FOR INDIVIDUAL FILTERS

FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER THAT ARE REQUIRED TO CONDUCT AN INDIVIDUAL FILTER ASSESSMENT

PUBLIC WATER SYSTEM NAME: Aguaville WSC

PLANT NAME OR NUMBER: Schwartz Water Treatment Plant

PWS ID No.: 1234567

FILTER NUMBER: Filter No. 5

FILTER PROBE	
NUMBER OF SITES	121
MEDIA	
Max. Thickness (inches)	37.00
Min. Thickness (inches)	26.00
Typ. Thickness (inches)	34.00
SUPPORT MATERIAL	
Max. Elevation	70.00
Min. Elevation	77.00
Typ. Elevation	75.00
ADDITIONAL REMARKS: One relatively large gravel mound was detected in the northeast corner of the filter.	

FILTER EXCAVATION						
	REFERENCE	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
SITE CHARACTERISTIC	Normal	Normal	Normal	Media Mound	Gravel Mound	Crack
LAYER 1 (Top Layer)	18.00	19.00	18.00	21.00	14.00	18.00
INTERFACE 1	2.50	2.00	2.00	1.50	1.25	2.50
LAYER 2	11.00	12.00	11.00	11.00	10.00	12.00
INTERFACE 2	0.75	0.50	0.75	0.50	0.50	
LAYER 3	4.00	4.00	3.75	3.00	0.00	
INTERFACE 3						
LAYER 4						
MUDBALLS	Few	None	None	Few	None	Few
Max. Size (inches)	0.75			0.50		0.50
Min. Size (inches)	0.25			0.13		0.25
Max. Depth (inches)	4.00			5.00		3.00
	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
SITE CHARACTERISTIC	Retraction	Jetting				
LAYER 1 (Top Layer)	18.00	18.00				
INTERFACE 1	2.00	4.75				
LAYER 2	12.00	8.00				
INTERFACE 2	1.00	2.50				
LAYER 3	3.00	2.00				
INTERFACE 3						
LAYER 4						
MUDBALLS	Several	None				
Max. Size (inches)	0.75					
Min. Size (inches)	0.25					
Max. Depth (inches)	7.00					
MEDIA CONDITION		ADDITIONAL REMARKS: The sand and garnet seemed in very good shape. The anthracite seemed slightly worn and encrusted. The anthracite grains did not seem very uniform in shape or size.				
Sharpness	Good					
Encrustation	Slight					
Uniformity	Marginal					

ADDITIONAL STUDIES	
FILTER PROFILE ATTACHED? <input checked="" type="checkbox"/> Yes <i>Note: A Filter Profile must be attached to this report.</i>	ADDITIONAL REMARKS: Several of the mudballs were placed in a chlorine solution (200 ppm, pH=4.5) for 12 hours and the mudballs dissolved. A representative sample of filter media was dried in an oven, weighed, and then placed in the acidified chlorine solution. After 12 hours, the media was removed, rinsed several times, dried and reweighed. The media lost 12% of its mass. The chlorine solution had a brownish tint so we neutralized the chlorine with thiosulfate and ran iron and manganese tests on the material. The manganese result was 0.55 mg/L and the iron result was 0.2 mg/L.
PERCENT MUDBALLS	
Media Volume (ml)	
Mudball Volume (ml)	14
% Mudballs	0.8%

CONCLUSIONS	
CONCLUSIONS: We have lost 5-6 inches of our anthracite and the anthracite that remains seems to no longer meet manufacturer's specifications. There is also a large gravel mound in one area of the filter. The presence of the severe backwash jet and the degree that the media layers were intermixed suggests that there is some underdrain damage in that part of the filter. The filter profile that was run on February 19th suggests that the performance of Filter No. 5 is adversely affected by sudden flow rate changes.	CORRECTIVE ACTION PLAN ATTACHED? <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Yes</div> WOULD YOU LIKE SOME TECHNICAL ASSISTANCE FROM THE TCEQ? <div style="text-align: center; font-weight: bold; font-size: 1.2em;">No</div>

