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ENVIRONMENTAL EFFECTS IN PAVEMENT MIX AND STRUCTURAL DESIGN SYSTEMS

CALIBRATION AND VALIDATION OF THE ICM VERSION 2.6

PRELIMINARY DRAFT
FINAL REPORT - APPENDICES
PART 2

Prepared for
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APPENDIX A.
DETAILED FIELD INFORMATION

FIELD SAMPLING PROCEDURE

1. Check traffic control and test site accessibility to determine acceptability.
2. Locate the 'Instrumentation Hole' with help of the post holding the rain gauge and air temperature probe located on the side of the road.
3. Record the site information and weather conditions.
4. Mark the sample locations (four at each site). Typically, two sample locations will be marked three feet apart, on either side of the instrumentation hole, along the outer wheel path as shown on Figure 1C. However, if the space between the instrumentation hole and the edge of test section is less than six feet or joints/cracks are present the sample location pattern may need to be changed accordingly.
5. Setup the coring device (8" diameter) at the first location and core through the asphalt layer. A wet-cutting core drill machine will be used for coring asphalt. The first several inches of asphalt will be cored with water cooling, but the last inch will be cored dry to avoid moisture contamination.
6. Retract the coring device and remove the cored cylinder.
7. Measure the thickness of the asphalt layer using a steel tape. If multiple layers are visibly present, measure each layer.
8. Put a plastic wrap around the asphalt cylinder, seal the wrapped cylinder with Ductape, label the sample, and place it in a 5-gallon plastic bucket for transportation.
9. Clean and level the bottom of the hole, and place the support ring for the Sand Cone.
10. Carefully dig a hole into the base using a 6" diameter hand auger. Use a tripod and guide to position the hand auger exactly in the middle of the 8" diameter hole. The hole should penetrate through the entire thickness of the base, or be 10" deep, whichever is less.
11. Place all the base course material dug out of the hole immediately in to a sealable plastic container. A 12" by 6" diameter plastic container can be used for this purpose. Close the lid immediately to prevent any moisture escape.
12. Clean the sides and bottom of the hole of any loose material using a brush and add that material into the plastic container and seal it.
13. Measure the thickness of base course, if the bottom of the base course was reached.
14. Measure the weight of the removed material in the plastic container using a balance, seal the container with tape, label it, and place in the same 5-gallon plastic bucket. The weight of the empty plastic container should be measured in advance.
15. Weigh the Sand Cone apparatus filled with sufficient amount of sand.
16. Lower the Sand Cone apparatus into the hole, place on the metal ring, and open the valve.

17. Close the valve of the Sand Cone apparatus when the sand stops flowing into the hole and carefully remove it out of the hole. If possible time the flow of sand to coincide with no or minimum traffic.
18. Weigh the Sand Cone apparatus again and refill it with sand for the next test.
19. Remove the sand from the hole using the hand auger/manually and clean the hole. Discard the removed sand.
20. Retrieve the metal ring from the hole.
21. Enlarge the 6" diameter hole in the base course using an 8" auger. Remove the material generated inside the hole and place on plastic. This material is not suitable for any testing and therefore, should be discarded or compacted back in the hole.
22. Clean the sides and the bottom of the hole of any loose material. Now the bottom of the hole is at the top of the next layer, most probably the subbase.
23. Repeat the Steps 8 through 19 for the subbase.
24. Now the bottom of the hole is at the top of the subgrade.
25. Prepare the hand sampler attaching the 2.8-inch thin-walled tube.
26. Lower the sampler into the hole and drive into the subgrade. Count the number of blows to drive the sampler.
27. Following 8 inches of penetration, retrieve the sampler and measure its moist density. Extrude the sample using a sample extruder, without any loss of material.
28. Place the sample in a plastic canister lined with plastic with minimum disturbance, close the lid, seal both ends with tape, label the sample, and place in the 5-gallon plastic bucket.
29. If the subgrade material exhibits insufficient cohesion to be retained in a drive tube, the Sand Cone test will be performed as describe before.
30. Following the sampling, clean and prepare the hole for backfilling. If the Sand Cone test was performed on the subgrade remove the sand.
31. Fill the hole with ABC material up to the base course level. Use a hand-tamping rod to compact the backfill at every 3 inches. Moisten the ABC material to facilitate the compaction.
32. Use cold-patch to fill the hole with asphalt. Use the hand-tamping rod to compact the cold-patch at every 3 inches.
33. Complete the surface leaving a very slight hump relative to the existing asphalt surface. The hump should level off eventually due to the traffic.
34. Dispose of any excess materials removed from the hole and clean the location.
35. Repeat the Steps 4 through 33 for the other three locations.
36. Locate the observation piezometer, if present, at the site and collect a water level measurement using a water-level indicator.

FIELD DATA SHEET

General information

Test Date :

Site Information-

- Name :
- Location :
- Elevation :
- Depth to GWT :
- Site Description :

Weather Condition-

- Temperature :
- Humidity :
- Wind :
- Sky :

Field Measurements

Sample Location ID :

Layer Thicknesses-

- Bound- Asphalt : Layer 1 =_____in
  Layer 2 =_____in
  Layer 3 =_____in
- Unbound- Base :_____ in
  Subbase :_____ in
  Subgrade :_____ in

Sand Cone Data-

	Base	Subbase	Subgrade
Initial Weight of apparatus:	_____ g	_____ g	_____ g
Final Weight of Apparatus:	_____ g	_____ g	_____ g
Weight of Empty Container:	_____ g		
Weight of Soil + Container:	_____ g	_____ g	_____ g
Weight of Soil:	_____ g		

Subgrade Drive Sample Data-

- Blow Count :
- Penetration :
- Recovery :
- Visual Classification :

Surface Completion

_____

_____

Comments

Site	**Opelika, AL** (LTPP Region: South)
Section ID	**010101** (Abbreviated Site ID: **1-3**)
Highway	US-280 Westbound; four-lane divided highway
Latitude/Longitude	32° 36' 22.1" / 85° 15' 4.4"
Elevation	151 feet above MSL
Date of Fieldwork	November 7, 2001
Weather Condition	Clear and sunny, no wind, 55° F
Pavement	7.25" AC; four AC cores
Treated Base	--
Granular Base	7.5" thick; whitish; P_{200} = 13; PI = 0; 4 Sand Cones; GM
Other Layers	--
Subgrade	Reddish brown; ML; P_{200} = 70; PI = 16; six tube samples; ML
Side Samples	No side samples
Cracking	No cracking
Instrumentation	TDR; well; rain gauge; air temperature probe

Site Description

Site was located at the end of Section 010101 near the TDR Location. Asphalt pavement was in good condition without cracks. Sides and median were grassy and properly sloped to facilitate drainage. Side drains and median were dry at the time of fieldwork. Wooded land and houses were observed on either side of the highway. The highway intersected with Lee County Road 155 North to the west of site. Numerous 4-inch diameter holes were left unfilled on the pavement about 8 feet east of TDR Location.

Site	**Chloride, AZ** (LTPP Region: West)
Section ID	**040113** (Abbreviated Site ID: **2-3**)
Highway	US-93 Northbound; four-lane divided highway
Longitude/Latitude	35° 23' 31.2" / 114° 15' 18"
Elevation	3580 feet above MSL
Date of Fieldwork	December 3, 2001
Weather Condition	Sunny with scattered clouds, high winds, 45° F
Pavement	4.5" AC; 4 AC cores
Treated Base	--
Granular Base	7.5" thick; whitish brown; P_{200} = 11; PI = 0; 4 Sand Cones; GP-GM
Other Layers	--
Subgrade	Whitish brown; SM (silty sand with gravel); P_{200} = 14; PI = 0; 3 Sand Cones; SM
Side Samples	One Sand Cone from side and one Sand Cone from median
Cracking	Severe cracking, especially near the TDR Location
Instrumentation	TDR; well; rain gauge; air temperature probe

Site Description

Site was located near MP 50.5 at the end of Section 040113 about 15 feet north of TDR Location. Asphalt pavement was in poor condition with severe cracks. Sides and median contained desert grass and were properly sloped to facilitate drainage. Side drains were

dry at the time of fieldwork. Performed a Sand Cone near a crack. Desert land was observed on either side of the highway.

Site	**Buckeye, AZ** (LTPP Region: West)
Section ID	**040215** (Abbreviated Site ID: **4-1**)
Highway	I-10 Eastbound; four-lane freeway
Latitude/Longitude	33° 27' 25.2" / 112° 44' 24"
Elevation	1100 feet above MSL
Date of Fieldwork	December 18, 2001
Weather Condition	Sunny and clear, windy, 50° F
Pavement	11" PCC
Treated Base	--
Granular Base	7" thick; grayish brown; P_{200} = 8; PI = 0; 3 Sand Cones; GP-GM
Other Layers	--
Subgrade	Whitish brown; USCS; P_{200} = 21; PI = 4; one tube; two Sand Cones; SM
Side Samples	One Sand Cone sample
Cracking	No cracking
Instrumentation	TDR; rain gauge; air temperature probe

Site Description

Site was located at the end of Section 040215 about 25 feet east of TDR Location. Site was moved away from TDR on the request of Nichols Consulting. PCC pavement was in good condition without cracks. Joints were filled and appeared to be of medium quality. Sides and median contained desert vegetation and properly sloped to facilitate drainage. Side drains and median were dry at the time of fieldwork.

Site	**Crossett, AR** (LTPP Region: South)
Section ID	**052042** (Abbreviated Site ID: **1-5**)
Highway	US-82 Westbound; two-lane highway
Latitude/Longitude	33° 8' 3.2" / 91° 50' 18.1"
Elevation	140 feet above MSL
Date of Fieldwork	November 15, 2001
Weather Condition	Sunny, mostly clear, no wind, 60° F
Pavement	7" AC; four AC cores; ¼" rutting
Treated Base	7" Treated Base
Granular Base	1.5" thick; reddish brown; no Sand Cones; grab samples only; P_{200} = 16; PI = 0
Other Layers	--
Subgrade	Grayish brown; USCS; P_{200} = 89; PI = 9; six tubes; CL, CL-ML
Side Samples	One tube sample
Cracking	Some cracks; two tube samples from subgrade underneath a crack
Instrumentation	No instrumentation

Site Description

Site was located at the start of Section 052042. No instrumentation on the site. AC pavement was in somewhat poor condition with minor cracks and rutting. Sides were

grassy and properly sloped to facilitate drainage. North side drain contained standing water about 4 feet below the pavement surface at the time of fieldwork. Wooded areas and cleared areas were observed on the sides of the highway.

Site	**Thornton, CA** (LTPP Region: West)
Section ID	**063042** (Abbreviated Site ID: **8-3**)
Highway	I-5 Southbound; four-lane freeway
Latitude/Longitude	38° 14' 20" / 121° 26' 25"
Elevation	11 feet above MSL
Date of Fieldwork	June 10, 11, and 12, 2002
Weather Condition	Sunny, clear, slight wind, 70° F
Pavement	8.5" PCC
Treated Base	4.5" thick; grab sample
Granular Base	No granular base
Other Layers	7" compacted subgrade; grayish brown; P_{200} = 58; PI = 5; 3 tubes; CL, SM
Subgrade	Grayish brown; USCS; P_{200} = 54, 46; PI = 9, 1; six tubes; ML
Side Samples	One tube sample
Cracking	Some cracks
Instrumentation	TDR

Site Description

Site was located at the end of Section 063042 near TDR Location. PCC pavement was in somewhat poor condition with cracks, especially near TDR Location. Sides and median contained grass and weeds, and were sloped to facilitate drainage. No standing water in drains at the time of fieldwork. Farmlands were observed on either side of the highway.

Site	**Delta, CO** (LTPP Region: West)
Section ID	**081053** (Abbreviated Site ID: **7-5**)
Highway	US-50 Northbound; four-lane divided highway
Latitude/Longitude	38° 41' 52.3" / 108° 1' 34.7"
Elevation	5140 feet above MSL
Date of Fieldwork	May 22, 2002
Weather Condition	Sunny, clear, slight wind, 45 to 55° F
Pavement	7" AC; three AC cores
Treated Base	--
Granular Base	6" thick; grayish brown; 3 Sand Cones; P_{200} = 7; PI = 0; GP-GM
Other Layers	30" Subbase; grayish brown; three Sand Cones; cobbles present; P_{200} = 10; PI = 0;
Subgrade	Gray; USCS; P_{200} = 97; PI = 23; four tubes; CL
Side Samples	One tube sample
Cracking	No cracks
Instrumentation	TDR

Site Description

Site was located at the start of Section 081053 near TDR Location. TDR was not visible due to a new overlay. AC pavement was in good condition without cracks. Sides were sparsely grassy and median was gravelly. Side and median were sloped to facilitate drainage. No standing water in drains at the time of fieldwork. Farmlands were observed on either side of the highway.

Site	**Aurora, CO** (LTPP Region: West)
Section ID	**087035** (Abbreviated Site ID: **7-4**)
Highway	I-70 Eastbound; four-lane freeway
Latitude/Longitude	39° 44' 35" / 104° 44' 16"
Elevation	5500 feet above MSL
Date of Fieldwork	May 22, 2002
Weather Condition	Overcast, slight wind, 45° F
Pavement	6” AC over 8.5” PCC; three AC cores
Treated Base	--
Granular Base	4.5” thick; whitish brown; 3 Sand Cones; P_{200} = 8; PI = 0; SP-SM
Other Layers	30” Subbase; light brown; four tubes; sand; P_{200} = 16; PI = 0; SM
Subgrade	Light brown; USCS; P_{200} = 83; PI = 18; three tubes; CL
Side Samples	One tube sample
Cracking	Some cracks
Instrumentation	No TDR

Site Description

Site was located at the start of Section 087035 near MP 286. AC pavement was in fair condition with some cracks. Sides and median were grassy, and were sloped to facilitate drainage. No standing water in drains at the time of fieldwork. Vacant land was observed on either side of the highway.

Site	**Groton, CT** (LTPP Region: North-Atlantic)
Section ID	**091803** (Abbreviated Site ID: **6-1**)
Highway	ST-117 Northbound; two-lane highway
Latitude/Longitude	41° 23' 42" / 72° 1' 37.2"
Elevation	165 feet above MSL
Date of Fieldwork	April 16, 2002
Weather Condition	Sunny, clear, slight wind, 70-80° F
Pavement	9” AC with a recent 2” overlay; three AC cores
Treated Base	--
Granular Base	12”; brown; 4” rocks; 3 Sand Cones; P_{200} = 6; PI = 0; GP-GM
Other Layers	--
Subgrade	Grayish brown; 8-18” rocks; USCS; P_{200} = 23; PI = 0; three Sand Cones; GM
Side Samples	One Sand Cone
Cracking	Some cracks
Instrumentation	No TDR; TDR was removed.

Site Description

Site was located at the end of Section 091803. AC pavement was in fair condition with minor cracks. Sides were grassy, and were sloped to facilitate drainage. No standing water in drains at the time of fieldwork. Residential houses were observed on either side of the highway. The subgrade was glacial till and contained large size cobbles that may affect the Sand Cone tests.

Site	**Abilene, KS** (LTPP Region: North-Central)
Section ID	**204054** (Abbreviated Site ID: **5-3**)
Highway	I-70 Westbound; four-lane freeway
Latitude/Longitude	38° 58' 1.2" / 97° 5' 27.6"
Elevation	1190 feet above MSL
Date of Fieldwork	April 1 and 2, 2002
Weather Condition	Sunny, clear, windy, 60-70° F and Cloudy; windy, 50° F
Pavement	9.5" PCC
Treated Base	4" thick
Granular Base	2.5" thick; no Sand Cones
Other Layers	--
Subgrade	Changed with depth; 11" of black clay; 4" of yellowish clay; then soft yellow rock; USCS; P_{200} = 88, 93; PI = 25, 22; 4 tubes; CL
Side Samples	Two tubes
Cracking	Some cracks
Instrumentation	TDR, well

Site Description

Site was located at the end of Section 204054 near TDR Location. PCC pavement was in fair condition with minor cracks. Sides and median were grassy, and were sloped to facilitate drainage. No standing water in drains at the time of fieldwork. Farmlands were observed on either side of the highway. Difficult drilling. Rapidly changing subgrade. Water level in the well was 11 feet below the pavement surface.

Site	**Moss Bluff, LA** (LTPP Region: South)
Section ID	**220118** (Abbreviated Site ID: **3-1**)
Highway	US-171 Northbound; four-lane divided highway
Latitude/Longitude	30° 20' 3" / 93° 11' 54"
Elevation	27 feet above MSL
Date of Fieldwork	December 10, 2001
Weather Condition	Partly Cloudy, slight wind, 50-55° F
Pavement	10.5" AC
Treated Base	TB1: 4" thick, lime treated; TB2: 8.5" thick, asphalt treated
Granular Base	No granular base
Other Layers	--
Subgrade	Brownish gray; USCS; P_{200} = 89; PI = 7; six tubes; CL-ML
Side Samples	One tube
Cracking	No cracks
Instrumentation	No TDR

Site Description

Site was located at the end of Section 220118. AC pavement was in good condition with no cracks. Sides and median were grassy, and were sloped to facilitate drainage. Standing water was present in side drains about 6 feet below the pavement surface at the time of fieldwork. The area received rain two days ago. Buildings were observed on either side of the highway.

Site	**Collins, MS** (LTPP Region: South)
Section ID	**281802** (Abbreviated Site ID: **1-4**)
Highway	ST-35 Westbound; four-lane divided highway
Latitude/Longitude	33° 8' 3.19" / 89° 25' 17.29"
Elevation	264 feet above MSL
Date of Fieldwork	December 13, 2001
Weather Condition	Sunny, mostly clear, no wind, 50-55° F
Pavement	9.5” AC, recent overlay, three AC cores
Treated Base	--
Granular Base	33” thick; reddish sand; P_{200} = 30; PI = 0; one Sand Cone; five tubes; SM
Other Layers	--
Subgrade	Grayish brown; USCS; P_{200} = 50; PI = 4; two tubes; ML
Side Samples	One tube
Cracking	No cracks
Instrumentation	TDR (not visible); rain gauge; temperature probe

Site Description

Site was located at the end of Section 281802 near the TDR Location. TDR was not visible since the pavement was recently overlaid. Pavement was in good condition with no cracks. Sides and median were grassy, and were sloped to facilitate drainage. No standing water in side drains at the time of fieldwork. Wooded areas were observed on either side of the highway.

