1. Procedure summary

This procedure describes how to collect a sample from a pond.

1.1. Related Procedures

Paddle Wheel Operation	CB-04-004-002
Safe Traffic Flow	CB-03-006-001

1.2. Procedure impacts and concerns

Safety	Caution when operating near ponds and paddle wheel. PPE Required: Standard PPE + Nitrile Gloves.
Quality	Inconsistent sampling impacts daily data related to Optical Density, Dry Weight and Microscope Observations.
Delivery	Samples must be delivered to the lab within (1) hour after collecting to ensure QAQC has sufficient time to complete analyses. Along with copy of Daily Data Collection Sheet.
Environmental	Loss of Containment
Cost	N/A
Compliance	Compliance with OSHA's Hazardous Waste Operations and Response, and Hazardous Communication Standard in addition to the Sapphire Energy, Inc. Chemical Hygiene Plan is required where applicable. See 29 CFR 1910.120 and 1200. An AUL list, MSDSs and label information will be available for easy reference in a binder in the administration building.

1.3. Responsibilities and owners

Document Owner	Manage content and distribution	Magdalena Pacheco
Process Owner	Responsible for content and process validation	Dhawal Dhonde
Site Manager	Responsible for implementation and conformance	Dhawal Dhonde

2. Process

2.1. Process description

This procedure describes how to collect a sample from a pond. Each sample must be collected in a uniform manner and at the designated location to ensure the accurate representation.

Be aware of Paddlewheel operation procedures

2.2. Process diagram: Work Instruction

2.3. Process steps

2.3.1. Daily Pond Sampling

2.3.1.1. Receive sample collection request through daily instructions indicating which ponds need to be sampled and any special deviations from the standard sample volume (1L) located in Laboratory.

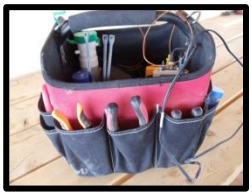
NOTE: **Labels must include Date, Pond Number, Operator Initials, and Sample Time.**

2.3.1.2. Print out Daily Data Collection form located in Columbus Drive L:\Field Operations\Daily Data\Daily Data Sheet for daily sampling.(See note)
2.3.1.3 Ensure all equipment, documentation and tools are with you prior to leaving office.

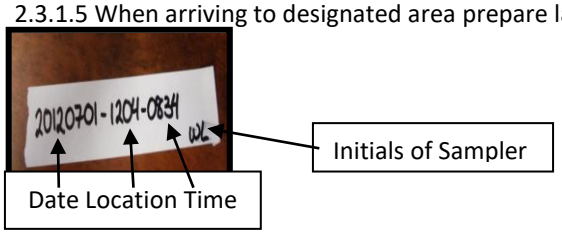
NOTE: **Be aware of paddlewheel operations and proceed with caution**

Note: **Prior to printing Daily data ensure pond count is up to date.**






2.3.1.4. Travel to sampling location. Refer to Safe Traffic Flow Procedure for details on how to travel within the site.
2.3.1.5 When arriving to designated area prepare label for that bottle.



2.3.1.5. Collect sample in between paddlewheel and ruler over safety rail, submerging

bottle about half way with the paddlewheel ON unless otherwise noted in instructions using sample stick with 1L bottle attached. See Figure 1 for sampling location.

2.3.1.6. Remove sample bottle from sample stick.

2.3.1.7. Field operator needs to get CO2 psi pressure (Figure 2), PLC # (Figure 3) from PLC box and report to designated person writing all documentation down on Daily Data Collection Sheet.

2.3.1.8 Place sample bottle on bed of truck and collect PH and temperature on Daily Data Sheet from handheld. See Figure 4.

