CLAIMS

What is claimed is:

1. A shunt tube assembly comprising:
   a wellbore tubular;
   a packing tube;
   a transport tube, wherein at least a portion of the transport tube is disposed within the packing tube; and
   at least one valve configured to provide selective fluid communication between an interior passageway through the transport tube and the packing tube.
2. The shunt tube assembly of claim 1, wherein a central axis of the packing tube is substantially parallel with a central axis of the wellbore tubular.
3. The shunt tube assembly of claim 1, wherein the shunt tube is disposed substantially concentrically within the packing tube.
4. The shunt tube assembly of claim 1, wherein the shunt tube is disposed eccentrically within the packing tube.
5. The shunt tube assembly of claim 1, wherein the packing tube comprises one or more ports.
6. The shunt tube assembly of claim 1, wherein the at least one valve is configured to provide selective fluid communication between the interior passageway through the transport tube and an annulus, wherein the annulus is formed between the transport tube and the packing tube.
7. The shunt tube assembly of claim 1, wherein the at least one valve comprises:
   a tubular wall; and
   a bore defined by the tubular wall, wherein the tubular wall comprises a swellable material configured to swell when contacted with a suitable fluid.
8. The shunt tube assembly of claim 7, wherein the at least one valve further comprises a coating disposed on a surface of the swellable material.
9. The shunt tube assembly of claim 7, wherein the swellable material is configured to substantially restrict flow through the bore in response to being contacted by the suitable fluid.
10. The shunt tube assembly of claim 1, wherein the at least one valve comprises:
    an opening extending through the transport tube; and
    a closure member, wherein the closure member is configured to substantially block

flow through the opening in a closed position and allow flow through the opening in an open position.

11. The shunt tube assembly of claim 10, wherein the at least one valve is configured to provide fluid communication between the transport tube and the packing tube until pressure difference across the at least one valve falls below a threshold.

12. The shunt tube assembly of claim 1, further comprising one or more separator rings disposed within an annulus formed between the packing tube and the transport tube, wherein the one or more separator rings are configured to divide the annulus into a plurality of annular sections.

13. The shunt tube assembly of claim 12, wherein the one or more separator rings are configured to substantially prevent fluid communication between adjacent annular sections.

14. A method of gravel packing comprising:

passing a slurry through a transport tube;

passing the slurry from the transport tube to an annulus between the transport tube and a packing tube, wherein the slurry passes through at least one valve disposed in the transport tube when passing from the transport tube to the annulus; and

disposing the slurry about a sand screen assembly.

15. The method of claim 14, further comprising: restricting fluid flow through the at least one valve after passing at least a portion of the slurry through the at least one valve.

16. The method of claim 15, wherein restricting the fluid flow comprises:

allowing a swellable material to contact a suitable fluid;

swelling the swellable material in response to contacting the fluid; and

reducing a flow area through the at least one valve based on swelling the swellable material.

17. The method of claim 15, wherein restricting the fluid flow comprises:

reducing a pressure differential across the at least one valve; and

engaging a closure member with a seat in response to reducing the pressure differential, wherein the closure member substantially prevents flow through the at least one valve when engaged with the seat.

18. The method of claim 15, wherein passing the slurry from the transport tube to the annulus comprises passing the slurry through a second valve disposed in the transport tube after restricting fluid flow through the at least one valve.

19. The method of claim 14, wherein passing the slurry from the transport tube to the annulus comprises:

passing the slurry from the transport tube to a first annular section through the at least one valve;

restricting flow through the at least one valve; and

passing the slurry from the transport tube to a second annulus section through a second valve.

20. A method comprising:

passing a fluid through a first wellbore tubular, wherein the first wellbore tubular is disposed within a second wellbore tubular, and wherein an annulus is formed between the first wellbore tubular and the second wellbore tubular;

passing the fluid from the first wellbore tubular to the annulus, wherein the fluid passes through at least one valve disposed in the first wellbore tubular when passing from the first wellbore tubular to the annulus;

passing the fluid from the annulus to an exterior of the second wellbore tubular through one or more ports disposed in the second wellbore tubular; and

closing the at least one valve in response to a portion of the fluid passing through the at least one valve.