Site	**Big Timber, MT** (LTPP Region: West)
Section ID	**307066** (Abbreviated Site ID: **7-1**)
Highway	I-90 Westbound; four-lane freeway
Latitude/Longitude	45° 48' 48.1" / 110° 0' 8.6"
Elevation	4072 feet above MSL
Date of Fieldwork	May 13, 2002
Weather Condition	Sunny, clear, slight wind, 40-70° F
Pavement	10.5” AC, three AC cores
Treated Base	--
Granular Base	3” thick; grayish brown; P_{200} = 12; PI = 0; 2 Sand Cones; SP-SC
Other Layers	15.5” subbase; grayish brown; P_{200} = 10; PI = 0; 3 Sand Cones; GP-GC
Subgrade	Dark brown; USCS; P_{200} = 52, 80; PI = 17, 17; 5 tubes; CL
Side Samples	One tube
Cracking	No cracks
Instrumentation	No TDR

Site Description

Site was located at the end of Section 307066. Pavement was in good condition with no cracks. Sides and median were grassy, and were sloped to facilitate drainage. Standing water was present about 10 feet below the pavement surface in side drains at the time of fieldwork. Ground water was encountered 46.5 inches below the pavement surface in Hole 1. Farmlands were observed on either side of the highway.

Site	**Hebron, NE** (LTPP Region: North-Central)
Section ID	**310114** (Abbreviated Site ID: **5-4**)
Highway	US-81 Southbound; four-lane highway
Latitude/Longitude	40° 4' 15.7" / 97° 37' 25.9"
Elevation	1611 feet above MSL
Date of Fieldwork	April 3, 2002
Weather Condition	Sunny, clear, gusty winds, 27-45° F
Pavement	7" AC, three AC cores
Treated Base	--
Granular Base	12" thick; whitish brown; P_{200} = 5; PI = 0; 3 Sand Cones; SP-SM
Other Layers	--
Subgrade	Grayish brown; USCS; P_{200} = 98; PI = 26; six tubes; CL
Side Samples	One tube
Cracking	Some cracks and severe rutting
Instrumentation	TDR, rain gauge, temperature probe

Site Description

Site was located at the start of Section 310114 near the TDR Location. Pavement was in poor condition with some cracks and severe rutting. The pavement was recently milled taking about 2" off due to rutting. Still 0.5 to 1" of rutting was present. Sides and median were grassy, and were sloped to facilitate drainage. Side drains were dry at the time of fieldwork. Farmlands were observed on either side of the highway.

Site	**Battle Mountain, NV** (LTPP Region: West)
Section ID	**320204** (Abbreviated Site ID: **8-2**)
Highway	I-80 Eastbound; four-lane freeway
Latitude/Longitude	40° 43' 15.6" / 117° 2' 16.8"
Elevation	4550 feet above MSL
Date of Fieldwork	June 5, 2002
Weather Condition	Sunny, clear, slight wind, 68-94° F
Pavement	11.5" PCC
Treated Base	12" TB at 38.5" below the surface, not passable due to depth
Granular Base	6.5" thick; light brown; P_{200} = 13; PI = 6; 3 Sand Cones; GC-GM
Other Layers	20.5" subbase; light brown; P_{200} = 13; PI = 3; 3 Sand Cones; GM
Subgrade	Not reached due to deep TB; no samples
Side Samples	One tube sample
Cracking	Some cracks; cracks near TDR were patches with a sealant
Instrumentation	TDR

Site Description

Site was located at the start of Section 320204 near the TDR Location. PCC pavement was in poor condition with some cracks near TDR Location. Sides and median contained desert grass, and were only slightly sloped. Side drains were dry at the time of fieldwork. Vacant desert lands were observed on either side of the highway.

Site	**Rincon, NM** (LTPP Region: South)
Section ID	**350105** (Abbreviated Site ID: **1-1**)
Highway	I-25 Northbound; four-lane freeway
Latitude/Longitude	32° 40' 41.7" / 107° 4' 14.4"
Elevation	4117 feet above MSL
Date of Fieldwork	November 29, 2001
Weather Condition	Sunny, clear, no winds, 60-80° F
Pavement	10” AC, new overlay, three AC cores
Treated Base	--

Granular Base 3” thick; grayish brown; P_{200} = 5; PI = 0; no Sand Cones

Other Layers	--
Subgrade	Whitish brown; USCS; P_{200} = 75, 91; PI = 17, 22; 6 tubes; ML
Side Samples	No side samples
Cracking	No cracks
Instrumentation	No instrumentation

Site Description

Site was located at the end of Section 350105. Pavement was recently overlaid and was in good condition with no cracks. Sides and median were grassy, and were sloped to facilitate drainage. Side drains were dry at the time of fieldwork. Desert hilly lands were observed on either side of the highway.

Site	**Otego, NY** (LTPP Region: North-Atlantic)
Section ID	**364018** (Abbreviated Site ID: **6-3**)
Highway	I-88 Eastbound; four-lane freeway
Latitude/Longitude	42° 22' 40.8" / 75° 11' 31.2"
Elevation	1070 feet above MSL
Date of Fieldwork	April 22, 2002
Weather Condition	Overcast, slight wind, rain and snow, 30-35° F
Pavement	9.5” PCC
Treated Base	--
Granular Base	--
Other Layers	--
Subgrade	Grayish brown; USCS; P_{200} = 8; PI = 0; six Sand Cones; GP-GM
Side Samples	One Sand Cone
Cracking	Some cracks
Instrumentation	TDR

Site Description

Site was located at the start of Section 364018 near the TDR Location. PCC pavement was in fair condition with some cracks. Sides and median were grassy, and were sloped to facilitate drainage. Standing water was present in median about 5 feet below the pavement surface at the time of fieldwork. Wooded hills were observed on either side of the freeway.

Site	**Lexington, NC** (LTPP Region: North-Atlantic)
Section ID	**370205** (Abbreviated Site ID: **5-1**)
Highway	US-52 Southbound; four-lane divided highway
Latitude/Longitude	42° 22' 40.8" / 75° 11' 31.2"
Elevation	742 feet above MSL
Date of Fieldwork	March 25 and 26, 2002
Weather Condition	Sunny, clear, slight wind, 60-75° F
Pavement	8.5” PCC
Treated Base	7.5” cement treated base
Granular Base	--
Other Layers	--
Subgrade	Reddish white; USCS; P_{200} = 51, 69; PI = 9, 13; six tubes; ML
Side Samples	One tube sample; reddish brown
Cracking	Some cracks near TDR Location
Instrumentation	TDR

Site Description

Site was located at the end of Section 370205 near an old TDR Location. TDR hole was left open allowing water to go into the base. Therefore, site was moved about 11 feet north of TDR. PCC pavement was in good condition. The only crack was near the TDR. Sides and median were grassy, and were sloped to facilitate drainage. No standing water was present in the side drains at the time of fieldwork. Wooded lands were observed on either side of the freeway.

Site	**Harrisburg, OR** (LTPP Region: West)
Section ID	**416011** (Abbreviated Site ID: **2-2**)
Highway	I-5 Southbound; four-lane freeway
Latitude/Longitude	44° 17' 40.5" / 123° 3' 40.4"
Elevation	323 feet above MSL
Date of Fieldwork	November 30, 2001
Weather Condition	Overcast, rain, windy, 45° F
Pavement	13” AC; two AC cores
Treated Base	--
Granular Base	>12” thick; grayish brown; one Sand Cone; GP-GM
Other Layers	--
Subgrade	Not sampled since groundwater was present within the GB
Side Samples	No side samples
Cracking	No cracks
Instrumentation	No instrumentation

Site Description

Site was located at the start of Section 416011. AC pavement was in good condition with no cracks. Sides and median were grassy, and were sloped to facilitate drainage. It rained constantly during the site visit. Accumulated rainwater was present in the median at the time of fieldwork. Groundwater was encountered 25" below the pavement surface within the granular base. Therefore, no attempt was made to reach the subgrade. Farmlands lands were observed on either side of the freeway.

Site	**Milesburg, PA** (LTPP Region: North-Atlantic)
Section ID	**420603** (Abbreviated Site ID: **6-4**)
Highway	I-80 Westbound; four-lane freeway
Latitude/Longitude	40° 58' 28.1" / 77° 47' 28.9"
Elevation	1360 feet above MSL
Date of Fieldwork	April 24, 2002
Weather Condition	Sunny, clear, slight wind, 35 to 60° F
Pavement	4" AC over 10.5" PCC; three AC cores
Treated Base	--
Granular Base	8"; light gray; P_{200} = 12, 69; PI = 0, 13; 3 Sand Cones; GP-GC
Other Layers	--
Subgrade	Dark reddish brown; USCS, P_{200} = 38; PI = 5; 3 Sand Cones; SC-SM
Side Samples	One Sand Cone
Cracking	No cracks
Instrumentation	No instrumentation

Site Description

Site was located at the end of Section 420603. AC pavement was in good condition with no cracks. But ¼" rutting was present along the wheel paths. The test section was on a cut. Subgrade appeared to be partially weathered rock. Sides and median were grassy, and were sloped to facilitate drainage. Rocky hills were observed on either side of the freeway.

Site	**Auburntown, TN** (LTPP Region: South)
Section ID	**473101** (Abbreviated Site ID: **5-2**)
Highway	ST-96 Eastbound; two-lane highway
Latitude/Longitude	35° 56' 28.4" / 86° 7' 20.1"
Elevation	770 feet above MSL
Date of Fieldwork	March 28, 2002
Weather Condition	Sunny, clear, slight wind, 45 to 65° F
Pavement	5.5" AC; three AC cores
Treated Base	7" asphalt treated base over 4" cement treated base
Granular Base	--
Other Layers	--
Subgrade	Yellowish brown; USCS, P_{200} = 29, 42; PI = 3, 3; six tubes; MH
Side Samples	One tube
Cracking	No cracks

Instrumentation No instrumentation

Site Description

Site was located at the start of Section 473101. AC pavement was in good condition with no cracks. Sides were grassy, and were sloped to facilitate drainage. Some water was present in the side drain about 7 feet below the pavement surface. Grassy areas, a cemetery, and buildings were observed on either side of the highway.

Site **Vidaurri, TX** (LTPP Region: South)
Section ID **481060** (Abbreviated Site ID: **3-3**)
Highway US-77 Northbound; four-lane divided highway
Latitude/Longitude 28° 30' 35.3" / 97° 3' 29.8"
Elevation 78 feet above MSL
Date of Fieldwork December 13, 2001
Weather Condition Overcast, rain, slight wind, 55 to 60° F
Pavement 7" AC; three AC cores
Treated Base 10" lime treated base; P_{200} = 5; PI = 0; one Sand Cone
Granular Base 7" thick; grayish white; P_{200} = 12; PI = 0; 2 Sand Cones; GP-GM
Other Layers --
Subgrade Yellowish brown; USCS, P_{200} = 52, 61; PI = 12, --; six tubes; SC
Side Samples One tube
Cracking No cracks
Instrumentation No instrumentation, TDR was removed or covered by the overlay

Site Description

Site was located at the start of Section 481060 near former TDR Location. AC pavement was in good condition with no cracks. Sides were grassy, and were sloped to facilitate drainage. Side and median drains contained rainwater. Vacant flat lands were observed on either side of the highway.

Site **Estelline, TX** (LTPP Region: South)
Section ID **481077** (Abbreviated Site ID: **1-2**)
Highway US-287 Southbound; four-lane divided highway
Latitude/Longitude 34° 32' 19.3" / 100° 26' 6.6"
Elevation 1835 feet above MSL
Date of Fieldwork November 1, 2001
Weather Condition Sunny, clear, windy, 60 to 80° F
Pavement 2" AC; three AC cores
Treated Base 12" fly-ash treated base; brown; P_{200} = 3; PI = 0; one Sand Cone
Granular Base 8" thick; grayish brown; P_{200} = 6; PI = 0; 3 Sand Cones; GP-GM
Other Layers --
Subgrade Reddish brown; USCS, P_{200} = 70; PI = 0; six tubes; ML, CL
Side Samples No side samples
Cracking No cracks
Instrumentation No instrumentation, TDR was removed

Site Description

Site was located at the end of Section 481077 near former TDR Location. AC pavement was in good condition with no cracks. The instrumentation at the site was removed and the road was reconstructed. Sides and median were grassy, and were sloped to facilitate drainage. No water in side or median drains at the time of fieldwork. Farmlands were observed on either side of the highway.

Site	**Beaumont, TX** (LTPP Region: South)
Section ID	**484143** (Abbreviated Site ID: **3-2**)
Highway	US-90 Eastbound; four-lane divided highway
Latitude/Longitude	30° 2' 32.5" / 94° 22' 15.6"
Elevation	42 feet above MSL
Date of Fieldwork	December 11 and 12, 2001
Weather Condition	Overcast, rain, windy, 45 to 50° F
Pavement	10.5” PCC
Treated Base	4” lime treated
Granular Base	--
Other Layers	10” compacted subgrade; P_{200} = 85; PI = 18; one Sand Cone; CL
Subgrade	Brownish gray; USCS, P_{200} = 88; PI = 19; four tubes; CL, ML
Side Samples	One tube
Cracking	No cracks
Instrumentation	TDR

Site Description

Site was located at the end of Section 484143 near the TDR Location. PCC pavement was in good condition with no cracks. Very hard drilling through concrete. Sides and median were grassy, and were sloped to facilitate drainage. Rainwater was present in side and median drains at the time of fieldwork. Farmlands were observed on either side of the highway.

Site	**Charlotte, VT** (LTPP Region: North-Atlantic)
Section ID	**501681** (Abbreviated Site ID: **6-2**)
Highway	US-7 Northbound; two-lane highway
Latitude/Longitude	44° 18' 29.2" / 73° 14' 44.1"
Elevation	255 feet above MSL
Date of Fieldwork	April 18, 2002
Weather Condition	Partly cloudy, slight wind, 70 to 75° F
Pavement	7” AC; three AC cores
Treated Base	3.5” treated base
Granular Base	21.5” thick; grayish brown; P_{200} = 4; PI = 0; 4 Sand Cones; SP
Other Layers	12” subbase; light brown; P_{200} = 10; PI = 0; two tubes; SP-SM
Subgrade	Compacted subgrade; yellowish brown; USCS, P_{200} = 40; PI = 16; three tubes; actual subgrade was not sampled due to the depth; SM
Side Samples	Two tubes
Cracking	Some cracks near the TDR
Instrumentation	TDR, rain gauge, temperature probe

Site Description

Site was located at the end of Section 501681 near the TDR Location. AC pavement was in somewhat poor condition. The road was constructed on a 6-foot fill. Sides and median were grassy, and were sloped to facilitate drainage. Standing water was present in side drains about 7 feet below the pavement surface at the time of fieldwork. Wooded hill and a water pond were observed on the sides of highway.

Site	**Pullman, WA** (LTPP Region: Western)
Section ID	**537322** (Abbreviated Site ID: **8-1**)
Highway	US-195 Northbound; two-lane highway
Latitude/Longitude	46° 43' 47.7" / 117° 13' 24.6"
Elevation	2545 feet above MSL
Date of Fieldwork	June 3, 2002
Weather Condition	Sunny, clear, slight wind, 60 to 70° F
Pavement	6” AC; three AC cores
Treated Base	4” asphalt treated base
Granular Base	9” thick; dark gray; P_{200} = 8; PI = 0; three Sand Cones; SP-SM
Other Layers	--
Subgrade	Yellowish brown; USCS, P_{200} = 95; PI = 13; six tubes; CL
Side Samples	One tube
Cracking	No cracks
Instrumentation	No instrumentation

Site Description

Site was located at the end of Section 537322. AC pavement was in good condition with no cracks. The road was constructed on cut and fill in a green rolling terrain. Sides contained a black gravel cover, and were sloped to facilitate drainage. Side drains were dry at the time of fieldwork. Croplands were observed on either side of highway.

Site	**Gillette, WY** (LTPP Region: Western)
Section ID	**562019** (Abbreviated Site ID: **7-3**)
Highway	ST-59 Southbound; two-lane highway
Latitude/Longitude	44° 9' 54.8" / 105° 26' 45.7"
Elevation	4577 feet above MSL
Date of Fieldwork	May 16, 2002
Weather Condition	Partly cloudy, slight wind, 35 to 45° F
Pavement	8” AC; four AC cores
Treated Base	11” cement treated base
Granular Base	11” thick; yellowish brown; P_{200} = 23; PI = 0; three tubes; SC
Other Layers	--
Subgrade	Yellowish gray; USCS, P_{200} = 74; PI = 23; four tubes; CL
Side Samples	One tube
Cracking	Cracks along the center line of the road
Instrumentation	No instrumentation

Site Description

Site was located at the start of Section 562019 near MP 103. AC pavement was in fair condition with only crack running along the centerline of the road. Sides and median were grassy, and were sloped to facilitate drainage. No standing water in side drains at the time of fieldwork. Groundwater appeared about 4 feet below the pavement surface in the side sample hole. Grazing land for cattle were observed on either side of highway.

Site	**Sheridan, WY** (LTPP Region: Western)
Section ID	**562020** (Abbreviated Site ID: **7-2**)
Highway	I-90 Westbound; four-lane freeway
Latitude/Longitude	44° 56' 19.1" / 107° 11' 50.7"
Elevation	4022 feet above MSL
Date of Fieldwork	May 14, 2002
Weather Condition	Sunny, partly cloudy, slight wind, 45 to 70° F; PM rain and wind
Pavement	7” AC; three AC cores
Treated Base	12.5” cement treated base
Granular Base	--
Other Layers	--
Subgrade	Yellowish brown; USCS, P_{200} = 59, 48; PI = 20, 17; 6 tubes; CL, SC
Side Samples	One tube
Cracking	Some cracks
Instrumentation	No instrumentation

Site Description

Site was located at the start of Section 562020. AC pavement was in fair condition with some cracks. Sides and median were grassy, and were sloped to facilitate drainage. No standing water in side drains at the time of fieldwork. Vacant grassy lands were observed on either side of highway.

Site	**MnRoad** near **Albertville, MN** (LTPP Region: North-Central)
Section ID	271004, 271116, 272018, and 27M121 (Abbreviated Site ID: **6-5**)
Highway	I-94 Westbound; four-lane freeway with bypass lanes
Latitude/Longitude	45° 14' 24" / 93° 39' 00" (approximate)
Elevation	970 feet above MSL (approximate)
Date of Fieldwork	May 1 and 2, 2002
Weather Condition	Mostly cloudy, slight wind, 35 to 50° F
Pavement	8.5” AC; 13 AC cores from four different cells
GB/TB	--
Other Layers	6 to 8 feet deep compacted fill; grayish brown; USCS, P_{200} = 55; PI = 11; eight tubes; SC
Subgrade	No samples from subgrade due to the depth
Side Samples	One tube
Cracking	Severs cracks near TDR
Instrumentation	TDR

Site Description

The site was located in Cell 4 near the TDR Location. AC pavement was in poor condition with cracks near the TDR. The road was constructed on a 6 to 8 feet compacted fill. Sides and median were grassy, and were sloped to facilitate drainage. The south drain contained water about 7 feet below the pavement and a water retention area was located to the north with a water level about 8 feet below the pavement at the time of fieldwork. Only AC cores were collected from Cells 16, 18, and 21.

