CLAIMS

1. A vessel having an integrated or connected pump comprising:

a vessel comprising a flexible bag or a substantially rigid container defining an interior volume and having a bottom surface, the bottom surface containing an aperture therein for the passage of fluid;

a pump secured to the bottom surface of the vessel, the pump having an inlet in fluid communication with the interior volume via the aperture and a plurality of outlets, wherein the pump pumps fluid from the interior volume of the vessel into the inlet of the pump and out the plurality of outlets; and

one or more conduits or tubing comprising return lines that are connected at one end to the plurality of outlets and having flexible free ends extending into the interior volume of the vessel.

2. The vessel having an integrated or connected pump of claim 1, wherein the one or more conduits or tubing return lines comprise flexible tubing, a flexible conduit, or rigid conduit or tubing external to the vessel.

3. The vessel having an integrated or connected pump claim 1, wherein the flexible free ends of the return lines terminate at different depths or heights within the interior volume of the vessel.

4. The vessel having an integrated or connected pump of claim 1, wherein the flexible free ends of the return lines comprise end features.

5. The vessel having an integrated or connected pump of claim 1, wherein the number of outlets comprises 2, 3, 4, 5, 6, 7, 8, 9, 10, or more outlets.

6. The vessel having an integrated or connected pump of claim 1, wherein the one or more return lines comprise branched lines.

7. The vessel having an integrated or connected pump of claim 1, wherein the one or more return lines have one or more holes formed in sides thereof.

8. The vessel having an integrated or connected pump of claim 1, wherein the return lines enter the vessel at ports contained therein and wherein respective flexible free ends of the return lines are unsecured to the vessel.

9. The vessel having an integrated or connected pump of claim 1, wherein at least one of the return lines is coupled to a processing units that performs one or more of: filtration, buffer addition, buffer dilution, media addition, nutrient addition, sparging of gases, gas removal, ozone gas addition, waste removal, dilution, precipitation of molecule(s) or compound(s) of interest, sensor reading, and pH adjustment, mixing or maintaining material in suspension continuously, product sampling, harvesting or products, or ultrafiltration/diafiltration (UFDF) washing.

10. The vessel having an integrated or connected pump of claim 1, further comprising a port disposed in the aperture of the vessel, wherein the bottom surface of the vessel is secured to the port.

11. The vessel having an integrated or connected pump of claim 10, wherein the port comprises a flanged end and wherein the pump is secured to the flanged end of the port.

12. The vessel having an integrated or connected pump of claim 1, wherein the pump comprises a pump head secured to the bottom surface of the vessel by one of a bonded interface, a welded interface, or an adhesive or glue.

13. The vessel having an integrated or connected pump of claim 1, wherein the vessel comprises a top surface, wherein the return lines pass through the top surface and extend into the interior volume.

14. A method of pumping fluid from a vessel that comprises a flexible bag or a substantially rigid container defining an interior volume and having a bottom surface, the bottom surface containing an aperture therein for the passage of fluid and wherein a pump is secured to the bottom surface of the vessel having an inlet in fluid communication with the

interior volume via the aperture and a plurality of outlets coupled to respective conduits or tubing comprising return lines that are connected at one end to the plurality of outlets and having flexible free ends extending into the interior volume of the vessel, the method comprising pumping a fluid contained in the vessel out the plurality of outlets of the pump and back into the vessel.

15. The method of claim 14, wherein the conduits or tubing are coupled to a processing unit that performs one or more of: filtration, buffer addition, buffer dilution, media addition, nutrient addition, sparging of gases, gas removal, ozone gas addition, waste removal, dilution, precipitation of molecule(s) or compound(s) of interest, sensor reading, and pH adjustment, mixing or maintaining material in suspension continuously, product sampling, harvesting or products, or ultrafiltration/diafiltration (UFDF) washing.

16. The method of claim 14, wherein at least one of the conduits or tubing connected the plurality of outlet(s) is coupled to a second vessel that comprises a flexible bag or a substantially rigid container defining an interior volume and having a bottom surface, the bottom surface containing an aperture therein for the passage of fluid and wherein a second pump is secured to the bottom surface of the second vessel having an inlet in fluid communication with the interior volume via the aperture and a plurality of outlets, the method comprising pumping fluid from the interior volume of the vessel using the pump to the second vessel and pumping with the second pump fluid in the second vessel out the plurality of outlets of the second pump.