

REVISION ORDER

DOCUMENT TO BE CHANGED: BHI-OP-00010 00 ~~10/25/94~~
10/29/94 A

Document Type/No. Rev. No. Date Rev. Order ID (Assigned by DCC)

Change Type: General Site Spec., Site No. Exception Revision

Approval of this revision shall alter the document identified above for:

Sites the project as detailed below in Section 2.

Initiated by: CD Wittreich *[Signature]* 11/22/94 Revision Required by: _____
Name Date Date

Reason for change: Revise 200-UP-1 pilot system operating procedures to bring a second well on line and include a procedure to backwash columns

DESCRIPTION OF CHANGE:

Section	Description
1.3, 2.2	Modify procedure to be able to use additional extraction wells. See attachment 1 for specific modifications.
2.0	Add new section 2.6 per attachment 2.

REVIEWED: *[Signature]* 11/22/94
Project Quality Assurance Date

CONCUR: *[Signature]* 11-23-94
CDW Functional/Area/Project Manager Date

lmm
11/29/94

Revision Order A to
BHI-OP-00010, Rev. 06

Attachment 1

Section 1.3.1: Change second paragraph to read; "Refer to process flow diagram, drawing number PT5EA-D1, Rev D and the process and instrument diagram drawing number 122293-K and 122293L for performing the startup checklist. In addition, utilize the equipment list below for performing the equipment component check."

Section 2.2.1: Change this section to read; " The flowing ball valves (BV) are to be positioned prior to startup of the extraction well pump(s). (A note will be made in the field log book as to which well(s) was brought on line.)

- If starting extraction well pump P-1A, Open BV-1A, BV-2A, BV-4A, BV-8, BV-7, BV-17 and BV-18
- If starting extraction well pump P-1B, Open BV-1B, BV-2B, BV-4B, BV-11, BV-12, BV-17, and BV-18.

Section 2.2.3: Change this section to read; " Start extraction well pump P-1A or B-1B by holding in the "Start" pushbutton until flow is established. Watch for flow on FIT-1A and for makeup of flow switch FS-1A when starting pump P-1A. Watch for flow on FIT-1B and for makeup of flow switch FS-1B when starting pump P-1B. Once flow is established, then release the pushbutton. Record in the field Log book which well(s) was brought on line."

Section 2.2.5: Change light designation FS-1 to FS-1A and add FS-1B, LSL-1A and LSL-1B.

11/28/94

Revision Order A to
BHI-OP-00010, Rev. 00

Page 3 of 5

Attachment 2

2.6 Backwash Procedure

When new IX resin or Granulated Activated Carbon is loaded into the process columns and before it is placed into service, it must be backwashed to remove fines and color bodies. When a backwash is to be done, the Treatment System will be shutdown. Two pumps are available for use for backwashing, pump P-3 (located on the Process Skid) and the gas motor operated pump. If sufficient treated or clean water exists in the Effluent Storage Tank, it may be used for the backwash water source. In that case the gas operated pump may be the best choice because of the long distance to pump P-3. If using the process water tank for backwashing, pump P-3 is probably the pump of choice. Backwashing is performed manually; to set up for backwash perform the following (Note: The backwash will require nominally 1000-3000 gallons per column depending on size and amount of media. Sufficient backwash water must be available.):

Note: The Granulated Activated Carbon GAC column should be filled 50 % with GAC. After filling with GAC, it may be advisable to fill the tank with water and allow the tank to soak overnight before backwashing operations begin.

- 2.6.1 Connect a hose from the Process Water Tank to the quick disconnect on the suction side of Pump P-3 (or to the suction of the gas motor operated pump).
- 2.6.2 Connect a hose from the discharge of Pump P-3 (or to the discharge of the gas motor operated pump) to the Process Manifold inlet, just upstream of FS-3, this will provide flow control for the backwash.
- 2.6.3 Connect a hose from the quick disconnect at the outlet of the manifold (just downstream of BV-27) to the bottom of the column to be backwashed. Connect the process system inlet manifold hose (which was disconnected from the manifold in step 2.6.2) to the top of the column to be backwashed. (Note: for a better view of the clarity of the solution, a portable rotometer may be installed in this line.)
- 2.6.4 The backwash solution will be sent back through the Influent Filters to remove solids and then on to the Influent Storage Tank. Connect a hose from a quick disconnect at the top of the IX Column being backwashed to BV-30 at the inlet of the Influent Filters (will be going through pumps P-2A or P-2B) and a hose from BV-61 (filter outlet) to the outlet manifold of the Influent Storage Tank at MBV-2/BV-25.
- 2.6.5 If treated water is to be used as the water supply for the backwash, close BV-66 in the Effluent Storage Tank outlet manifold, and disconnect the outlet hose. Then connect a hose from BV-82, to the

lmm
11/29/94

Revision Order A to
BHI-OP-00010, Rev. 00

Attachment 2 (Continued)

Page 4 of 5

process pump P-3 (or to the gas motor operated pump), and to the process manifold as in 2.6.1 and 2.6.2 above.

- 2.6.6 Backwash new media in each column until the colored backwash solution turns clear (carbon fines, fractured resin beads, or color bodies contribute to the color). As stated above this may require approximately 1000-3000 gallons per column, and may take approximately 1 - 2 hours. The backwash rate should be sufficient to expand the bed 30-50% and should require approximately 20 gpm for both the ion exchange resin and the GAC.
- 2.6.8 When backwash is complete, secure hoses and valves and make correct hose connections to allow establishing normal processing water flow as described in Section 1.3 above.
- 2.6.9 Table 2.5 is provided to document these steps, and a copy of this checklist is to be maintained in the field files.

Document the backwash process in the field logbook.

lmm
11/29/94

Revision Order A to
BHI-OP-00010, Rev. 00

Attachment 2 (Continued)

Table 2.5. Backwash of IX Columns.

OPERATOR: _____

DATE: _____

Backwash Checklist	Verified/Date
1) Verify that sufficient backwash water is available for backwashing.	
2) Connect a hose from the Process Water Tank to the suction of Pump P-3 (or the gas motor operated pump) as described in 2.6.1 above.	
3) Connect a hose from pump P-3 (or gas pump) discharge to the inlet of the Process Manifold as in 2.6.2, above.	
4) Connect a hose from the quick disconnect at the outlet of the process manifold to the bottom of the column being backwashed as in 2.6.3, above.	
5) Connect a hose from a quick disconnect at the top of the IX Column being backwashed to BV-30 at the inlet of the Influent Filters, and a hose from BV-61 (filter outlet) to the outlet manifold of the Influent Storage Tank at MBV-2/BV-25.	
6) If treated water is to be used as the water supply for the backwash, close BV-66 at the Effluent Storage Tank outlet manifold and disconnect the outlet hose. Then connect a hose from that quick disconnect to the process pump P-3 (or to the gas pump), and to the process manifold as in 2.6.1 and 2.6.2 above.	
7) Backwash new media in each column until the colored backwash solution turns clear (carbon fines, fractured resin beads, or color bodies contribute to the color). As stated above this may require approximately 1000-3000 gallons per column, and may take approximately 1 - 2 hours.	
8) When backwash is complete, secure hoses and valves and make correct hose connections to allow establishing normal processing water flow as described in Section 1.3 above.	