Site	**WesTrack** near **Silver Springs, NV** (LTPP Region: West)
Section ID	Section 12 (Abbreviated Site ID: **2-1**)
Highway	WesTrack Testing Facility; two-lane roadway
Latitude/Longitude	39° 25' 12" / 119° 13' 12" (approximate)
Elevation	1280 feet above MSL (approximate)
Date of Fieldwork	November 26 and 27, 2001
Weather Condition	Mostly cloudy, slight wind, 35 to 45° F; PM snow
Pavement	6” AC; 3 AC cores
Treated Base	--
Granular Base	12” thick; grayish brown; P_{200} = 12; PI = 4; three Sand Cones; GM
Other Layers	12” eng. fill; light gray; USCS, P_{200} = 67; PI = 20; three tubes; and 6” comp. subgrade; gray; USCS, P_{200} = 76; PI = 12; 3 tubes; CL, ML
Subgrade	Gray; USCS, P_{200} = 76; PI = 12; one tube; CL-ML
Side Samples	No side samples
Cracking	A crack near TDR
Instrumentation	TDR

Site Description

The site was located at the start of Section 12 near the TDR Location. AC pavement was in fair condition with one crack near the TDR. Sides and median contained desert grass, and were sloped to facilitate drainage. Side and median drains were dry at the time of fieldwork.

Site	**WesTrack** near **Silver Springs, NV** (LTPP Region: West)
Section ID	Section 15 (Abbreviated Site ID: **2-1**)
Highway	WesTrack Testing Facility; two-lane roadway
Latitude/Longitude	39° 25' 12" / 119° 13' 12" (approximate)
Elevation	1280 feet above MSL (approximate)
Date of Fieldwork	November 27, 2001
Weather Condition	Mostly cloudy, slight wind, 35 to 45° F; PM snow
Pavement	6” AC; 3 AC cores
Treated Base	--
Granular Base	12” thick; grayish brown; P_{200} = 10; PI = 3; three Sand Cones; GM
Other Layers	12” eng. fill; light gray; USCS, P_{200} = 79; PI = 16; 3 tubes; and 6” comp. subgrade; gray; USCS, P_{200} = 82; PI = 20; 3 tubes; CL, ML
Subgrade	No subgrade samples
Side Samples	One side sample
Cracking	No cracks

Instrumentation No TDR

Site Description

The site was located at the start of Section 15. AC pavement was in good condition with no cracks. Sides and median contained desert grass, and were sloped to facilitate drainage. Side and median drains were dry at the time of fieldwork. Note: Two AC cores were collected from Section 16.

APPENDIX B.
MEASURED SOIL WATER CHARACTERISTIC CURVES

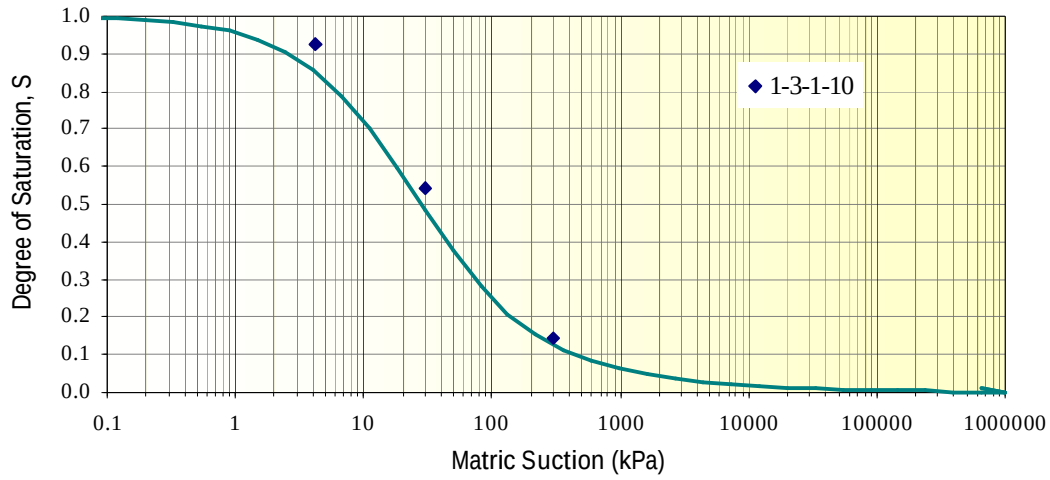

FIGURE B.1 SWCC for granular base, Opelika, AL.

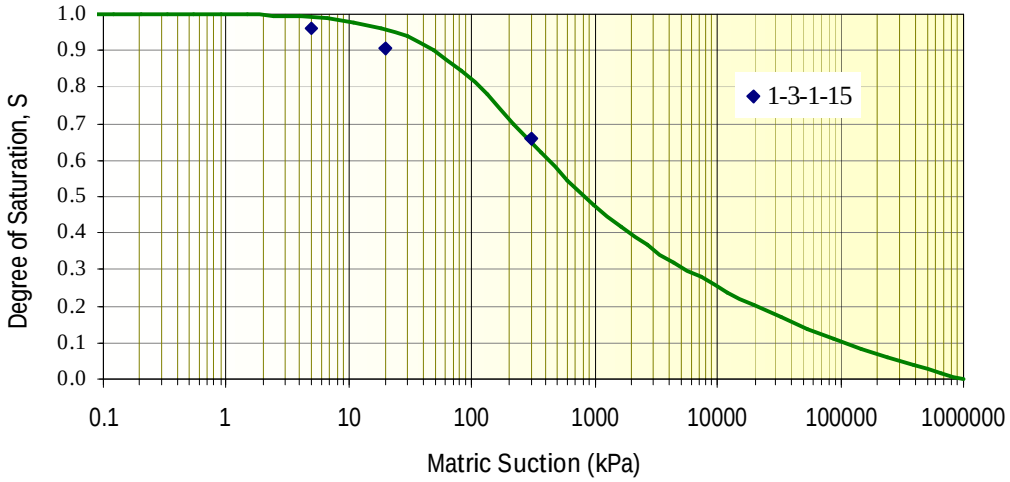

FIGURE B.2 SWCC for subgrade, Opelika, AL.

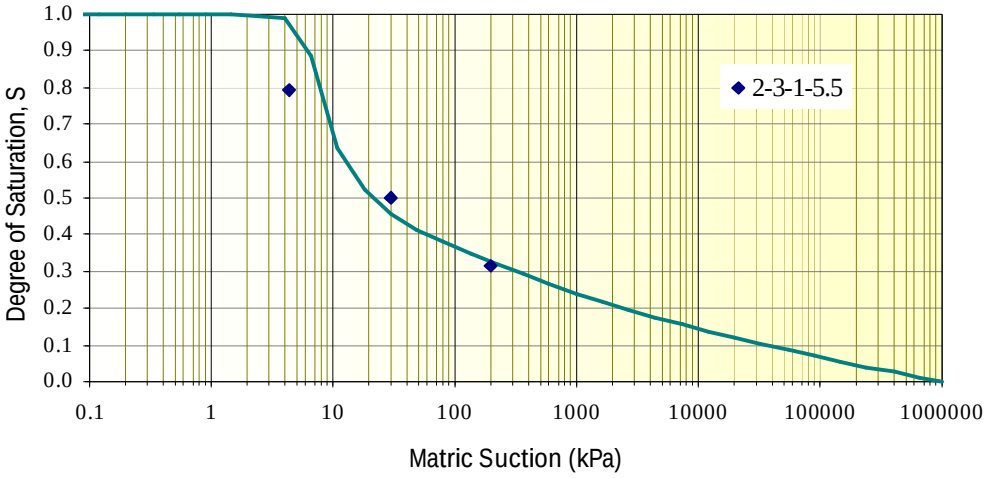

FIGURE B.3 SWCC for granular base, Chloride, AZ.

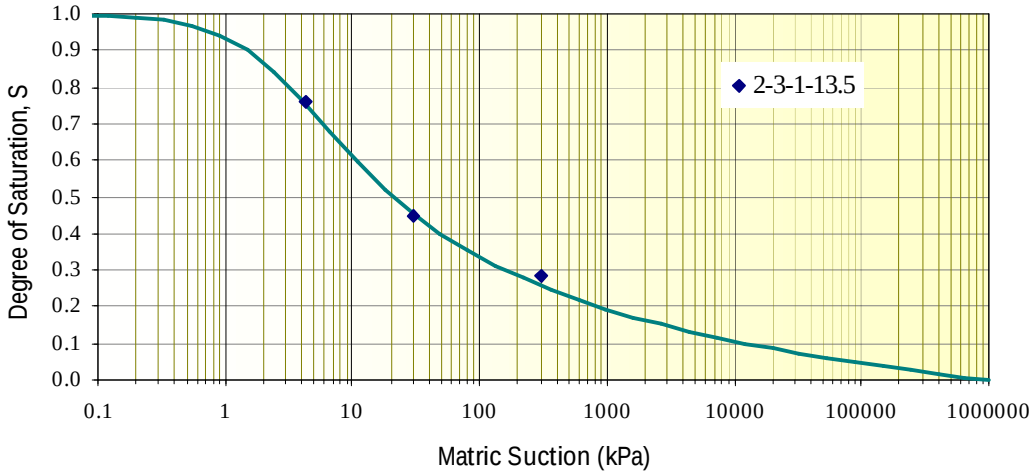

FIGURE B.4 SWCC for subgrade, Chloride, AZ.

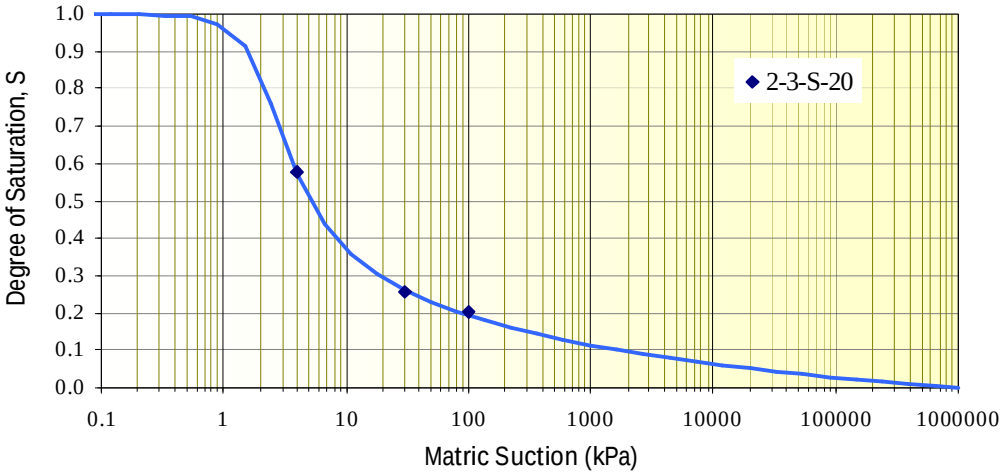

FIGURE B.5 SWCC of side sample, Chloride, AZ.

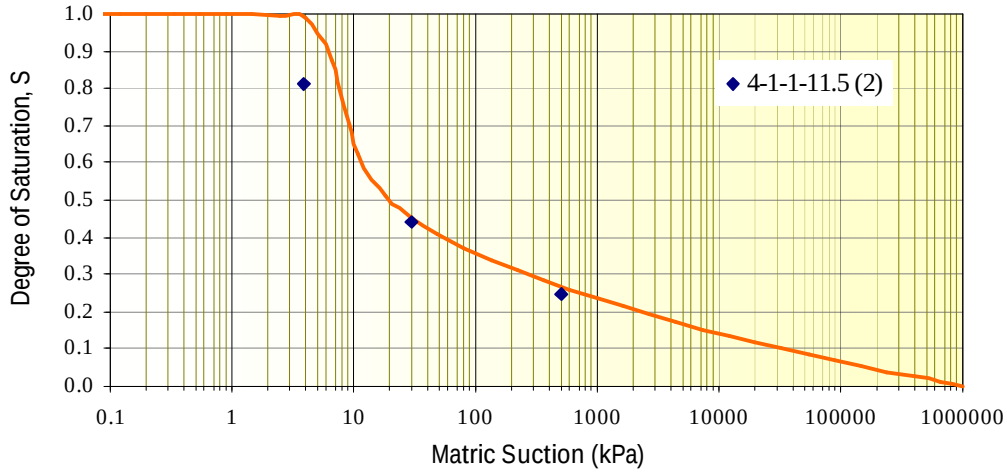

FIGURE B.6 SWCC for granular base, Buckeye, AZ.

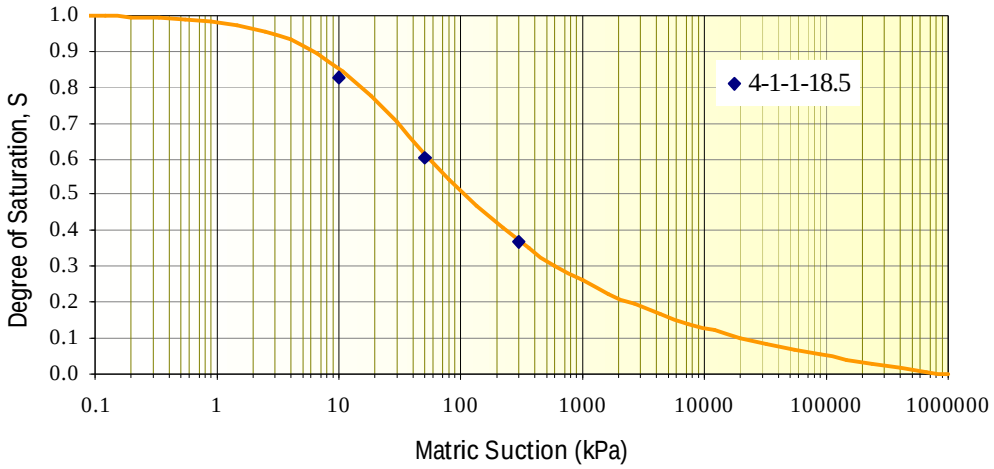

FIGURE B.7 SWCC for subgrade, Buckeye, AZ.

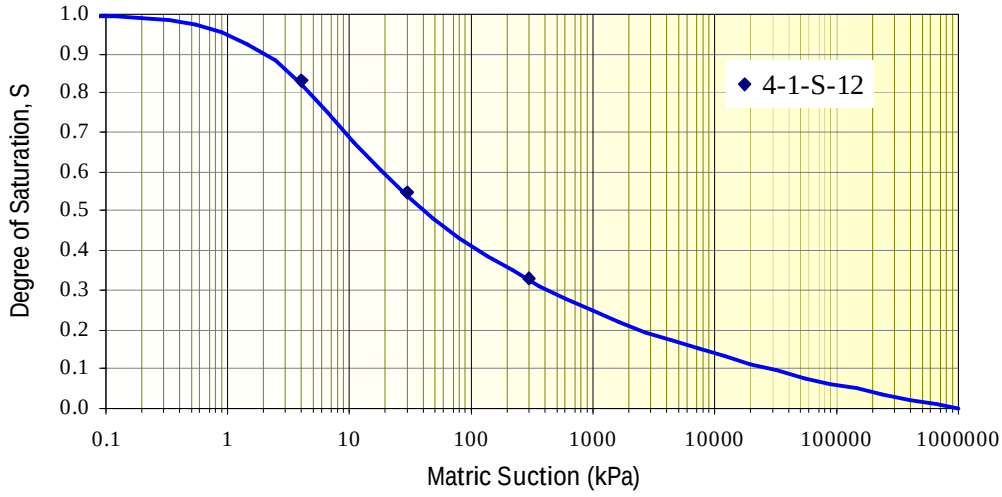

FIGURE B.8 SWCC of side sample, Buckeye, AZ.

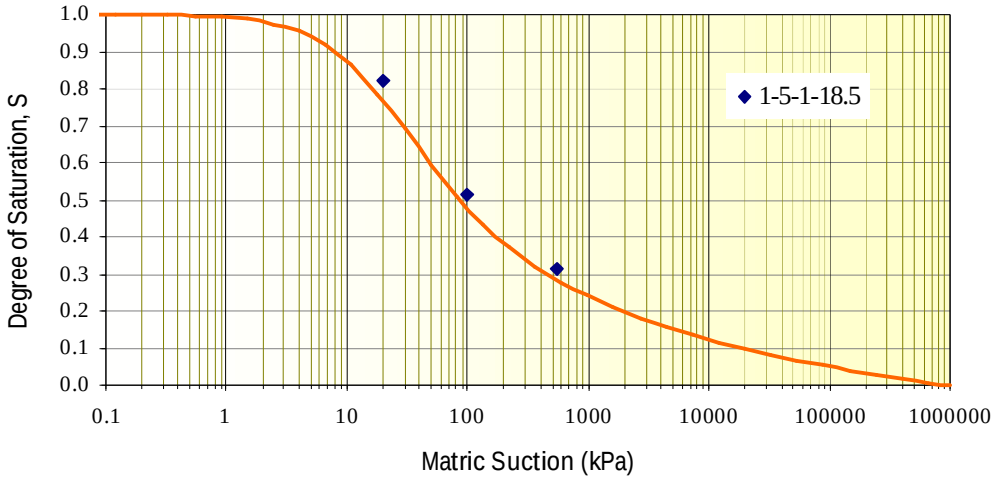

FIGURE B.9 SWCC for subgrade, Crossett, AR.

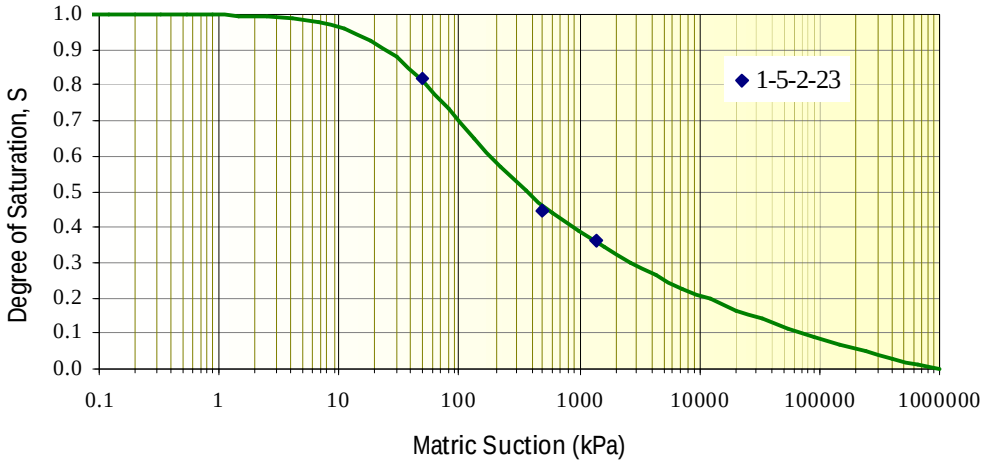

FIGURE B.10 SWCC for subgrade, Crossett, AR.