2.3.1.9 Repeat for all required pond samples with respective bottles.

2.3.1.10. Place full bottles in carrier.

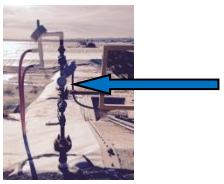


Figure 2

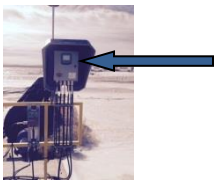


Figure 3

Figure 4

Figure 1. Diagram of pond sampling location.

2.3.1.9. Samples must be submitted to the Lab immediately.

2.3.2 Harvest AH-Valve Sampling

2.3.2.1. Receive sample collection request from daily instructions indicating which locations need to be sampled and any special deviations from the standard sample volume (1L) and frequency of sampling.

2.3.2.2. Print Harvest Sample Sheet located in L:\Field operations\Cultivation checklist\Sampling Sheets\AH-V Sample Sheet. See figure 1.3.

2.3.2.3. Travel to sampling location at DAF Feed Channel. Refer to Safe Traffic Flow Procedure for details on how to travel within the site.

2.3.2.4. Label bottle with appropriate information after arriving to specific area. See photo below.

NOTE: **Samples must be submitted to lab within one hour of sample start time.**

NOTE: **All samples must be properly labeled.**

2.3.2.5. Collect sample from designated area at DAF Feed channel AH-Valves 202, 402 and 602 using sample stick with 1L bottle attached. See Figure 2 for sampling locations.
2.3.2.6. Remove sample bottle from sample stick and place cap on bottle firmly.
2.3.2.7. Repeat for all required locations and time points with respective bottles.
2.3.1.8. Place full bottles in carrier, samples must stay out of the sun.
2.3.1.9. Samples must be submitted to the Lab when pond dropping is complete.
2.3.1.10 All samples must be properly labeled and verified on sample sheet when submitted to the lab. NOTE: Copy of sample sheet will need to be made and given to QAQC.

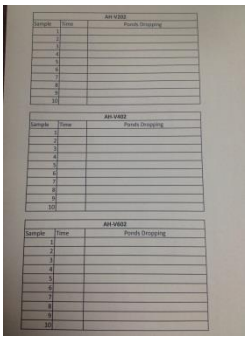


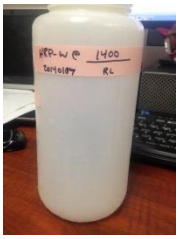
Figure 1.3

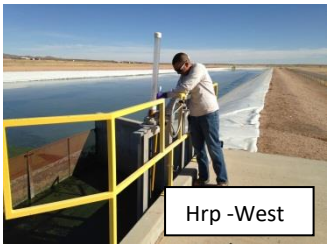
Figure 2. Diagram of harvest sampling locations at DAF Feed Channel at AH-Valves

2.3.3. Harvest Return Pond (HRPW) Sampling

2.3.3.1. Receive sample collection request through daily instructions indicating which locations need to be sampled, any special deviations from the standard sample volume (1L) and frequency of sampling.
2.3.3.2. Print out HRP sample sheet located in L:\field operations\Cultivation Checklist\Pond Dropping\HRP sample sheet. See figure 1.4.
2.3.3.3. Travel to sampling location at HRP. Refer to Safe Traffic Flow Procedure for details on how to travel within the site.
2.3.3.4. Label bottle with appropriate label
2.3.3.5. Collect sample from designated area at HRP using sample stick with 1L bottle attached. See Figure 3 for sampling locations.
2.3.3.6. Remove sample bottle from sample stick and place cap on bottle firmly.
2.3.3.7. Document color, flock, depth etc. on HRP sample sheet.
2.3.3.8. Repeat for all required locations and time points with respective bottles.
2.3.3.9. Place full bottles in carrier.
2.3.3.10. Samples must be submitted to the Lab as soon as they are collected.

