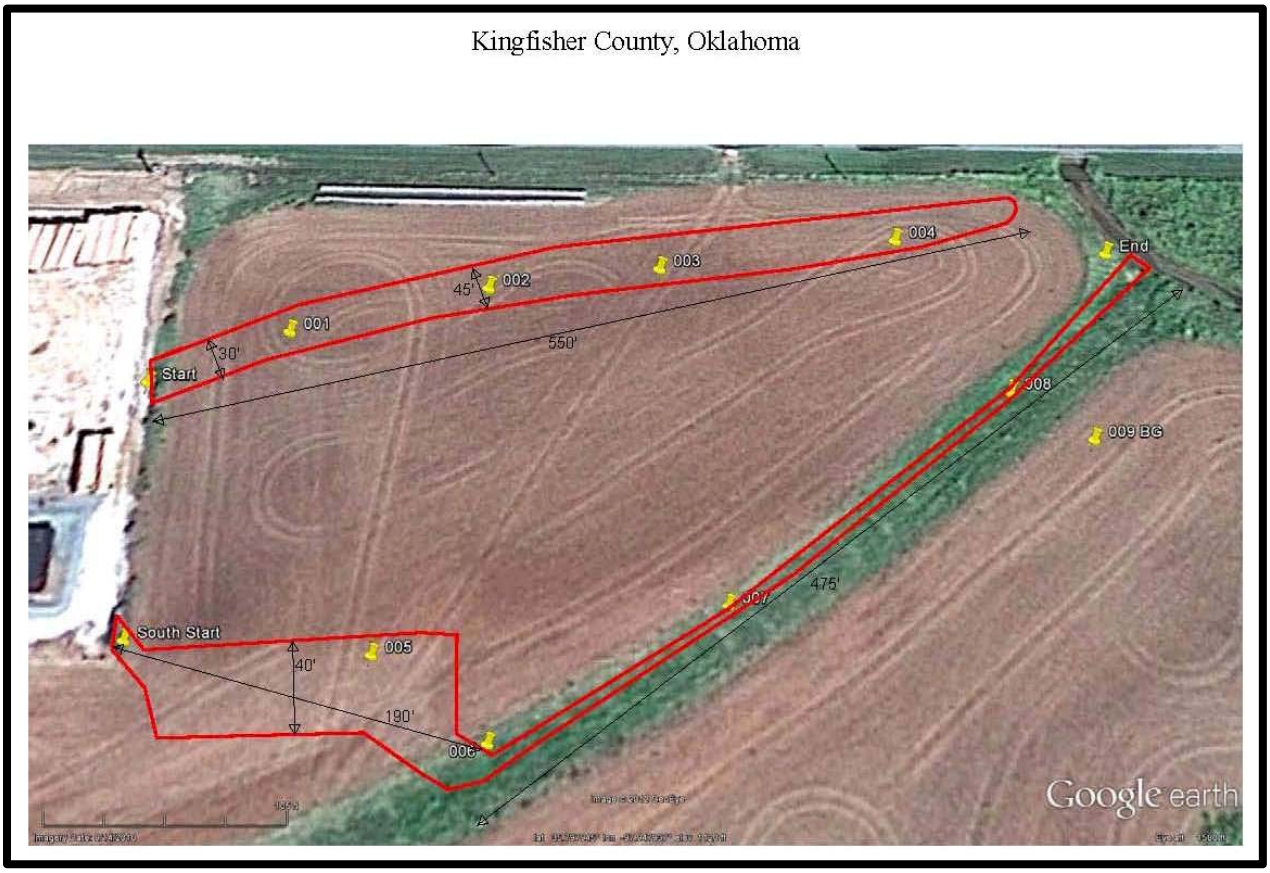
MicroBind Case Study – Kingfisher County, OK

Timeline

6/20/12 – Collect initial samples to vertically/horizontally delineate impacted area

Site Map



6/20/12 Analytical Results		
Sample ID	**Depth (ft. bgs)**	**Total Soluble Salts Results (ppm)**
001	0	23,300
001A	1	5,130
001B	2	2,440
001C	3	697
002	0	15,100
002A	1	3,760
002B	2	1,360
003	0	8,810
003A	1	1,590
003B	2	1,300

6/20/12 Analytical Results		
Sample ID	**Depth (ft. bgs)**	**Total Soluble Salts Results (ppm)**
001	0	23,300
004	0	21,600
004A	1	6,850
005	0	28,200
005A	1	1,030
005B	2	963
006	0	17,300
006A	1	842
007	0	24,000
007A	1	2,610
008	0	16,500
008A	1	6,990
009BG	0	305

**ft. bgs = feet below ground surface, ppm = parts per million*

Results indicated Total Soluble Salts (TSS) levels above the Oklahoma Corporation Commission (OCC's) action level of 2,640 ppm in Sample IDs 001, 001A, 002, 002A, 003, 004, 004A, 005, 006, 007, 008, and 008A.