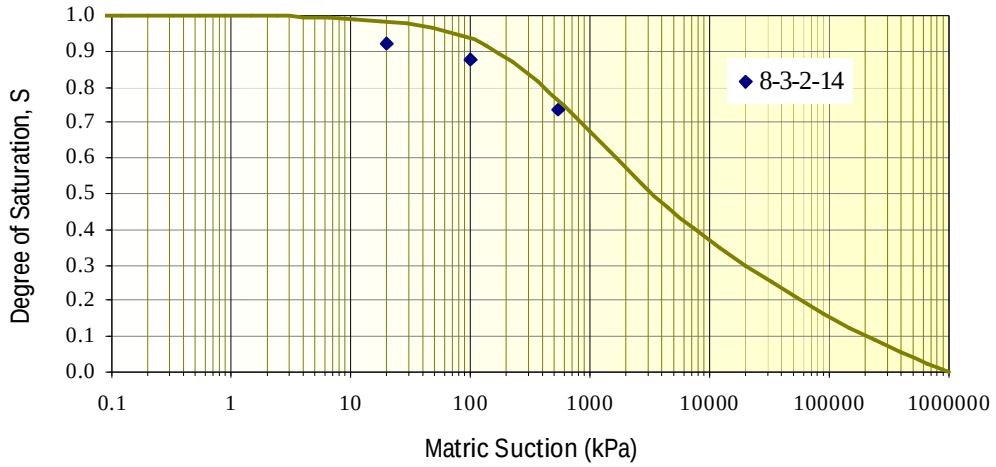

FIGURE B.11 SWCC for compacted subgrade, Thornton, CA.

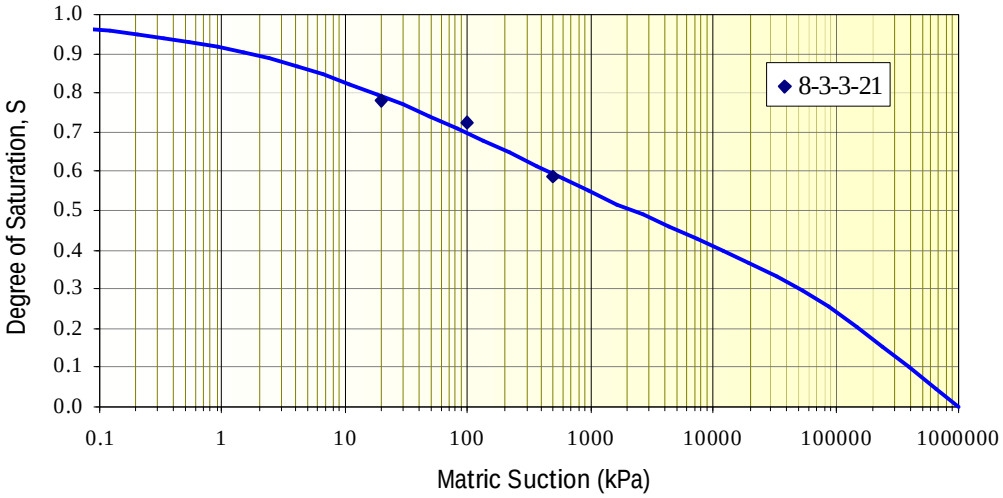

FIGURE B.12 SWCC for subgrade, Thornton, CA.

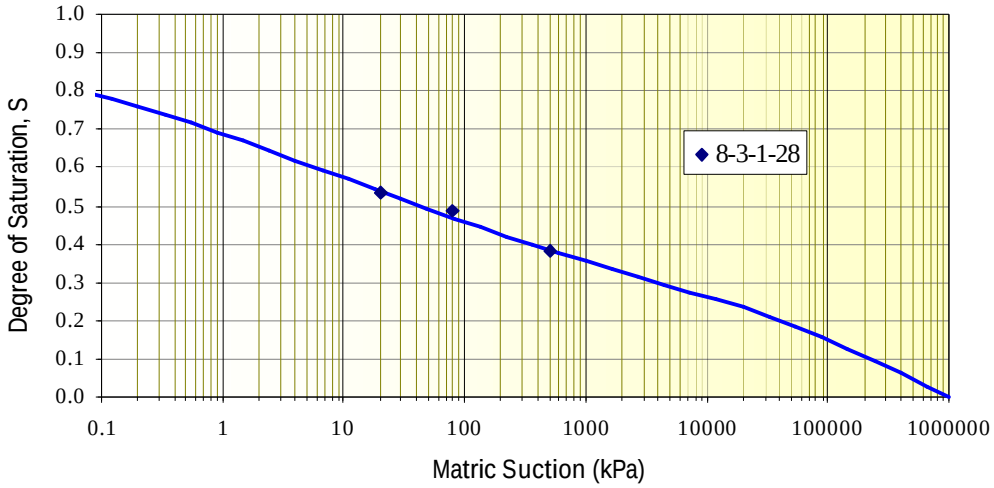

FIGURE B.13 SWCC for subgrade, Thornton, CA.

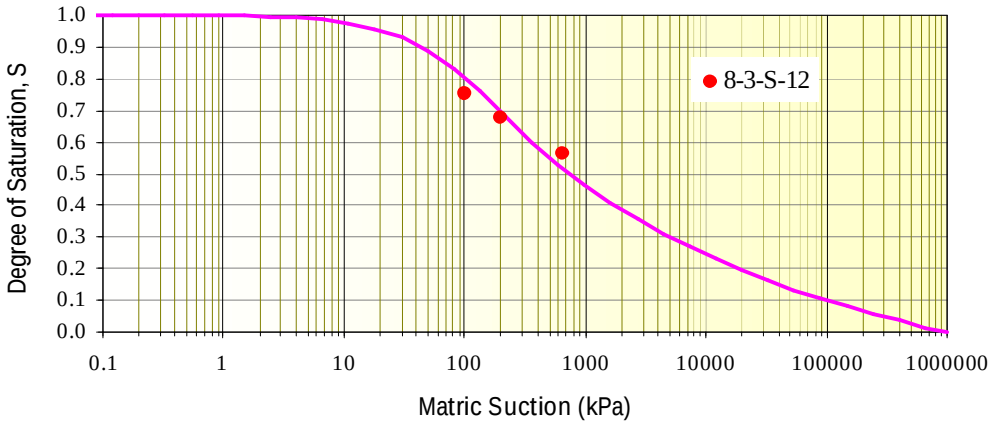

FIGURE B.14 SWCC of side sample, Thornton, CA.

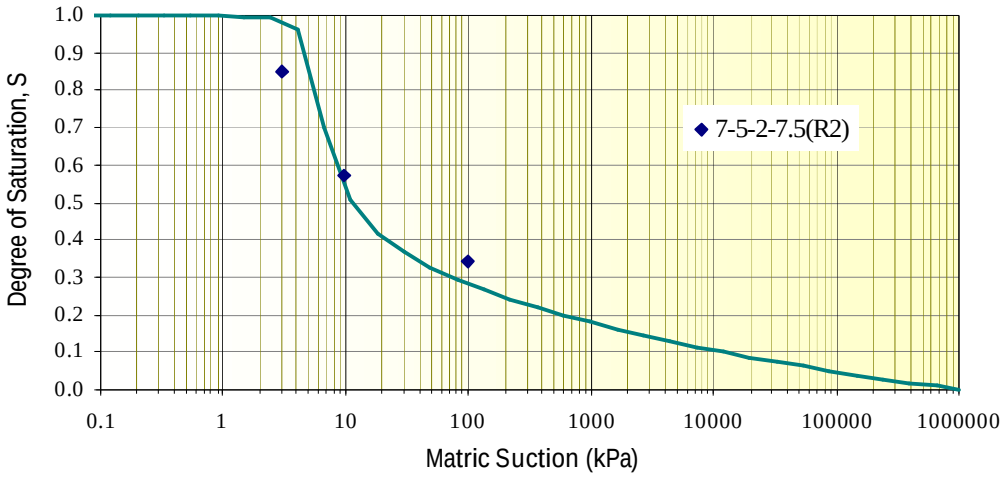

FIGURE B.15 SWCC for granular base, Delta, CO.

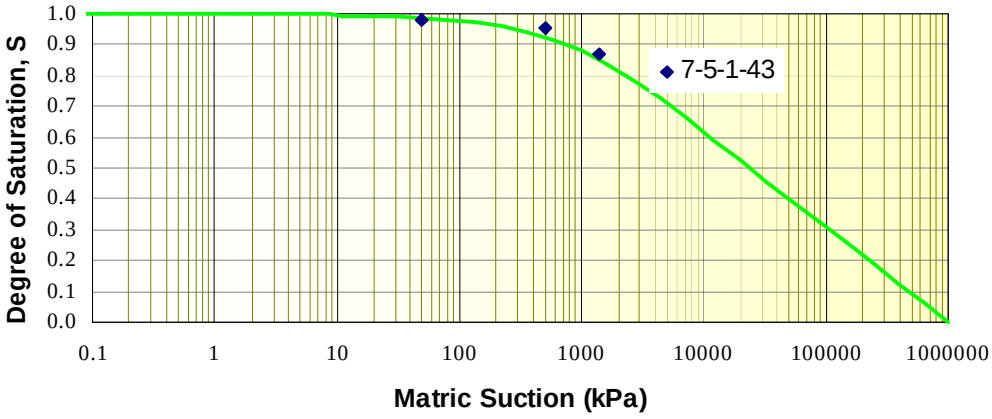

FIGURE B.16 SWCC for subgrade, Delta, CO.

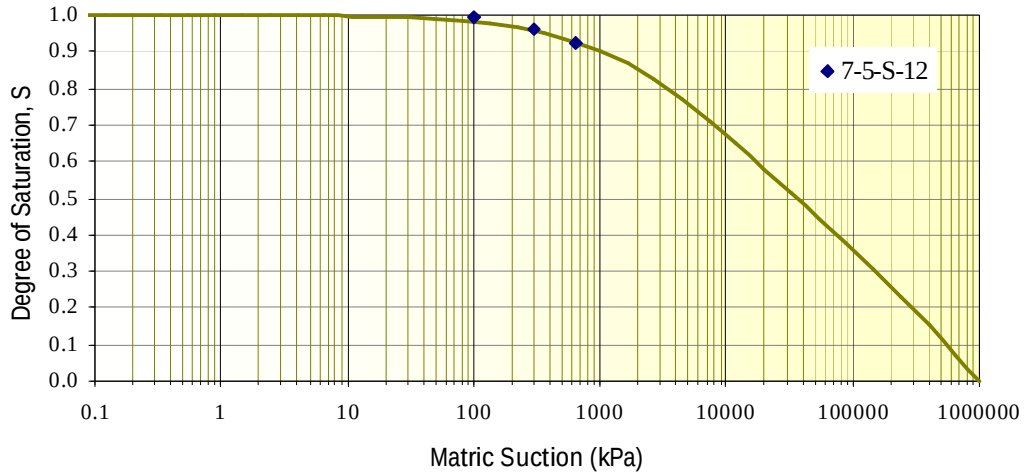

FIGURE B.17 SWCC of side sample, Delta, CO.

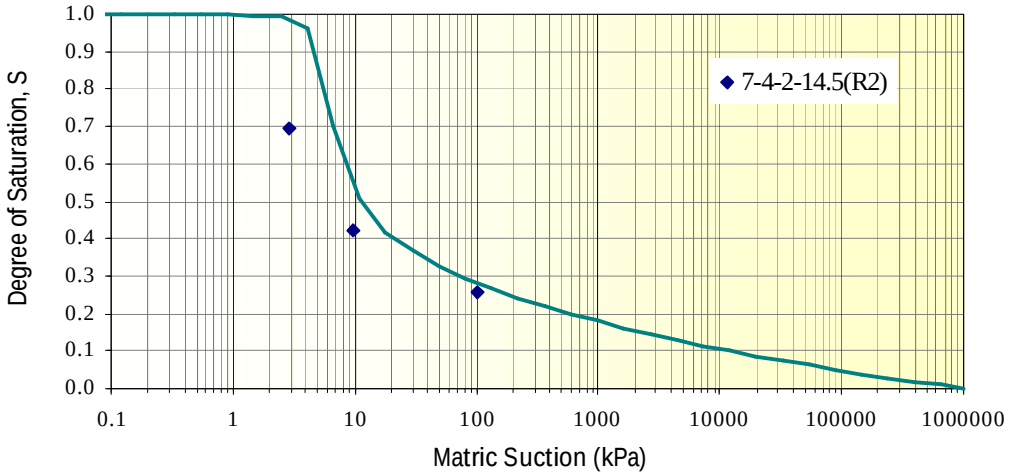

FIGURE B.18 SWCC for granular base, Aurora, CO.

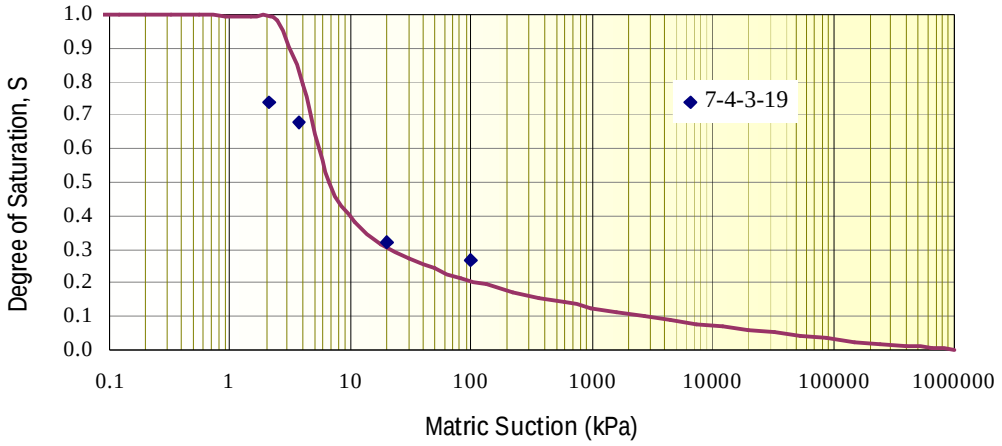

FIGURE B.19 SWCC for subbase, Aurora, CO.

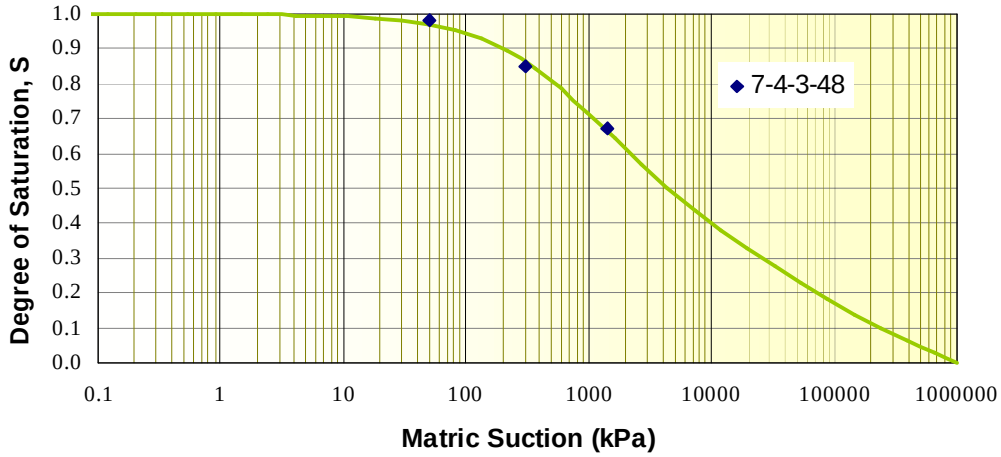

FIGURE B.20 SWCC for subgrade, Aurora, CO.

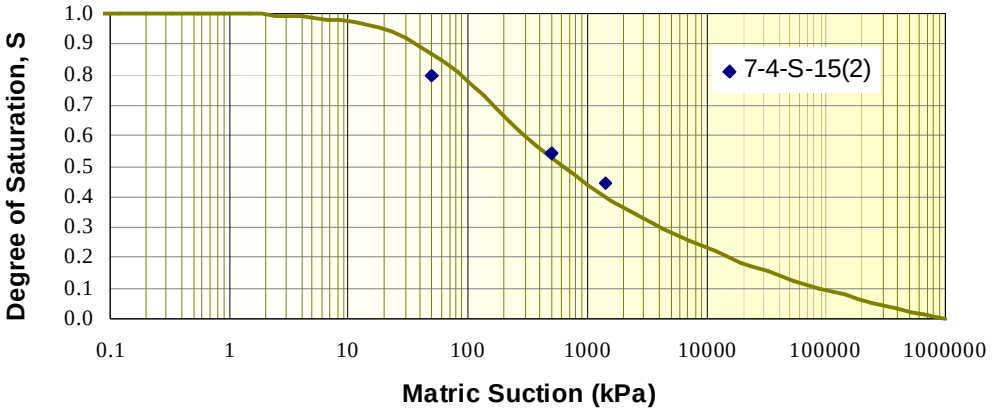

FIGURE B.21 SWCC of side sample, Aurora, CO.

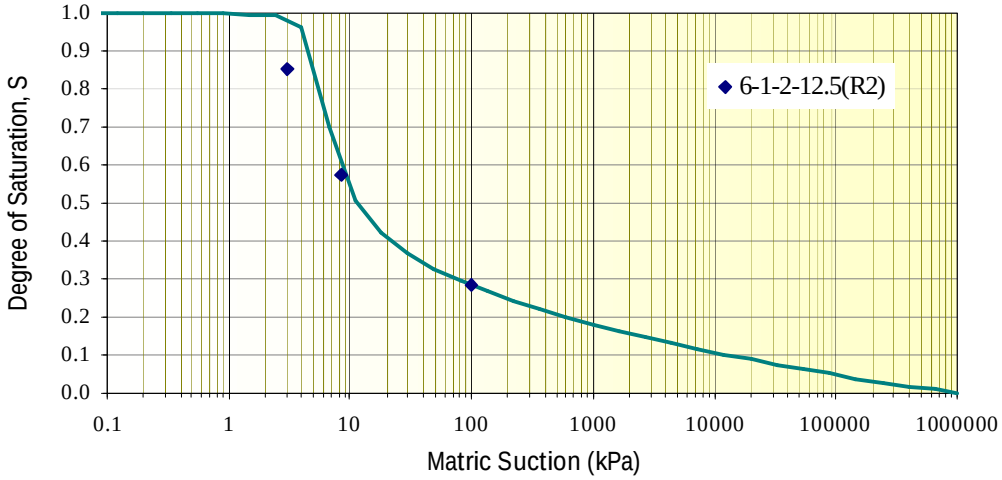

FIGURE B.22 SWCC for granular base, Groton, CT.

