

This is a RED Stamp

**ROCKY FLATS PLANT
EMD OPERATING
PROCEDURES MANUAL**

**Manual No.: 5-21000-OPS-GW
Procedure No.: Table of Contents, Rev 12
Page: 1 of 2
Effective Date: 05/04/93
Organization: Environmental Management**

THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:

**VOLUME I: FIELD OPERATIONS (FO)
VOLUME II: GROUNDWATER (GW)
VOLUME III: GEOTECHNICAL (GT)
VOLUME IV: SURFACE WATER (SW)
VOLUME V: ECOLOGY (EE)
VOLUME VI: AIR (AP)**

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FOR VOLUME II: GROUNDWATER**

<u>Procedure No.</u>	<u>Title</u>	<u>Rev. No.</u>	<u>Effective Date</u>
GW.01	Water Level Measurements in Wells and Piezometers	2	05/12/92
DCN 92.01	Improve Form	2	10/28/92
DCN 93.01	Measuring Water Levels in Well Points	2	01/28/93
GW.02	Well Development	2	05/12/92
DCN 92.01	Practice Clarification	2	10/05/92
DCN 92.02	Update Forms to Include Form Number	2	10/22/92
DCN 93.01	Well Fluid Volumes	2	04/13/93
GW.03	Pump-In Borehole Packer Testing	2	05/12/92
GW.04	Slug Testing	2	05/12/92
GW.05	Field Measurement of Groundwater Field Parameters	2	05/12/92
DCN 92.01	Eliminate Unsafe Work Practice	2	10/26/92
GW.06	Groundwater Sampling	2	05/12/92
DCN 92.01	Form Update	2	EXPIRED
DCN 92.02	Update Forms to Include Form Number	2	10/22/92
DCN 93.01	Hydropunch	2	04/15/93
*DCN 93.02	New GW Sample Collection Log	2	05/04/93

ADMIN RECORD

DOCUMENT CLASSIFICATION REVIEW WAIVER
PER R.B. HOFFMAN, CLASSIFICATION OFFICE
JUNE 11, 1991

A-SW-000602

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<u>Procedure No.</u>	<u>Title</u>	<u>Rev. No.</u>	<u>Effective Date</u>
GW.08	Aquifer Pumping Tests	1	05/12/92
DCN 92.01	Expired	1	05/22/92
DCN 92.02	Expired	1	05/15/92

This is a
CONTROLLED DOCUMENT
 EG&G - ROCKY FLATS PLANT ENVIRONMENTAL MANAGEMENT
ENVIRONMENTAL MANAGEMENT DOCUMENT CHANGE NOTICE (DCN)
 This is a RED Stamp

Procedure Number 5-21000-OPS-GW.6, Rev. 2

Page 1 of 3
MCS 4/27/93

Title <u>Groundwater Sampling</u>	Date <u>5-04-93</u> <i>dw</i>	DCN Number <u>93-02</u> <i>dw</i> 5-21000-OPS-GW.6
Expires <u>5-4-94</u> <i>dw</i>	Procedure Revision Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Scope Limitation <u>none</u>		

Item Number	Page	Step or Paragraph	Changes (Use DCN Continuation Sheet for Additional Space)
1	Form GW.6B (2 pg.)	n/a	Replace old form (Rev. 2 dated 05-13-92) titled, "Rocky Flats Plant Groundwater Sample Collection Log," with the new one attached (Rev. 2.1 dated 02-23-93). Note: This DCN Supersedes Item #2 on DCN 92-02 (10/14/92)

DOCUMENT CLASSIFICATION REVIEW WAIVER
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Justification (Reason for change - Provide numbers to reference corresponding items above)

1. This form was revised to be consistent with the GW.6 text and to improve field documentation.

Concurrence	Organization	Req	Date	Concurrence	Organization	Req	Date
<i>[Signature]</i>	QAPM	X	5/3/93	<i>[Signature]</i>	User	X	4/22/93
<i>[Signature]</i>	FOM	X	4-22-93	<i>[Signature]</i>	EQS		4/29/93
Approval of Responsible Manager <i>[Signature]</i>		Date 4/22/93	Is Posting Req'd? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, By What Date? upon receipt		Date Posted	

Rocky Flats Plant Groundwater Sample Collection Log

Project Name _____	Sample Number _____
Project Number _____	Well Number _____
COC/RFA Number _____	Samples Collected By _____
COC/RFA Number _____	Zone _____
COC/RFA Number _____	Dates Collected _____
COC/RFA Number _____	

QA/QC Review By/Date: _____	Air Monitoring	Background	Breathing	Well Bore	Other _____
	Day 1				
	Day 2				
Purge Method - Type Used					
Baller: <input type="checkbox"/> Teflon <input type="checkbox"/> SS <input type="checkbox"/> Other _____					
Comments _____					

