WHAT IS CLAIMED:

1. A seawater or salt wastewater desalination process comprising:

performing a phosphate precipitation process, the phosphate precipitation process including adding a first mixture comprising ammonium phosphate and sodium phosphate to seawater or salt wastewater and mixing the first mixture and the seawater or salt wastewater;

after mixing the first mixture and the seawater or salt wastewater, adding a second mixture comprising ammonia and a water-based charged solvent comprising water, alcohol and sodium hydride to the seawater or salt wastewater and mixing to produce a seawater or salt wastewater mixture having a pH of greater than or equal to 8.5;

performing a solids collection process to collect precipitated solids from the seawater or salt wastewater mixture, the solids including magnesium ammonium phosphate;

after performing the solids collection, performing an oxidation process comprising aeration of the seawater or salt wastewater mixture, followed by filtration removal of solids produced during the oxidation process; and

performing a final filtration process comprising microfiltration followed by nano-filtration of the seawater or salt wastewater to produce potable water.

2. The desalination process of claim 1 further comprising filtering the seawater or salt wastewater mixture after the solids collection process.

3. The desalination process of claim 2 wherein the filtration comprises filtration through sand followed by carbon filtration.

4. A fertilizer production process comprising:

providing seawater or salt wastewater;

performing a phosphate precipitation process, the phosphate precipitation process including:

adding a first mixture comprising ammonium phosphate and sodium phosphate to the

seawater or salt wastewater and mixing the first mixture and the seawater or salt wastewater;

after mixing the first mixture and the seawater or salt wastewater, adding a second mixture comprising ammonia and a water-based charged solvent comprising water, alcohol and sodium hydride to the seawater or salt wastewater and mixing to produce a seawater or salt wastewater mixture having a pH of greater than or equal to 8.5; and

performing a collection process to collect a fertilizer product comprising precipitated solids from the seawater or salt wastewater mixture, the solids including magnesium ammonium phosphate.

5. The fertilizer production process of claim 4 wherein the fertilizer product further comprises organic matter.

6. The fertilizer production process of claim 4 wherein the solids additionally contain potassium and calcium salts.

7. The fertilizer production process of claim 4 wherein a seawater or salt wastewater is selected for processing such that the solids contain from 8 to 20% by weight magnesium.