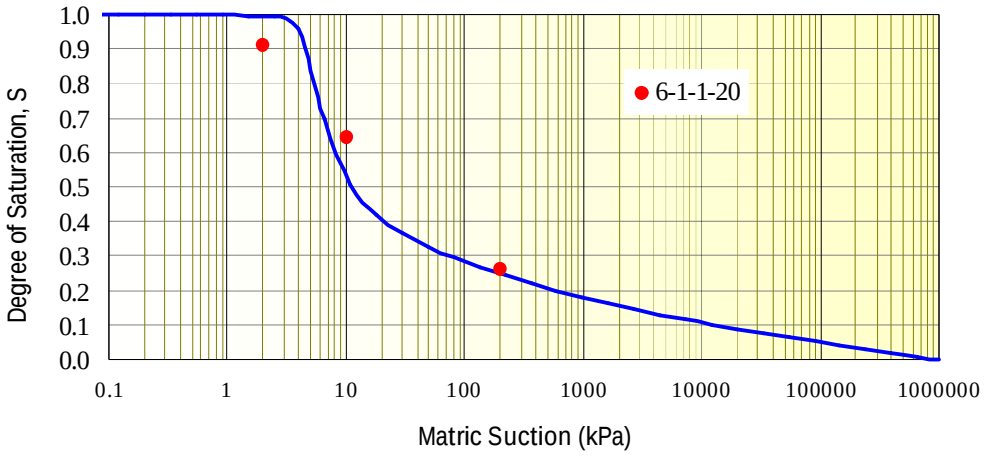

FIGURE B.23 SWCC for subgrade, Groton, CT.

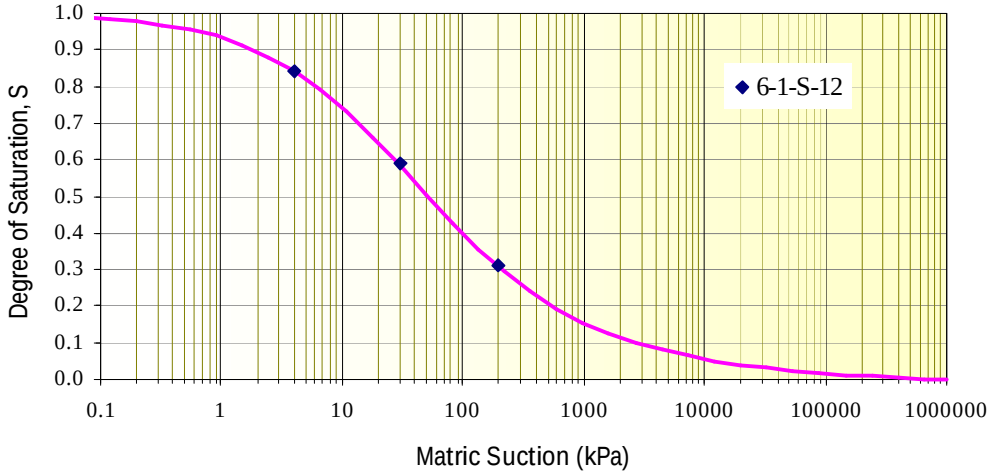

FIGURE B.24 SWCC of side sample, Groton, CT.

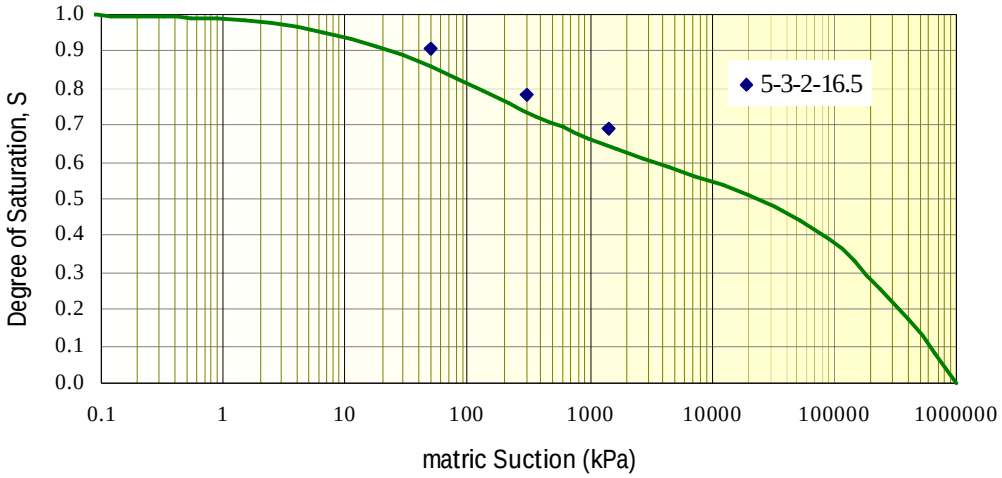

FIGURE B.25 SWCC for subgrade, Abilene, KS.

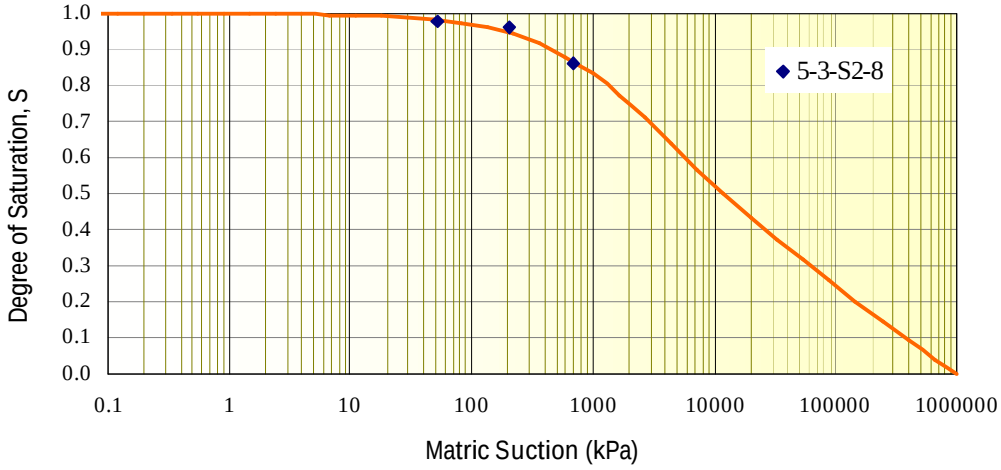

FIGURE B.26 SWCC of side sample, Abilene, KS.

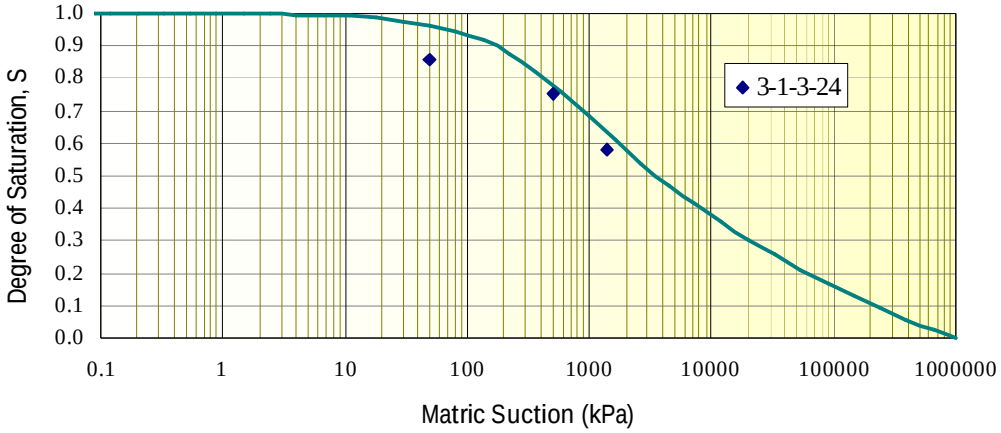

FIGURE B.27 SWCC for subgrade, Moss Bluff, LA.

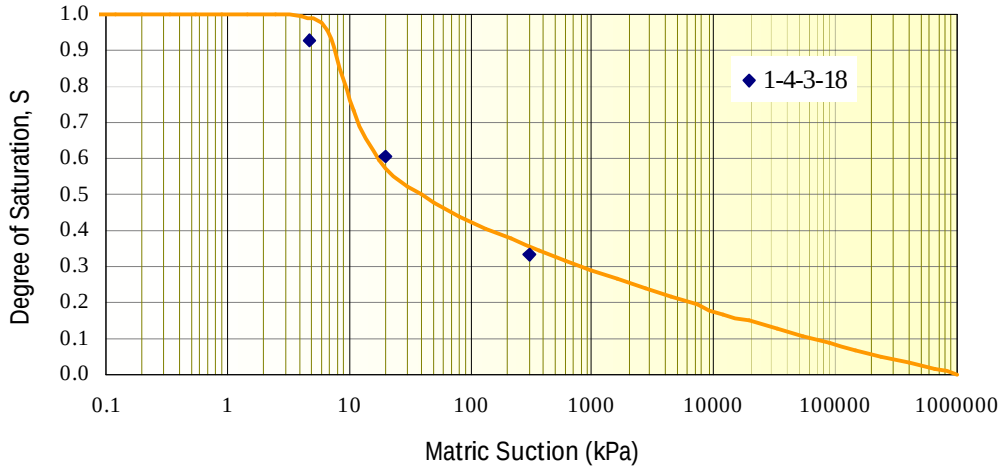

FIGURE B.28 SWCC for granular base, Collins, MS.

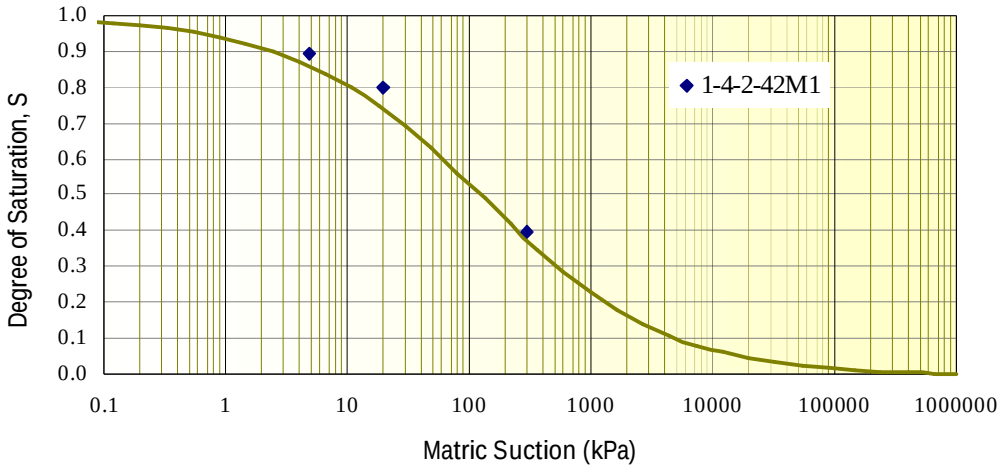

FIGURE B.29 SWCC for subgrade, Collins, MS.

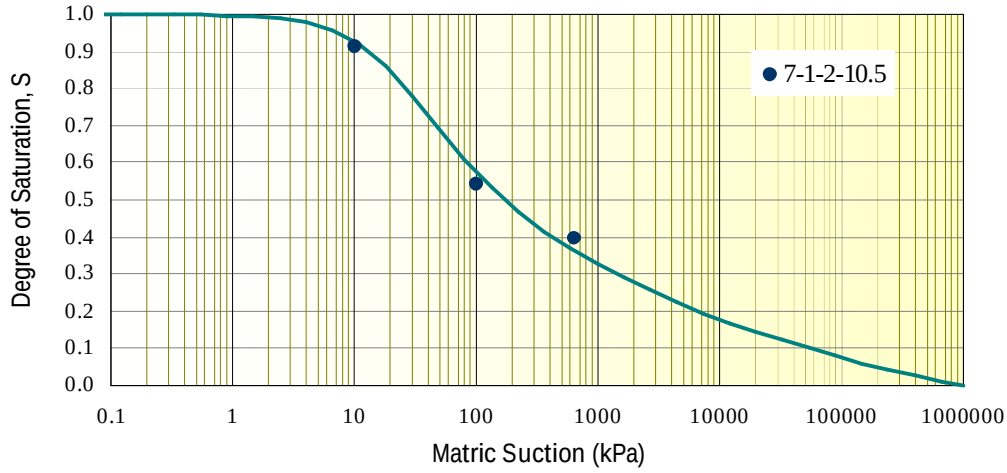

FIGURE B.30 SWCC for granular base, Big Timber, MT.

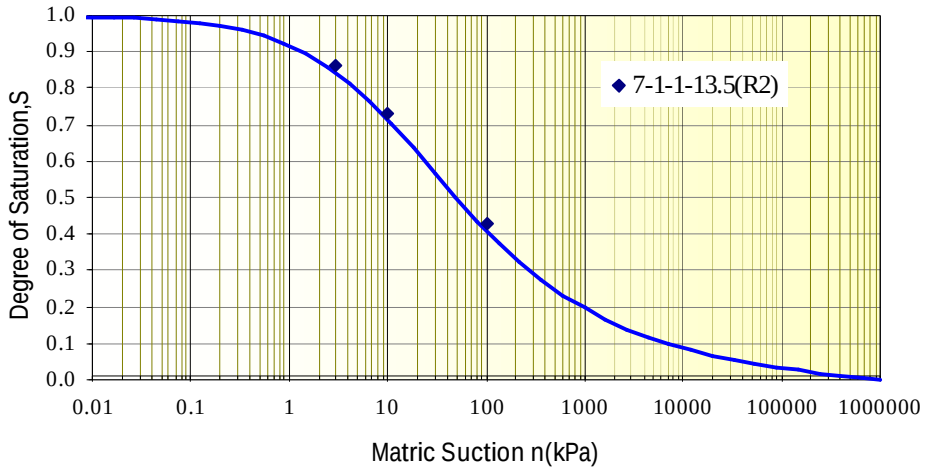

FIGURE B.31 SWCC for subbase, Big Timber, MT.

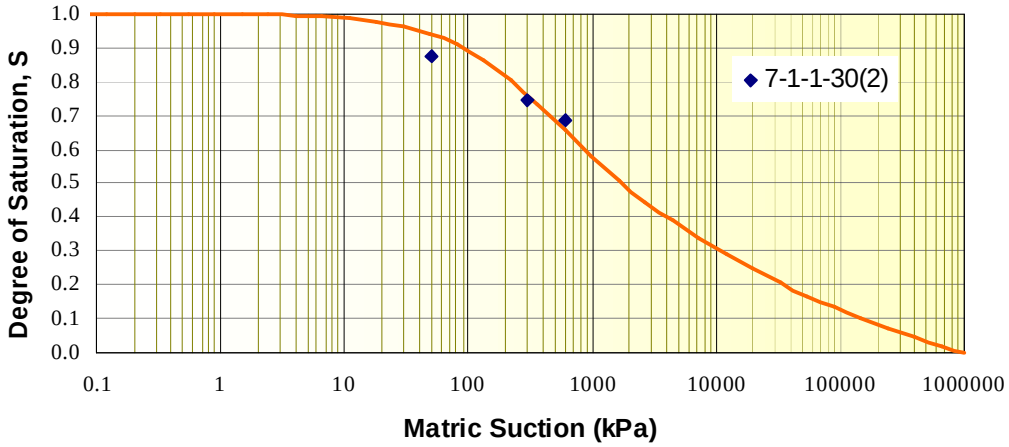

FIGURE B.32 SWCC for subgrade, Big Timber, MT.

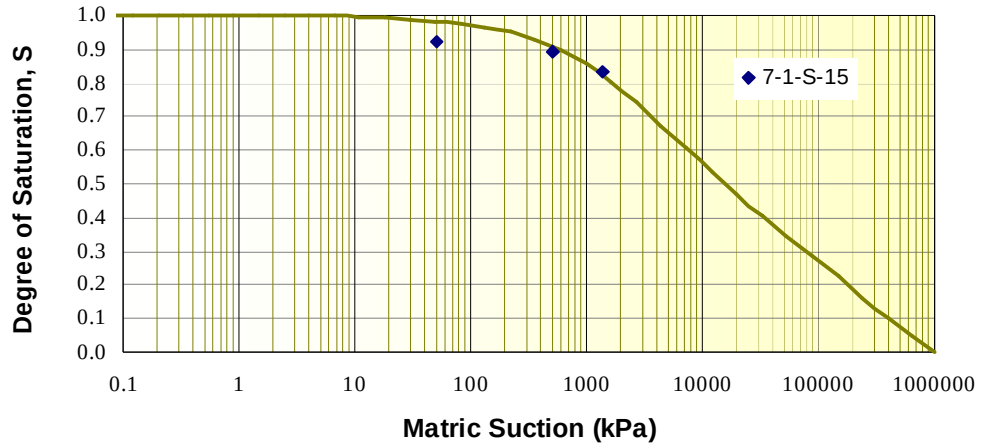

FIGURE B.33 SWCC of side sample, Big Timber, MT.

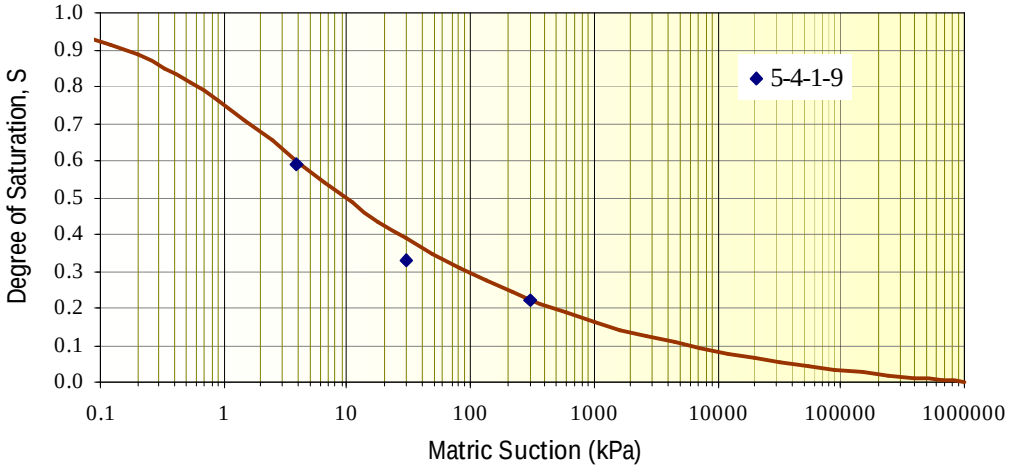

FIGURE B.34 SWCC for granular base, Big Timber, MT.

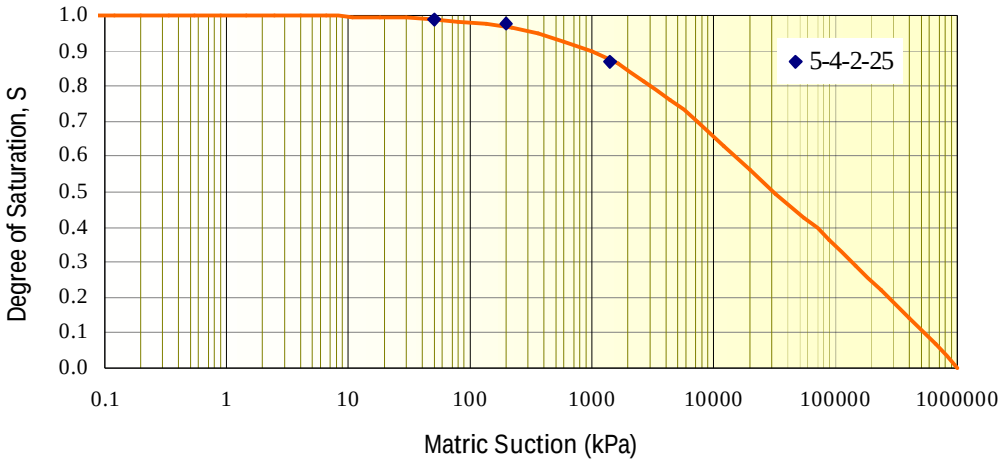

FIGURE B.35 SWCC for subgrade, Hebron, NE.