CLAIMS

What is claimed is:

1. A shunt tube assembly comprising:

a wellbore tubular;

a packing tube;

a transport tube, wherein at least a portion of the transport tube is nested within the packing tube; and

at least one valve configured to provide selective fluid communication between an interior passageway through the transport tube and the packing tube.

2. The shunt tube assembly of claim 1, wherein a central axis of the packing tube is substantially parallel with a central axis of the wellbore tubular.

3. The shunt tube assembly of claim 1, wherein the shunt tube is nested substantially concentrically within the packing tube in a pipe-in-pipe configuration.

4. The shunt tube assembly of claim 1, wherein the shunt tube is nested eccentrically within the packing tube in a pipe-in-pipe configuration.

5. The shunt tube assembly of claim 1, wherein the packing tube comprises one or more ports.

6. The shunt tube assembly of claim 1, wherein the at least one valve is configured to provide selective fluid communication between the interior passageway through the transport tube and an annulus, wherein the annulus is formed between the transport tube and the packing tube.

7. The shunt tube assembly of claim 1, wherein the at least one valve comprises:

a tubular wall; and

a bore defined by the tubular wall, wherein the tubular wall comprises a swellable material configured to swell when contacted with a suitable fluid.

8. The shunt tube assembly of claim 7, wherein the at least one valve further comprises a coating disposed on a surface of the swellable material.

9. The shunt tube assembly of claim 7, wherein the swellable material is configured to substantially restrict flow through the bore in response to being contacted by the suitable fluid.

10. The shunt tube assembly of claim 1, wherein the at least one valve comprises:

an opening extending through the transport tube; and

a closure member, wherein the closure member is configured to substantially block

flow through the opening in a closed position and allow flow through the opening in an open position.

11. The shunt tube assembly of claim 10, wherein the at least one valve is configured to provide fluid communication between the transport tube and the packing tube until pressure difference across the at least one valve falls below a threshold.

12. The shunt tube assembly of claim 1, further comprising one or more separator rings disposed within an annulus formed between the packing tube and the transport tube, wherein the one or more separator rings are configured to divide the annulus into a plurality of annular sections.

13. The shunt tube assembly of claim 12, wherein the one or more separator rings are configured to substantially prevent fluid communication between adjacent annular sections.

14. A method of gravel packing comprising:

passing a slurry through a transport tube;

passing the slurry from the transport tube to an annulus between the transport tube and a packing tube, said transport tube being nested within the packing tube, wherein the slurry passes through at least one valve disposed in the transport tube when passing from the transport tube to the annulus; and

disposing the slurry about a sand screen assembly .

15. The method of claim 14, further comprising: restricting fluid flow through the at least one valve after passing at least a portion of the slurry through the at least one valve.

16. The method of claim 15, wherein restricting the fluid flow comprises:

allowing a swellable material to contact a suitable fluid;

swelling the swellable material in response to contacting the fluid; and

reducing a flow area through the at least one valve based on swelling the swellable material.

17. The method of claim 15, wherein restricting the fluid flow comprises:

reducing a pressure differential across the at least one valve; and

engaging a closure member with a seat in response to reducing the pressure differential, wherein the closure member substantially prevents flow through the at least one valve when engaged with the seat.

18. The method of claim 15, wherein passing the slurry from the transport tube to the annulus comprises passing the slurry through a second valve disposed in the transport tube after restricting fluid flow through the at least one valve.

19. The method of claim 14, wherein passing the slurry from the transport tube to the annulus comprises:

passing the slurry from the transport tube to a first annular section through the at least one valve;

restricting flow through the at least one valve; and

passing the slurry from the transport tube to a second annulus section through a second valve.

20. A method comprising:

passing a fluid through a first wellbore tubular, wherein the first wellbore tubular is disposed within a second wellbore tubular, and wherein an annulus is formed between the first wellbore tubular and the second wellbore tubular;

passing the fluid from the first wellbore tubular to the annulus, wherein the fluid passes through at least one valve disposed in the first wellbore tubular when passing from the first wellbore tubular to the annulus;

passing the fluid from the annulus to an exterior of the second wellbore tubular through one or more ports disposed in the second wellbore tubular; and closing the at least one valve in response to a portion of the fluid passing through the at least one valve.