Submitted by: Más Dapeleo

Date: February 23, 2012

FILTER ASSESSMENT REPORT FOR INDIVIDUAL FILTERS








FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER THAT ARE REQUIRED TO CONDUCT AN INDIVIDUAL FILTER ASSESSMENT

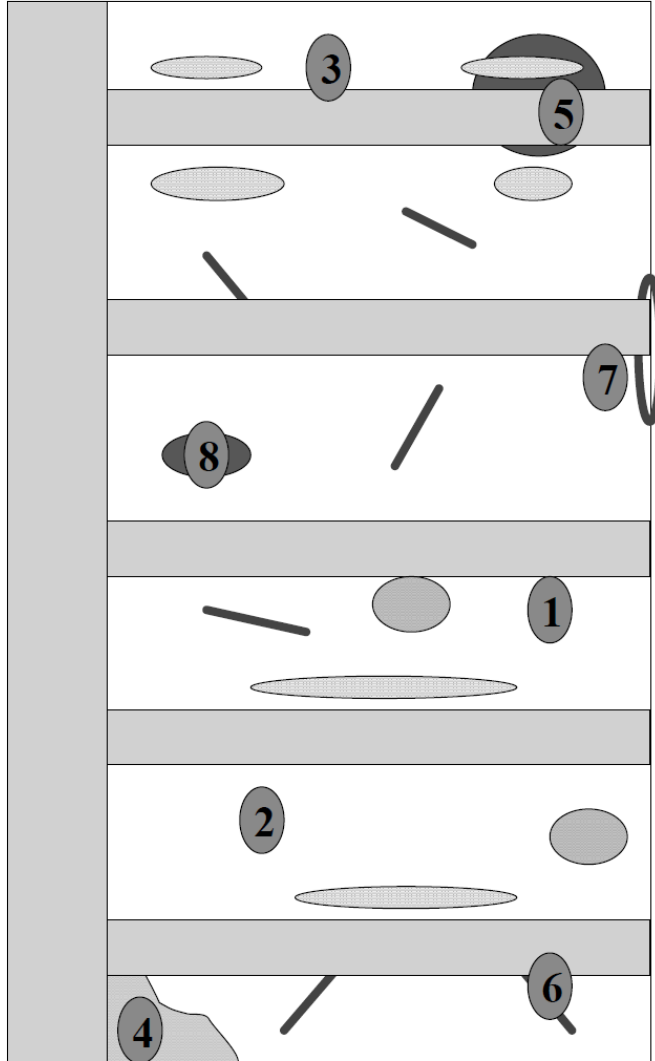
PUBLIC WATER SYSTEM NAME: Aguaville WSC
 PWS ID No.: 1234567

PLANT NAME OR NUMBER: Schwartz Water Treatment Plant
 FILTER NUMBER: Filter No. 5

FILTER SCHEMATIC

PREPARE A SIMPLE FILTER SCHEMATIC SHOWING THE LOCATION OF BACKWASH WATER TROUGHS, OBSERVED ANOMALIES, AND EXCAVATION SITES.

- 
Excavation Site no.
- 
Post-backwash filter mound
- 
Severe backwash jet or Large Gravel Mound
- 
Pre-backwash media crack
- 
**Pre-backwash media retraction
Pre-backwash media depression**
- 
- 
Pre-backwash media mound



Submitted by: Más Papeleo

Date: February 23, 2012

CORRECTIVE-ACTION PLAN

Task: Improve the performance of Filter No. 5 by addressing the operational and filter defects identified during the filter assessment.

Plant: Aguaville WSC, Schwartz WTP

Date: February 25, 2012

Step No.	Activity	Description	By Whom	By When
1	Gather additional information	Submit 1.0 ft ³ of media to the Water Plant Sand Company to determine the size range, uniformity coefficient, and condition of each type of media material.	Plant manager	3/1/12
		Submit 1.0 ft ³ of media to Water Plant Reference Labs, Inc. to determine the composition of the material that appears to be deposited on the anthracite media.	Plant manager	3/1/12
		Contact our consulting engineer to discuss potential solutions to Filter No. 5 problem.	Plant manager	3/1/12
		Get a cost estimate for new media from the Water Plant Sand Company.	Plant manager	3/5/12
		Staff meeting to identify other concerns about Filter No. 5 and to discuss possible changes in plant SOPs.	Plant staff	3/5/12
2	Modify SOPs	Backwash SOP: Limit production rate to a maximum of 9.6 MGD when backwashing a filter.	Shift supervisors and operator IIs	3/15/12
		Plant start-up SOP: If the clearwell has more than 10 feet of water, backwash one of the filters before starting a production run.		
		Normal operations SOP: If possible, avoid operating plant above 9.6 MGD.		
3	Submit report to the Board.	Develop report summarizing the historical filter performance for past three months, filter assessment results, and laboratory findings, and operational changes implemented to reduce IFE turbidity levels.	Plant manager	4/5/12
		Staff Meeting to discuss findings, develop staff recommendations, and finalize the report.	Plant staff and general manager	4/9/12
		Discuss the report conclusions (Filter No. 5 renovation; and the need for additional filtration capacity or three operating shifts) and the new SOPs with the Board President.	Plant manager and general manager	4/11/12
		Request approval to renovate Filter No. 5.	Board meeting	4/20/12

Step No.:	Activity:	Description:	By Whom:	By When:
4	Rebuild Filter No. 5.	Purchase required media and gravel.	General manager	5/15/12
		Remove old media and gravel.	contractor	5/15/12
		Check condition of underdrain and repair if necessary.	Engineer and contractor	6/1/12
		Install gravel and media.	Contractor with plant-manager inspection	06/15/12 (see note)

Note: If we cannot complete the renovation of Filter No. 5 by June 20, 2012, we must delay the project until the fall. Because we are currently limited to a 16-hour production day, we are unable to meet our maximum daily demand (which typically occurs in July or August) with only five filters.