Figure 3





NOTE: **Document depth when taking HRPW sample on sample label for QAQC.**

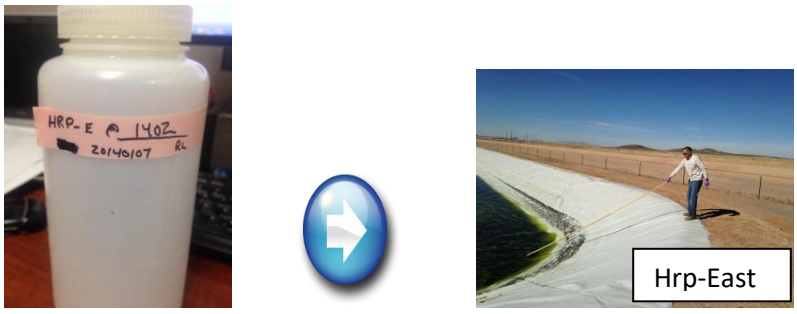


Figure 3. Diagram of Harvest Return Pond sampling locations.

Figure 1.4.

2.3.**4** **Subnatant Return (SN), Well Water Sampling and HRPE sampling.**

2.3.4.1. Receive sample collection request through daily instructions indicating which locations need to be sampled, any special deviations from the standard sample volume (1L) and frequency of sampling.

2.3.4.2. Travel to sampling location at SN, Well Water outlet or HRP East. Refer to Safe Traffic Flow Procedure for details on how to travel within the site.

2.3.4.3. Label bottle with appropriate label

2.3.3.4. Collect sample from SN, Well Water outlet, or HRPE sample using sample stick with 1L bottle attached. See Figure 4 for sampling locations.

2.3.4.5. Remove sample bottle from sample stick and place cap on bottle firmly.

2.3.4.6**.** Repeat for all required locations and time points with respective bottles.

2.3.4.7. Place full bottles in carrier.

2.3.4.8. Samples must be submitted to the Lab as soon as they are collected.

Figure 4. Diagram of SN line and Well Water sampling at HRPE Location.

2.3.5. **DAF Feed Pond (DFC) Sampling**

2.3.5.1. Receive sample collection request through daily instructions, including any special deviations from the standard sample volume (1L) and frequency of sampling.

2.3.5.2. Travel to sampling location at DFP. Refer to Safe Traffic Flow Procedure for details on how to travel within the site.

2.3.5.3. Label bottle with appropriate label

2.3.5.4. Collect sample from designated area at DFP using sample stick with 1L bottle attached. See Figure 5 for sampling locations.

2.3.5.5. Remove sample bottle from sample stick and place cap on bottle.

2.3.5.6**.** Place full bottles in carrier.

NOTE: Any documentation taken from SN sample will be taken on HRP sample sheet. Well water sample documentation will be taken on a production log.

2.3.5.7. Samples must be submitted to the Lab as soon as they are collected.

Figure 5. Diagram of DAF Feed Pond Sampling Location.

NOTE: Documentation of DFP sampling along with depth will be taken on Daily Data Collection or production log depending on sampling task assigned. See Figure 5.

3. Required documents

3.1. Input documents

Daily Instructions	Email communication
Daily Data Collection Form	L:\Cultivation\Daily Data
Harvest Sample Sheet	L:\ Field operations\Cultivation checklist\Sampling Sheets\AH-V Sample Sheet
HRP Sample Sheet	L:\field operations\Cultivation Checklist\Pond Dropping\HRP sample sheet.

3.2. Output documents

Completed Daily Data Collection Form	Email communication
Completed Harvest Sample Sheet	L:\Cultivation\Daily Data
Completed HRP Sample Sheet	L:\ Field operations\Cultivation checklist\Sampling Sheets\AH-V Sample Sheet
	L:\field operations\Cultivation Checklist\Pond Dropping\HRP sample sheet.

4. Document control

4.1. Revision history

R0 – Initial Release – Robert McBride, Andy Randall	02-16-2012
R1 – Adriana Rascon	04-03-2012
R2—Adriana Rascon	06-27-2012
R3-Magdalena Pacheco	12-11-2015

4.2. Document approval

4.3. Document reviewers

5. Risk analysis