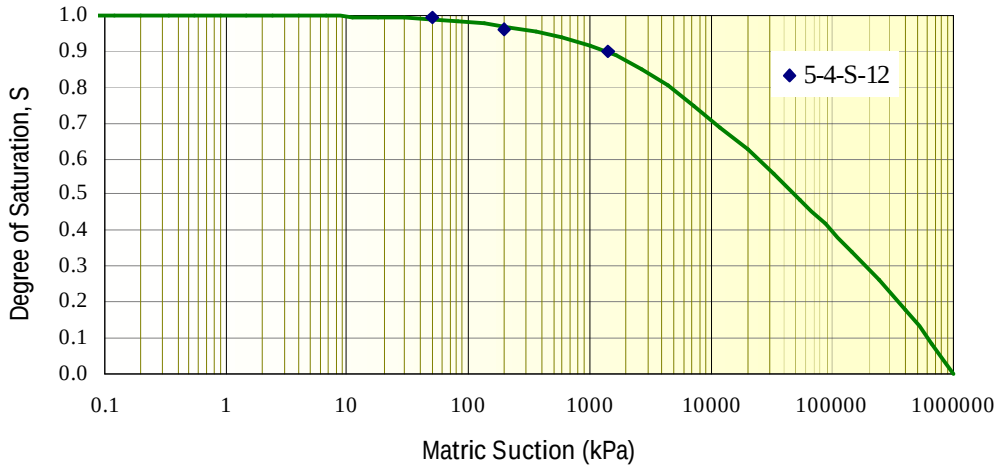

FIGURE B.36 SWCC of side sample, Hebron, NE.

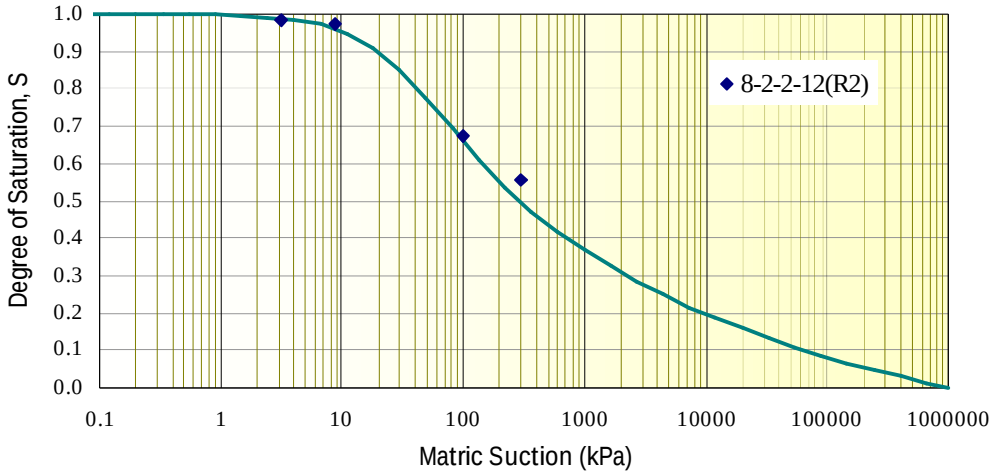

FIGURE B.37 SWCC for granular base, Battle Mountain, NV.

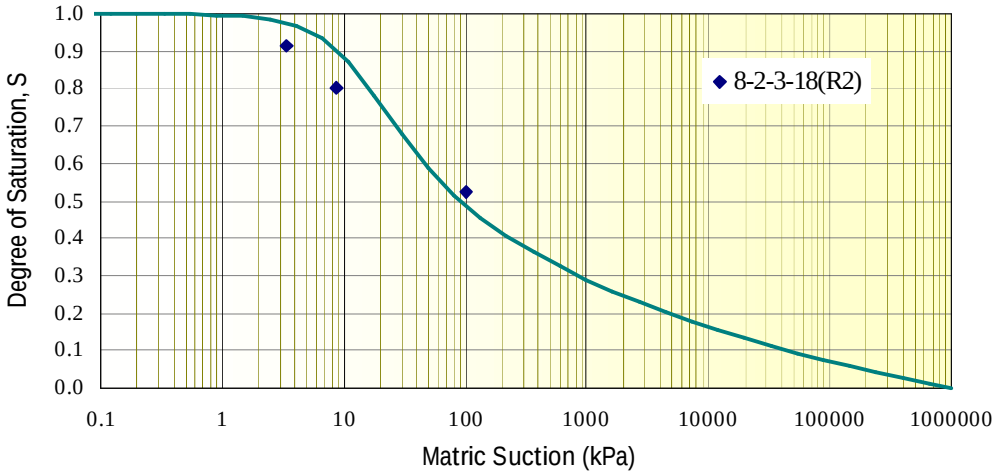

FIGURE B.38 SWCC for subbase, Battle Mountain, NV.

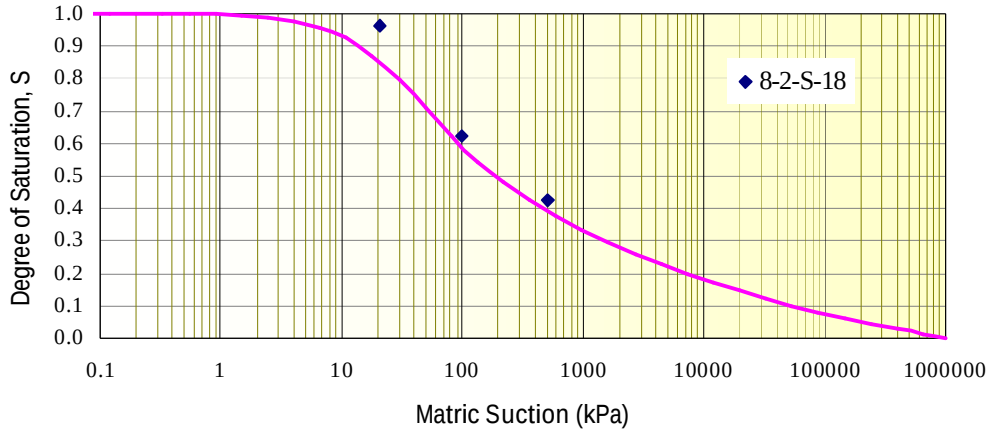

FIGURE B.39 SWCC of side sample, Battle Mountain, NV.

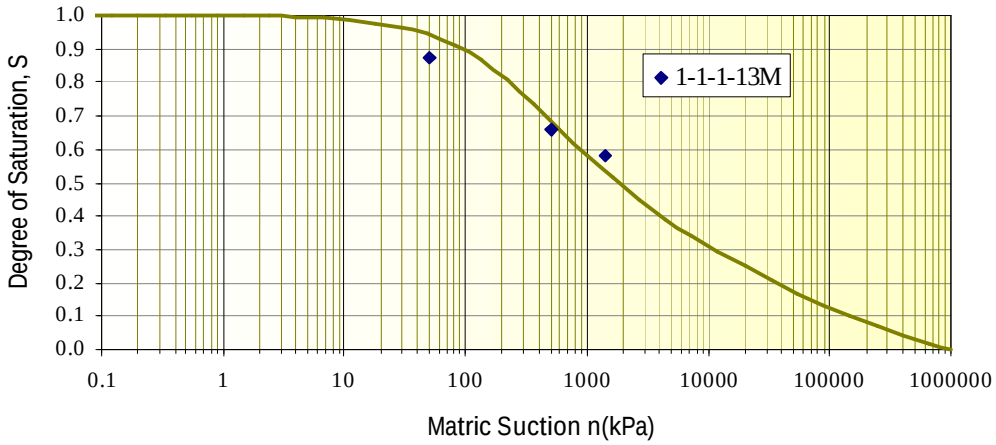

FIGURE B.40 SWCC for subgrade, Rincon, NM.

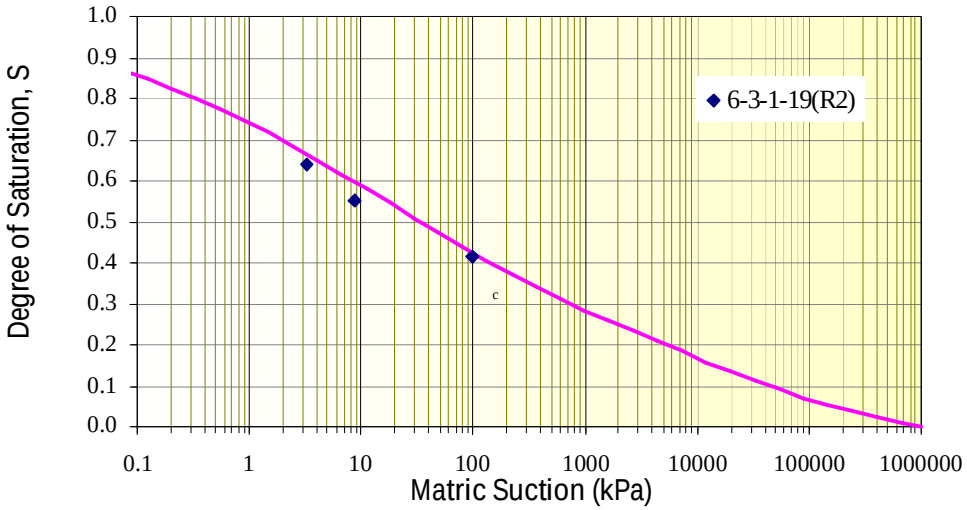

FIGURE B.41 SWCC for subgrade, Otego, NY.

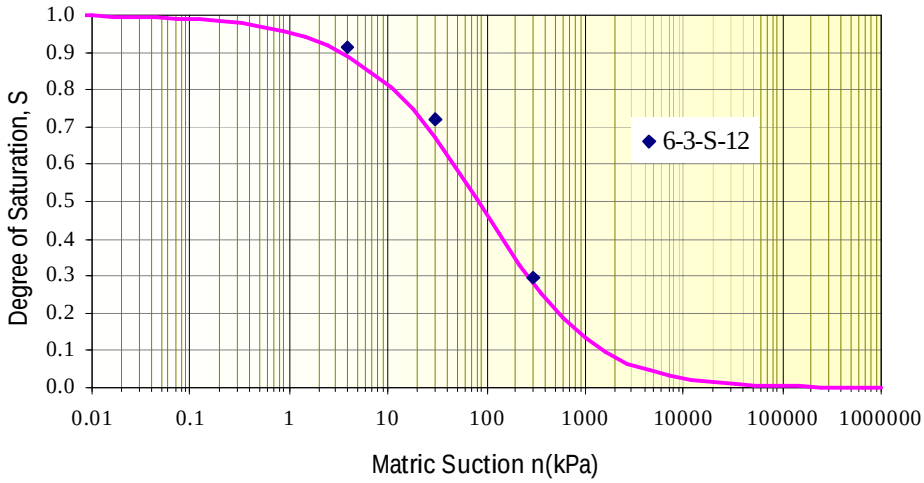

FIGURE B.42 SWCC of side sample, Otego, NY.

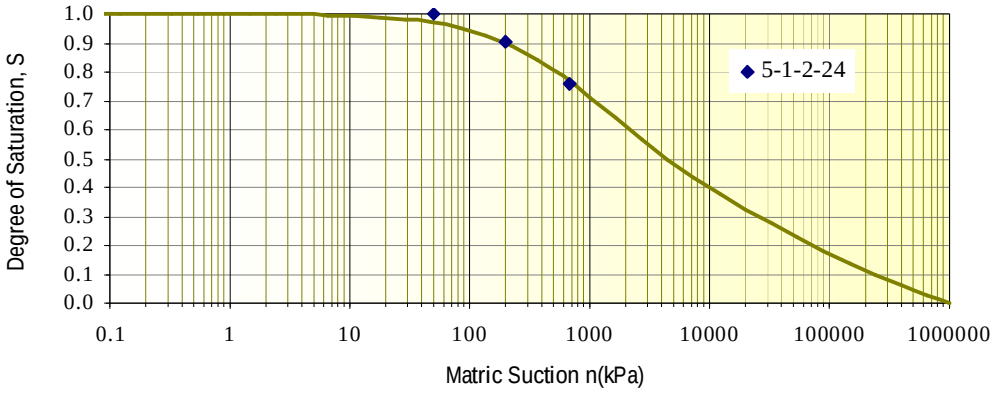

FIGURE B.43 SWCC for subgrade, Lexington, NC.

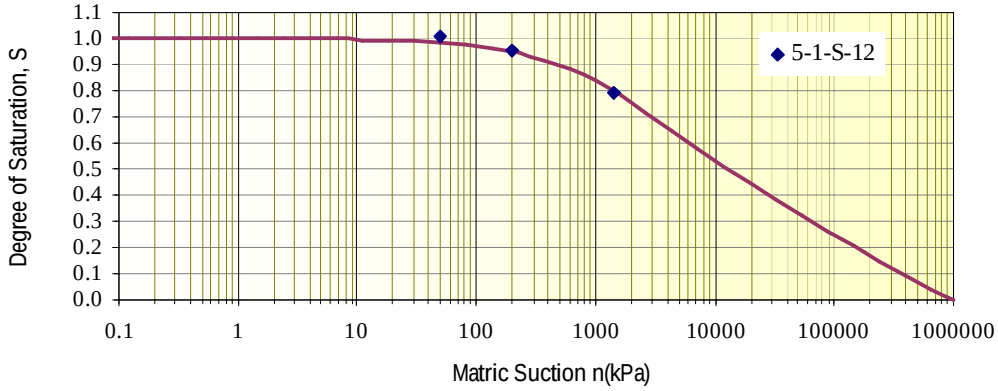

FIGURE B.44 SWCC of side sample, Lexington, NC.

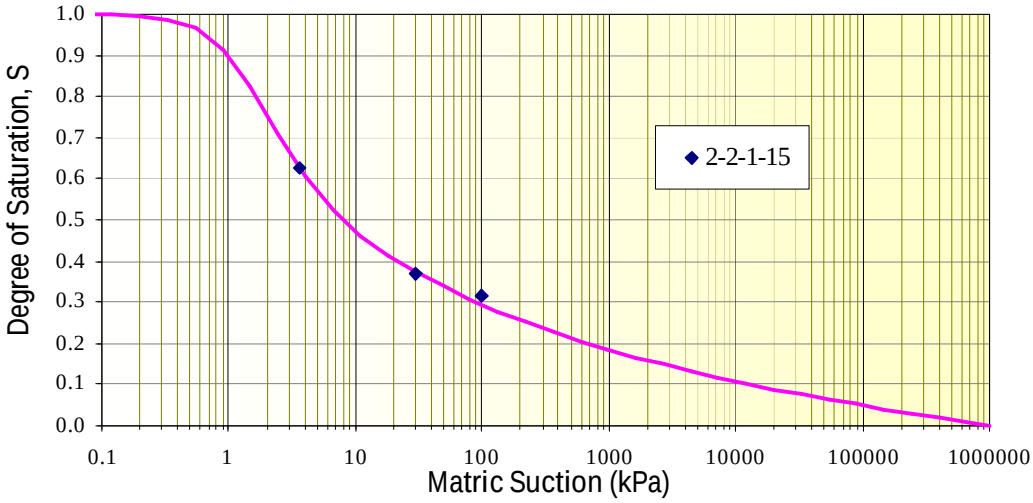

FIGURE B.45 SWCC for granular base, Harrisburg, OR.

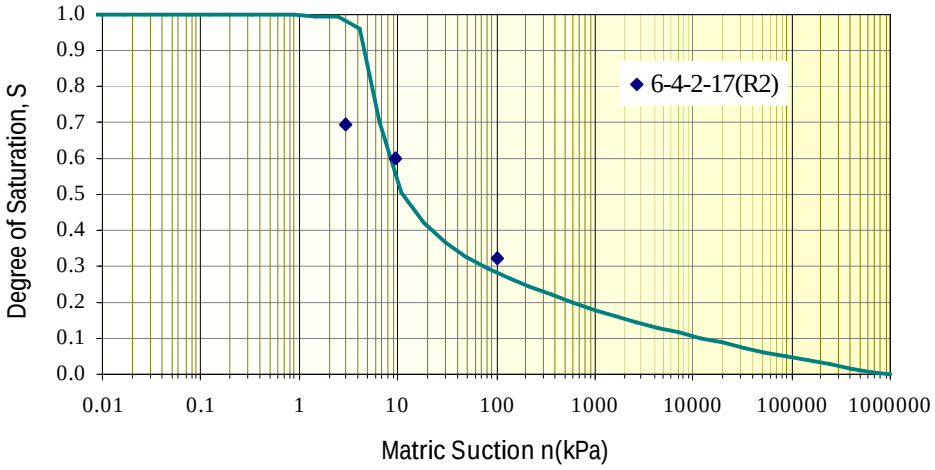

FIGURE B.46 SWCC for granular base, Milesburg, PA.

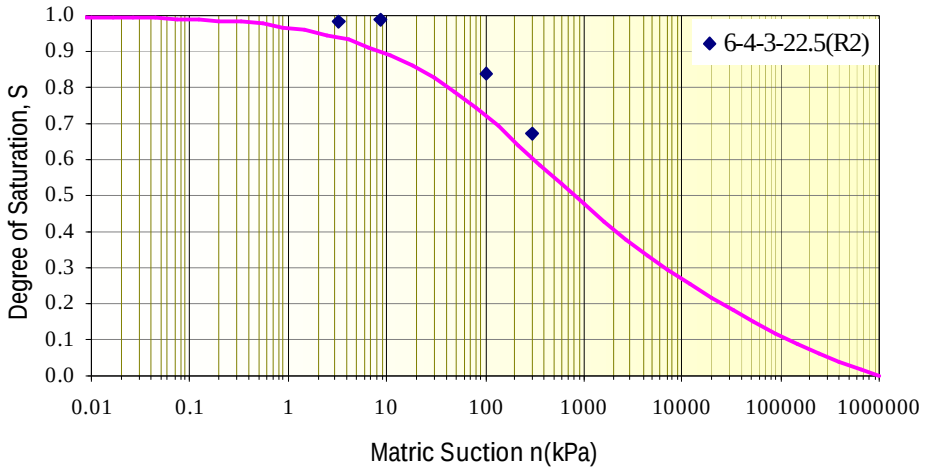

FIGURE B.47 SWCC for subgrade, Milesburg, PA.