7/17/12 – 7/20/12 – Perform remediation services:

- Till impacted drainage way (southern portion)
- Treat impacted drainage way with a MicroBind solution
- Excavate remaining impacted area
- Incorporate gypsum and manure into the base of the excavation
- Treat the base of the excavation with a MicroBind solution
- Backfill with impacted soil
- Incorporate gypsum and manure into the backfilled area
- Treat the backfilled area with a MicroBind solution

9/18/13 – Collect confirmation samples from previous sample locations

Comparison of Analytical Results from Pre and Post Remediation				
Sample ID	**Depth (ft. bgs)**	**Pre-Remediation Total Soluble Salts Results (ppm)**	**Post-Remediation Total Soluble Salts Results (ppm)**	**Δ Total Soluble Salts Results (ppm)**
001	0	23,300	2,430	-20,870
004	0	21,600	5,070	-16,530
004A	1	6,850	2,680	-4,170
005	0	28,200	2,180	-26,020
006	0	17,300	10,100	-7,200
008	0	16,500	3,630	-12,870

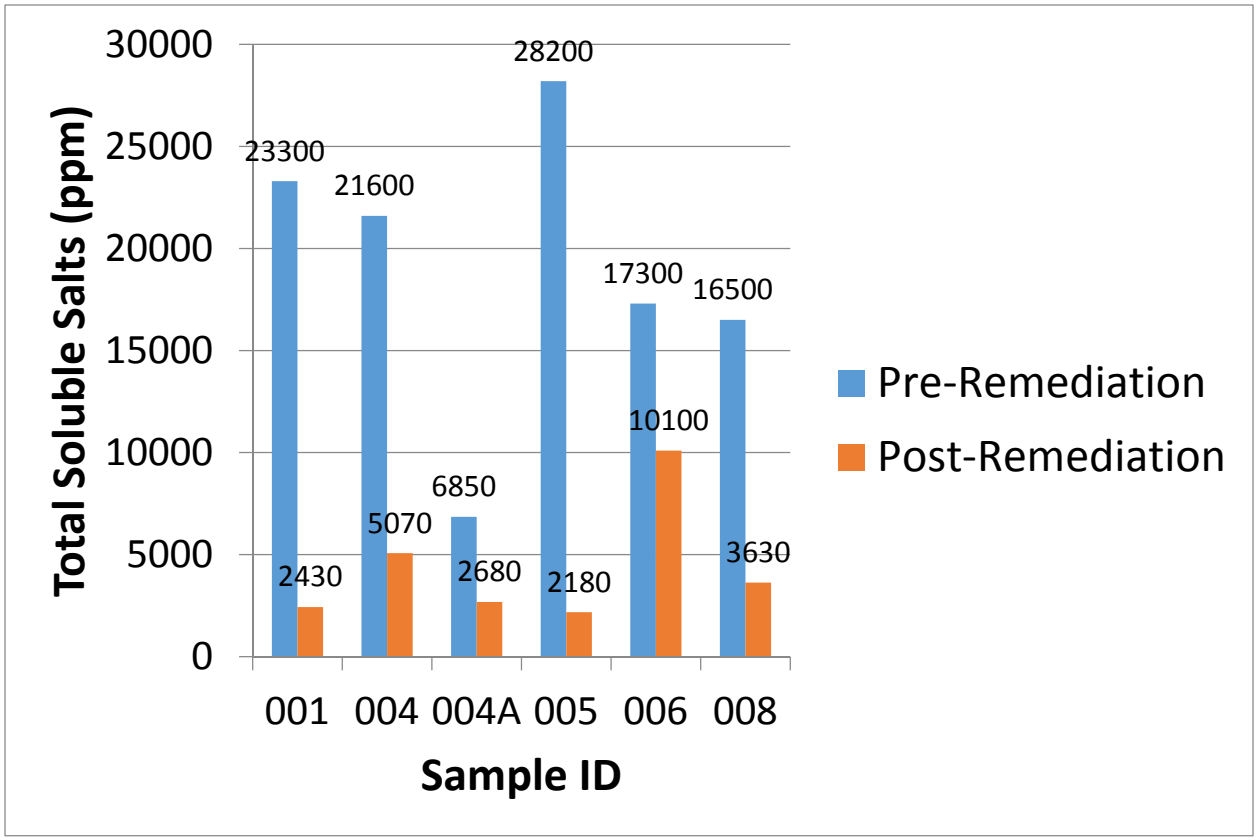


Figure 1: Comparison Graph of Pre and Post Remediation TSS Results

Results indicated significant reductions in TSS in Sample IDs 001, 004, 004A, 005, 006, 008.

Photographic Documentation:

Photograph 1: Tilling drainage way

Photograph 2: Treating the tilled drainage way with a MicroBind solution

Photograph 3: Excavation of Impacted Area

Photograph 4: Incorporating manure into base of the excavation

Photograph 5: Incorporating gypsum into base of the excavation

Photograph 6: Treating the base of the excavation with a MicroBind solution

Photograph 7: Post Backfill Treatment with a MicroBind solution

Photograph 8: Post Backfill Treatment with a MicroBind solution