PURGE VOLUME CALCULATION - DATUM: TOP OF CASING (TOWC)	Purge Date _____
ID = Well Casing Inside Diameter (Inches) = _____	
UV = Unit Casing Volume (Gal/Linear Foot) = _____	
WD = Depth to Water (Feet) = _____	
TD = Total Depth (Feet) = Measured Total Depth (MTD) + Probe End = _____	Checked By: _____
IC = Initial Water Column (Feet) = TD - WD = _____ - _____ = _____	
IV = Initial Water Volume (Gallons) = UV x IC = _____ x _____ = _____	
PV = Purge Volume (Gal) = 3 x IV = 3 x _____ = _____	

PURGED VOLUMES AND FIELD WATER QUALITY MEASUREMENTS

Time (24-Hour)	Volume Purged (Gal)	Temp (°C)	Spec Conductance (ms/cm)	pH (SU)	DO (mg/L)	Turbidity (FTU)	Water Description (Color, Turbidity)

Does the Well Dewater? (Yes/No) _____ If Yes, Then Perform Recharge Rate Calculation. If No, Then Sample Using PV.
 Actual Purged Volume (Gals) = _____

RECHARGE RATE CALCULATION

90% of IC = 0.9 x IC = 0.9 x _____ = _____

10 Minute Water Level Recovery: Time Start _____ Time Stop _____

ER = Estimated 30 Minute Recharge = (TD - 10 Minute WD) x 3 = (_____ - _____) x 3 = _____

2nd 10 Minute Recharge: ER = (_____ - _____) x 3 = _____

3rd 10 Minute Recharge: ER = (_____ - _____) x 3 = _____

SD = Depth to Top of Screen - 2 = _____ - 2 = _____

Is WD Less Than SD? (Yes/No) _____ If Yes, Then:

AC = Adj Water Column = TD - SD = _____ - _____ = _____

AC 90% = 0.9 x AC = 0.9 x _____ = _____

Is ER 90% Less Than AC 90%? (Yes/No) _____ If Yes, Then Sample; If No, Then Sample Using PV

If No, Then:

IC 90% = 0.9 x IC = 0.9 x _____ = _____

Is ER Less Than IC 90%? (Yes/No) _____ If Yes, Then Sample; If No, Then Sample Using PV

Depth to Water Before Sampling _____ Volume _____ Time _____ Date _____

Depth to Water Before Sampling _____ Volume _____ Time _____ Date _____

Rocky Flats Plant Groundwater Sample Collection Log (concl)

Project Name	Sample Number
Project Number	Well Identification

Equipment Type	Equipment Identification	Standard Used Lot Number	Temp (°C)	Equipment Reading	Reading Acceptable?	Date	Time

Sample Method - Type Used <input type="checkbox"/> Pump <input type="checkbox"/> Peristaltic <input type="checkbox"/> Baller <input type="checkbox"/> Teflon <input type="checkbox"/> Other	PH Offscale _____ <input type="checkbox"/> Yes Total Alkalinity: _____ x 10 _____ ppm at _____ pH <input type="checkbox"/> No Total Alkalinity (Full Range) _____ ppm at _____ pH Nitrite _____ mg/l - Blank Value _____ mg/l = Final Nitrite _____ Final DO _____ mg/l Checked By: _____
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Date	Time	Temp (°C)	pH (SU)	Conductivity (ms/cm)	DO (mg/l)	Turbidity (FTU)	Initials

Analysis	Partial	Rad	VOA	Stbl	Inorg	Nitrate	BNA	PCB	A/B/U	A,B,U,Cs,Ra,Sr	Diss Metals	Total Metals	TOC	COD
	Full	Scrn	ISO					PEST						
Volume	100ml	(2) 40ml	100ml	1L	250ml	1L	1L	1L	1L	Gallon	1L	1L	250ml	250ml
Pres					H ₂ SO ₄			HNO ₃	H ₂ SO ₄	H ₂ SO ₄				
								Filter	Filter	Filter				
Date														
Time														
Number of Bottles														

Analysis	Partial	Ammonia	Pu/Am	Tritium	Pu	Am	Cs,Ra,Sr	Cyanide	Ortho Phosphate	Other
	Full									
Volume	1L	Gallon	100ml	Gal	Gal	Gallon	1L	250ml		
Pres	H ₂ SO ₄	HNO ₃		HNO ₃	HNO ₃	HNO ₃	NaOH			
						Filter		Filter		
Date										
Time										
Number of Bottles										

Comments

Print Name	Signature	Date
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