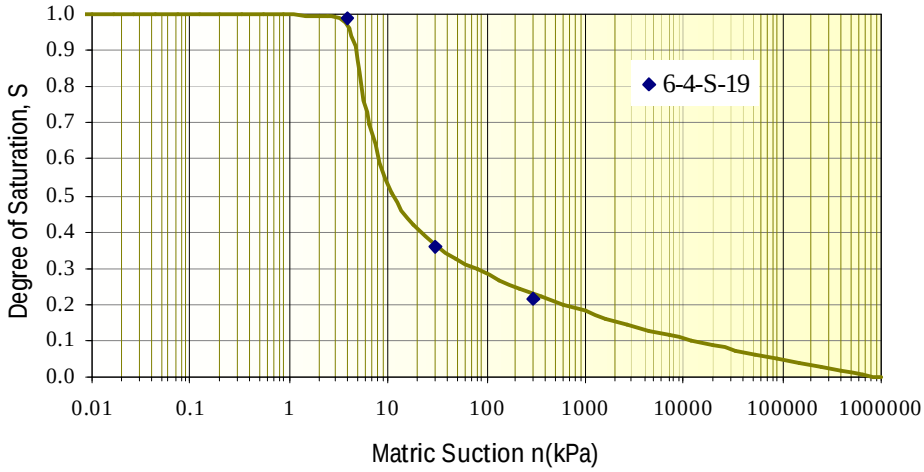

FIGURE B.48 SWCC of side sample, Milesburg, PA.

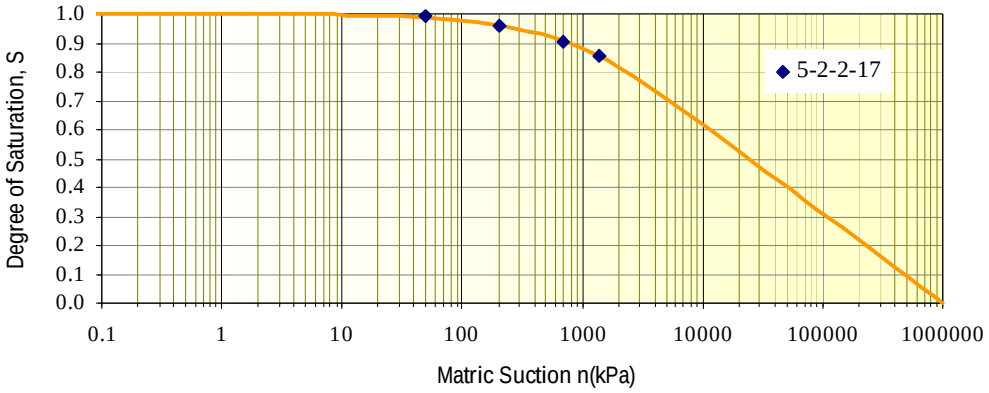

FIGURE B.49 SWCC for subgrade, Auburntown, TN.

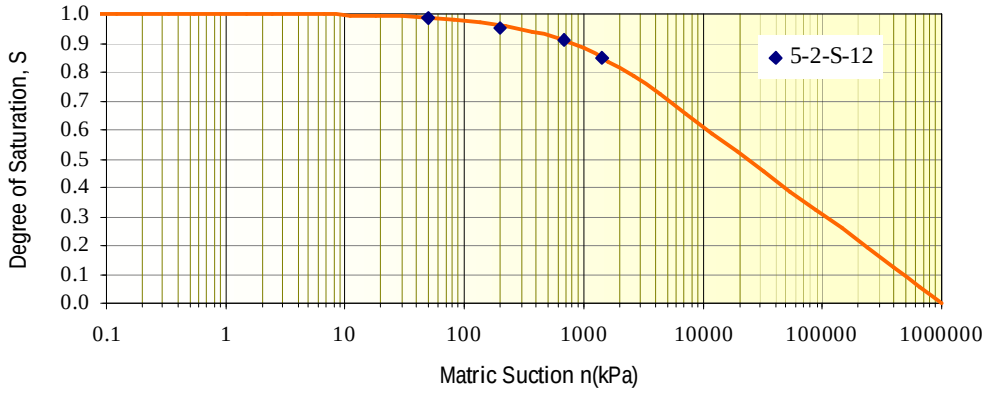

FIGURE B.50 SWCC of side sample, Auburntown, TN.

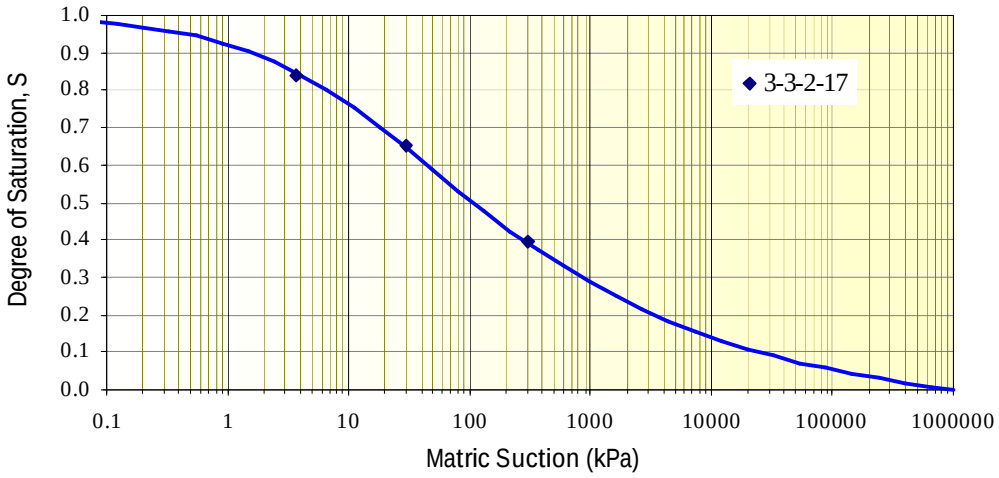

FIGURE B.51 SWCC for granular base, Vidaurri, TX.

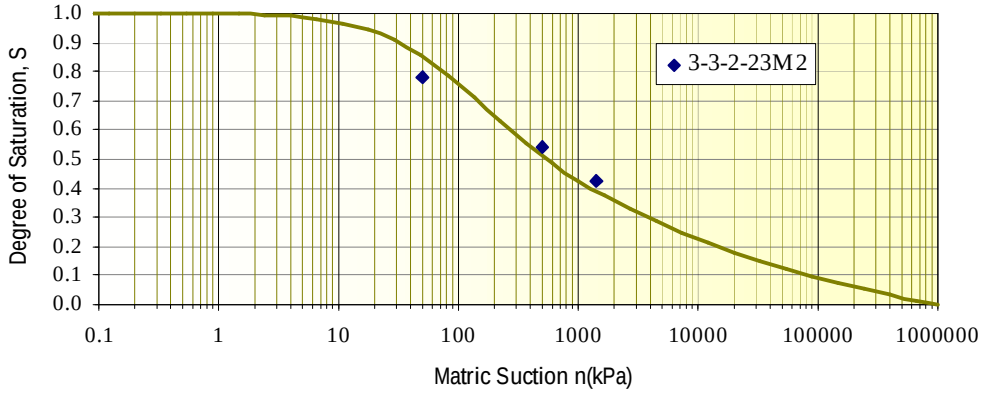

FIGURE B.52 SWCC for subgrade, Vidaurri, TX.

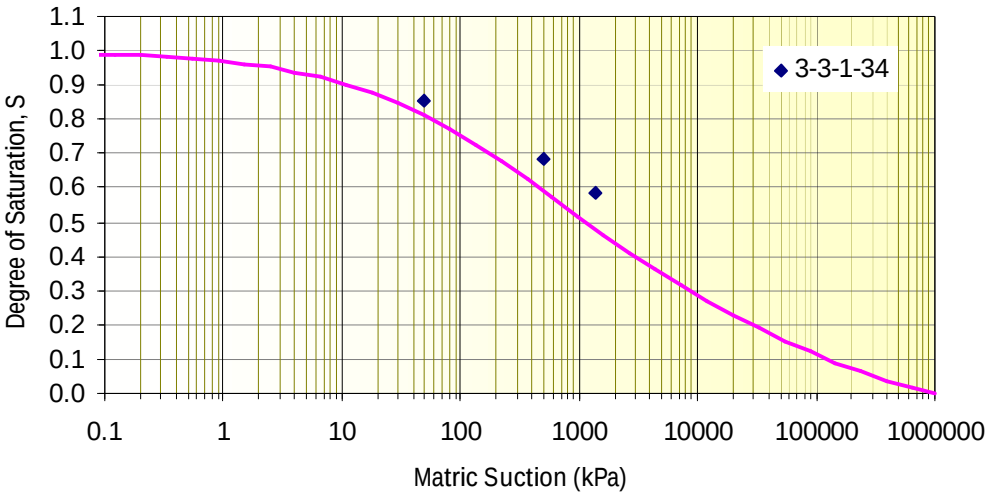

FIGURE B.53 SWCC for subgrade, Vidaurri, TX.

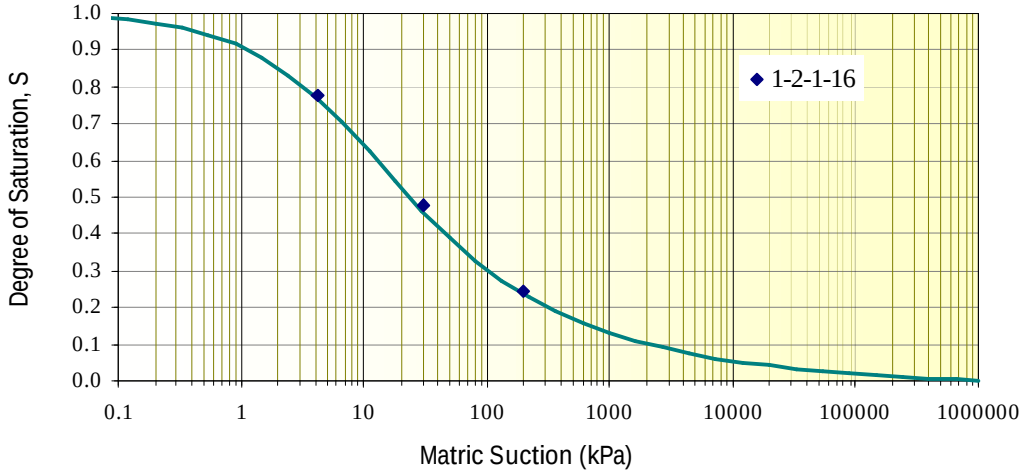

FIGURE B.54 SWCC for granular base, Estelline, TX.

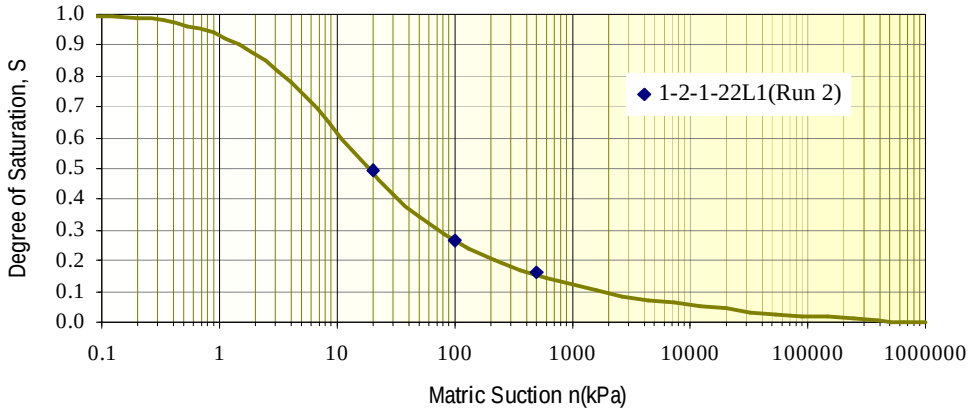

FIGURE B.55 SWCC for subgrade, Estelline, TX.

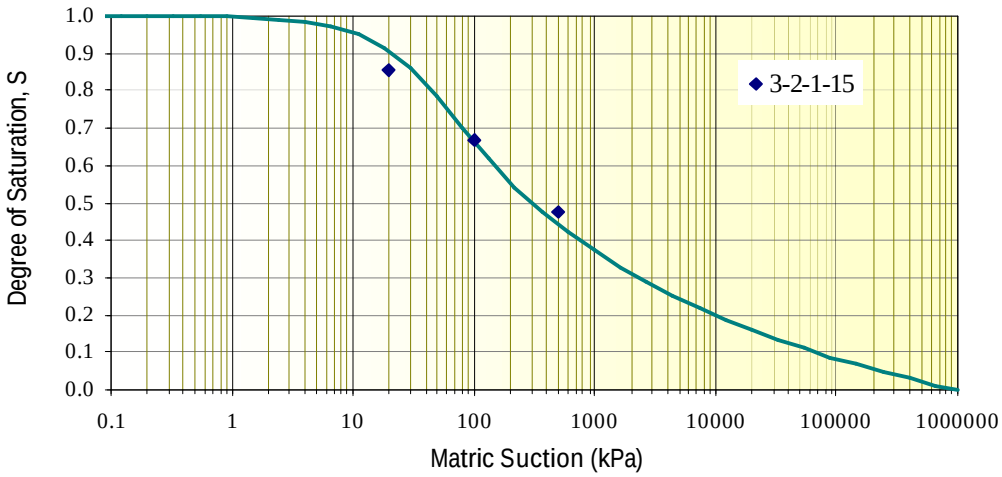

FIGURE B.56 SWCC for compacted subbase, Beaumont, TX.

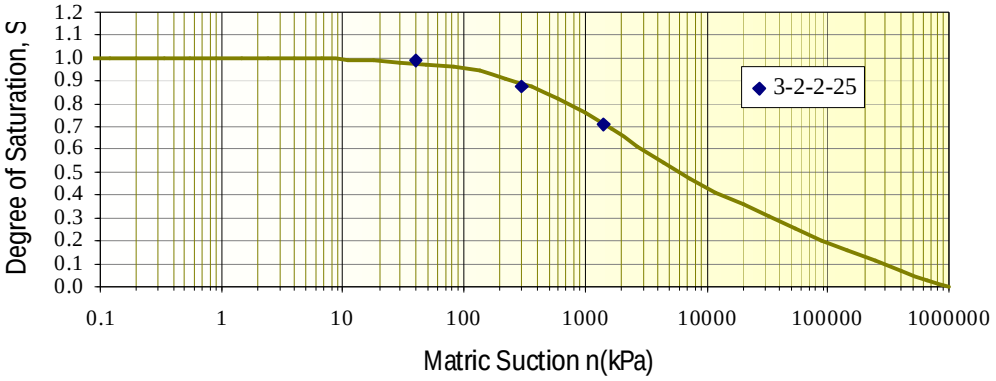

FIGURE B.57 SWCC for subgrade, Beaumont, TX.

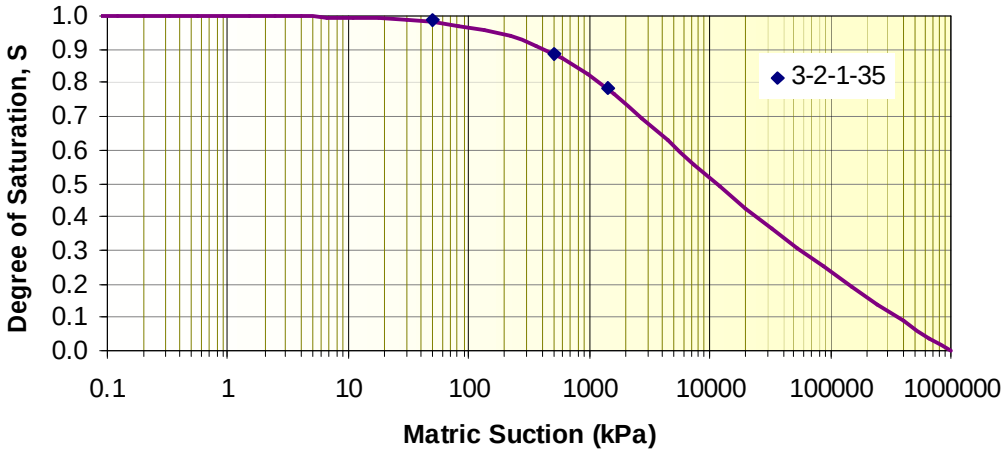

FIGURE B.58 SWCC for subgrade, Beaumont, TX.

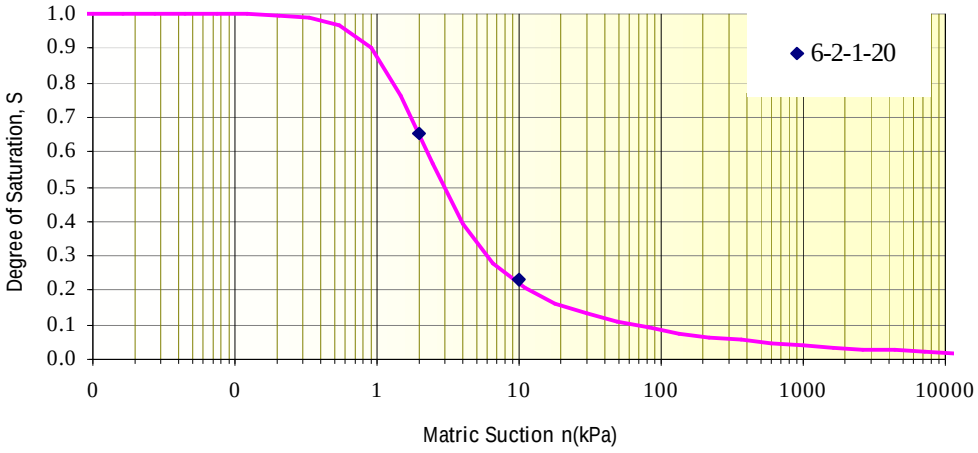

FIGURE B.59 SWCC for granular base, Charlotte, VT.

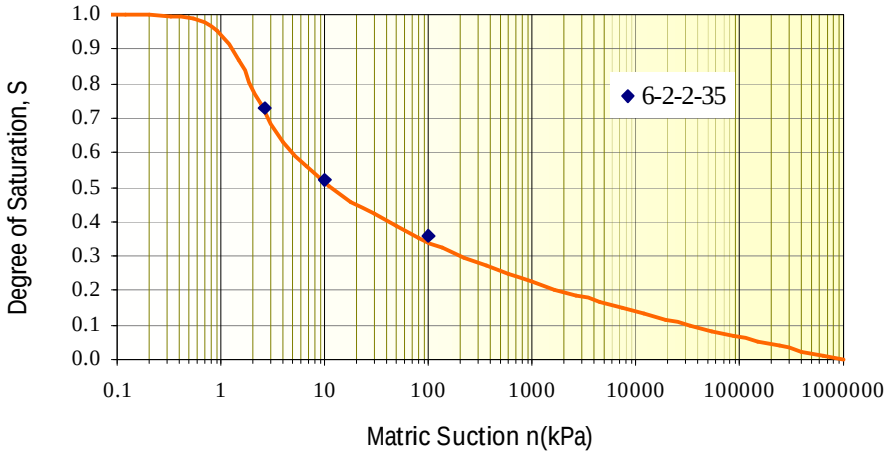

FIGURE B.60 SWCC for subbase, Charlotte, VT.

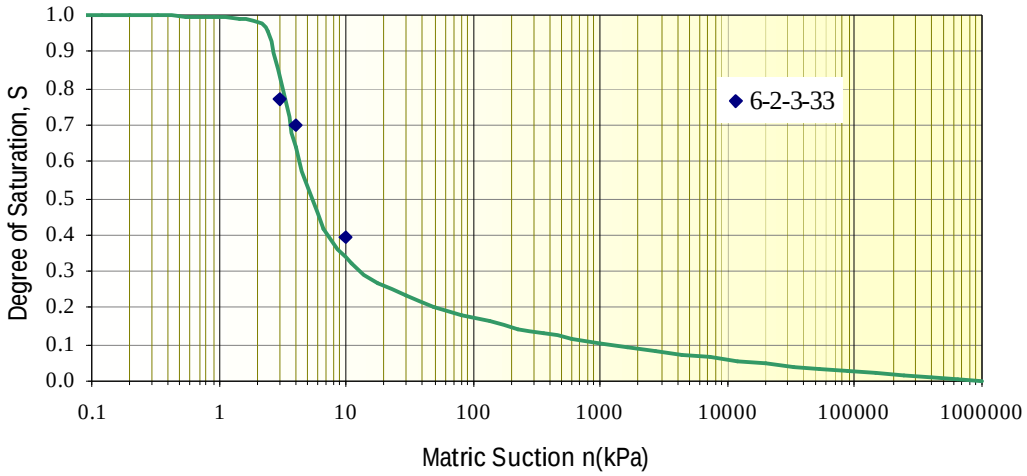

FIGURE B.61 SWCC for subbase, Charlotte, VT.

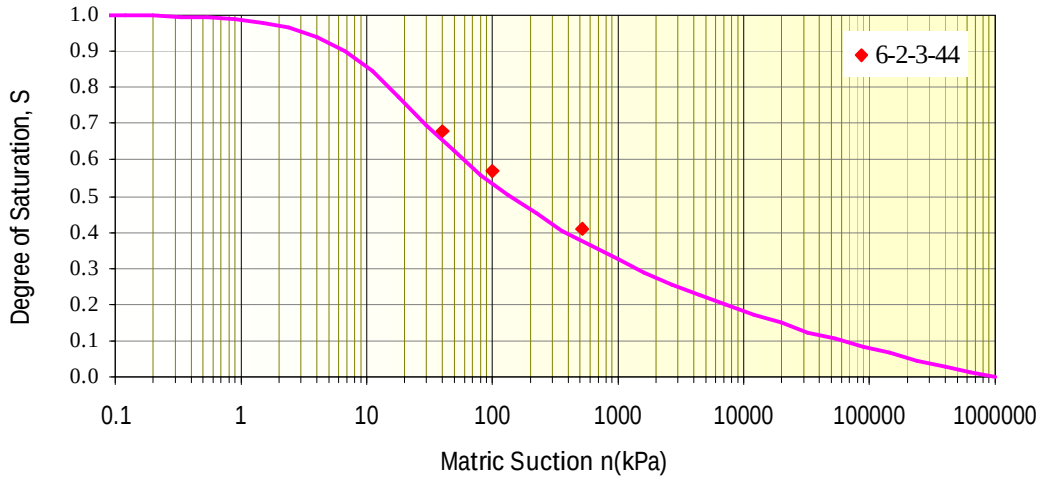

FIGURE B.62 SWCC for subgrade, Charlotte, VT.

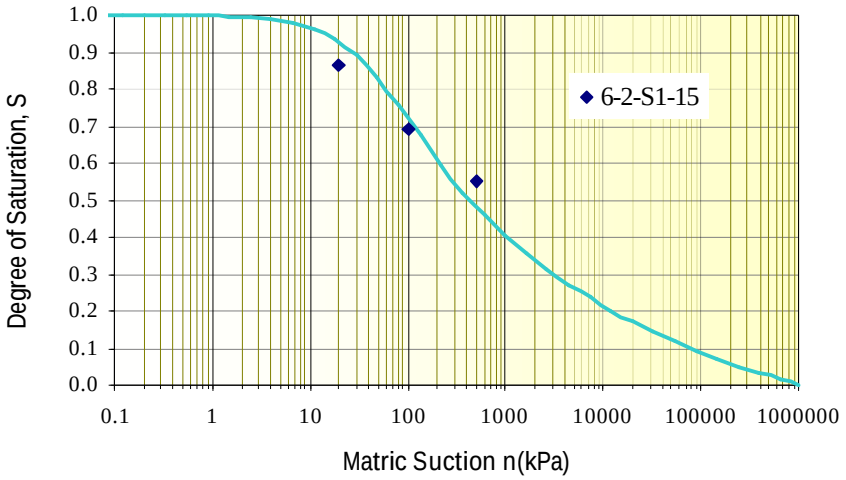

FIGURE B.63 SWCC of side sample, Charlotte, VT.

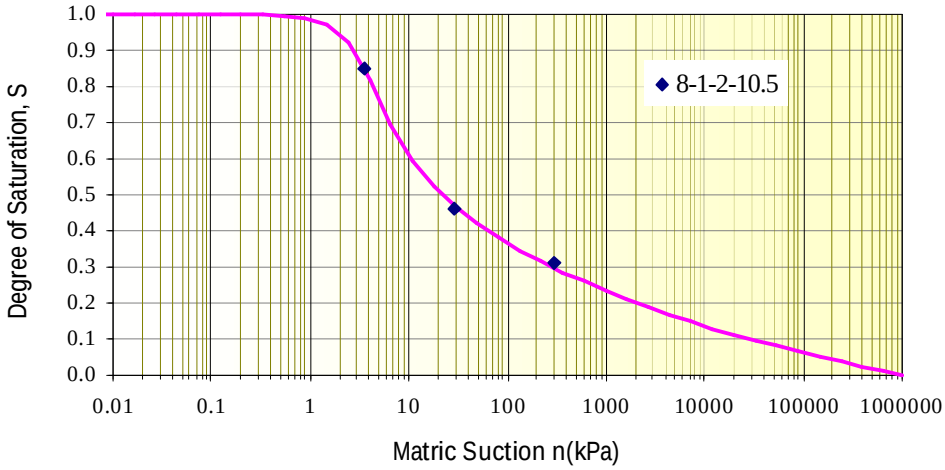

FIGURE B.64 SWCC for granular base, Pullman, WA.

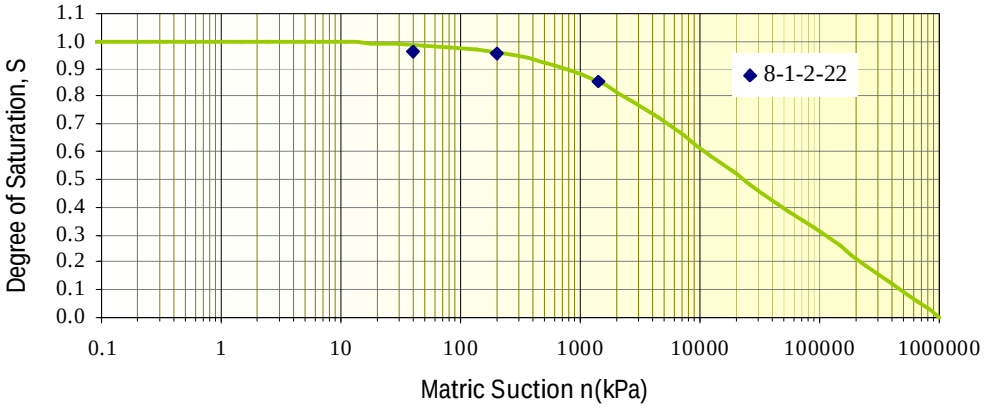

FIGURE B.65 SWCC for subgrade, Pullman, WA.

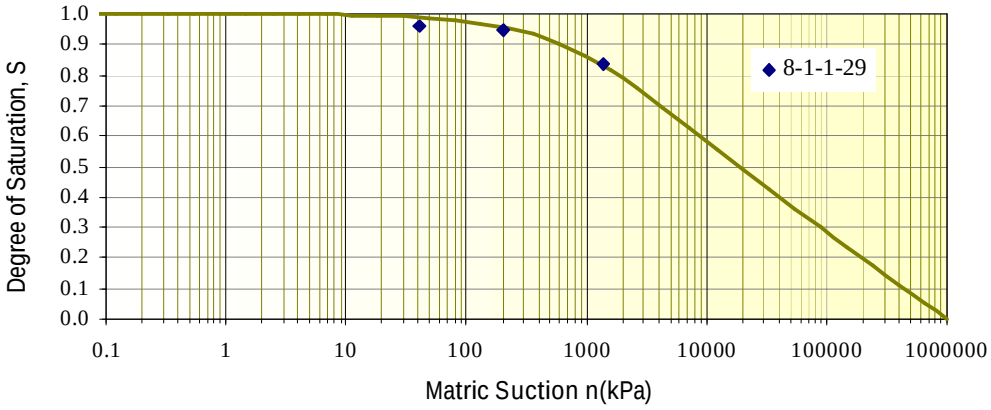

FIGURE B.66 SWCC for subgrade, Pullman, WA.

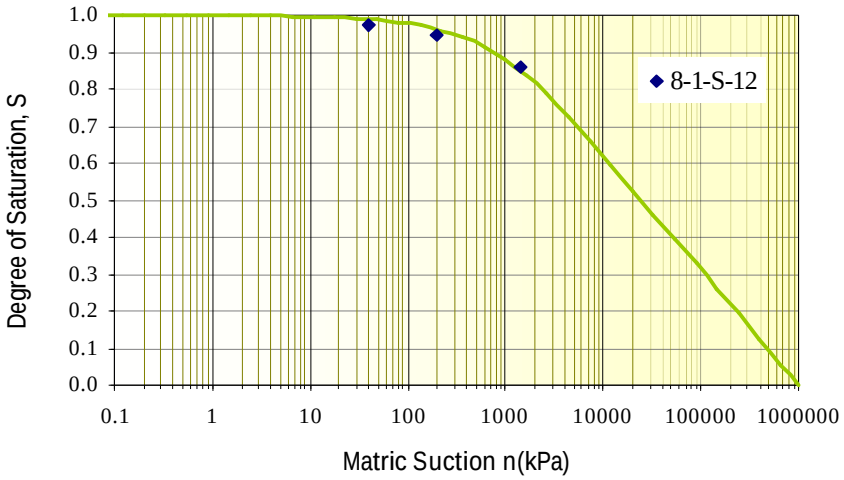

FIGURE B.67 SWCC of side sample, Pullman, WA.

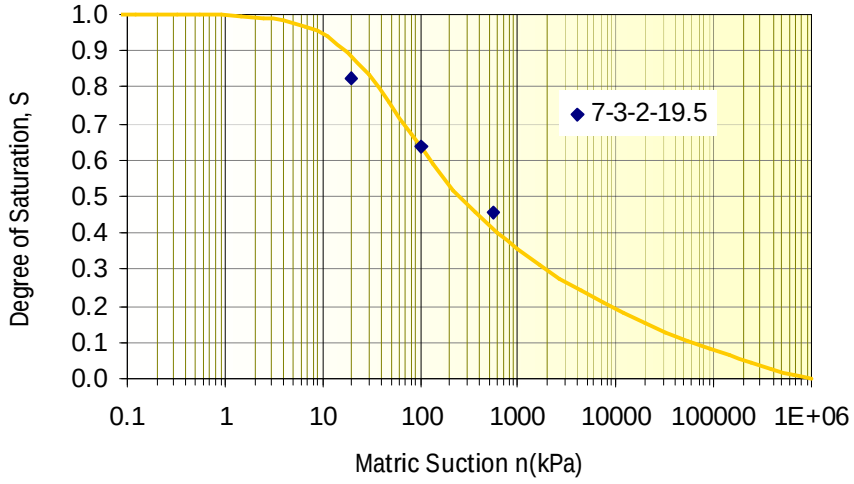

FIGURE B.68 SWCC for subbase, Gillette, WY.

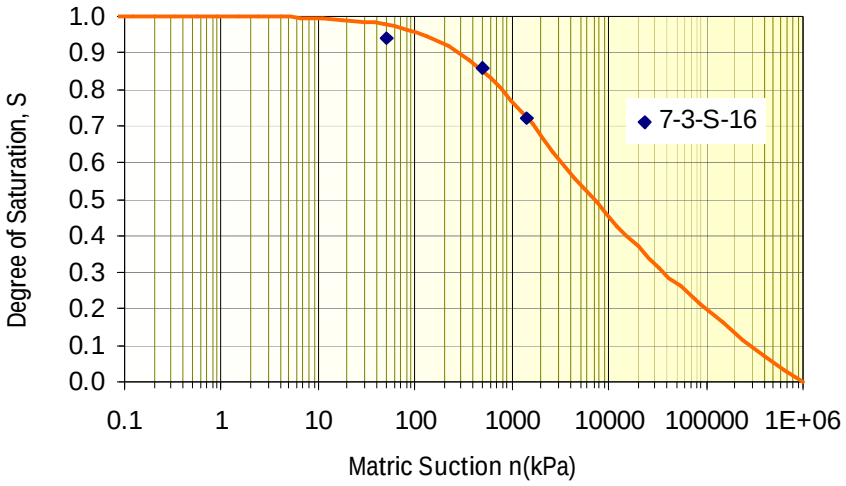

FIGURE B.69 SWCC of side sample, Gillette, WY.

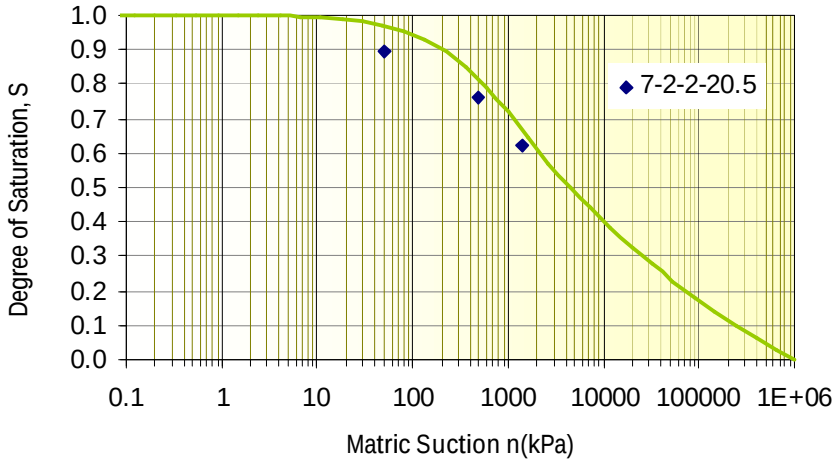

FIGURE B.70 SWCC for subgrade, Sheridan, WY.

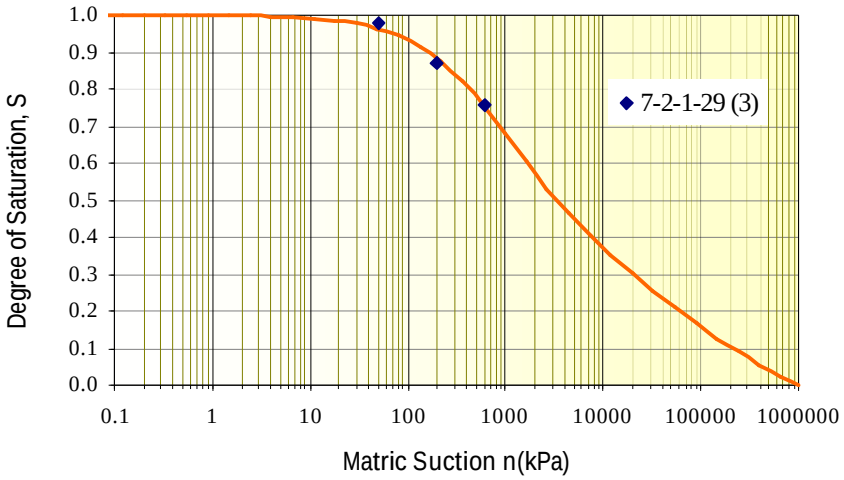

FIGURE B.71 SWCC for subgrade, Sheridan, WY.

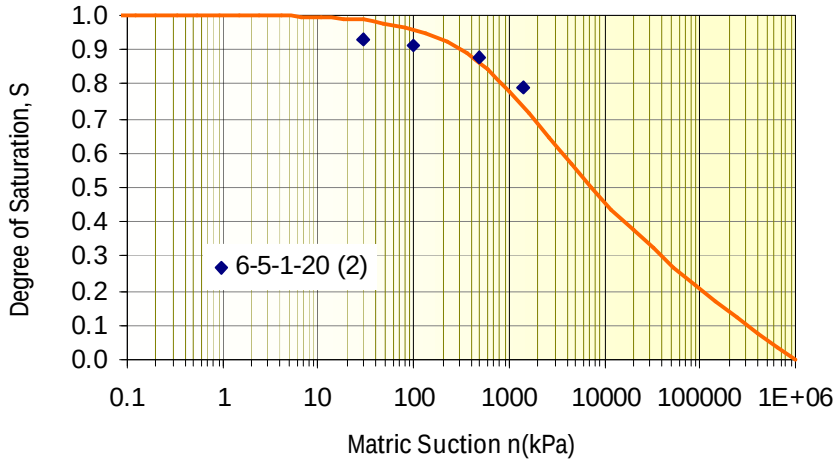

FIGURE B.72 SWCC for compacted subgrade, Albertville, MN.

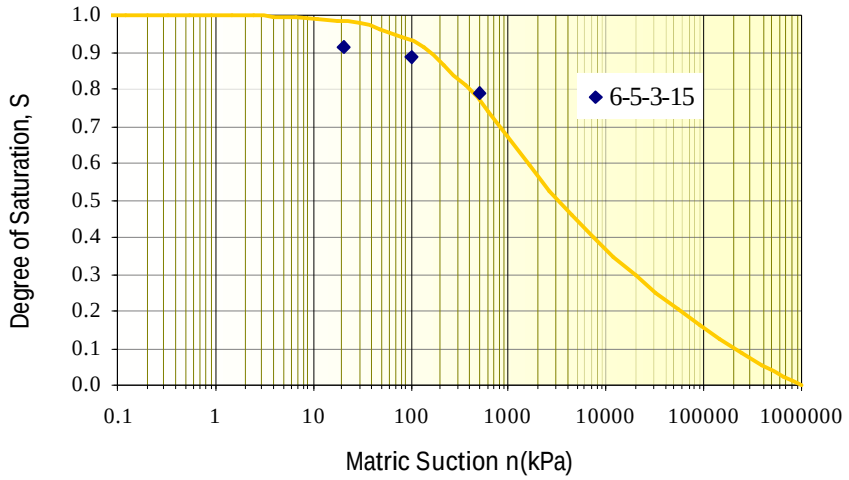

FIGURE B.73 SWCC for compacted subgrade, Albertville, MN.

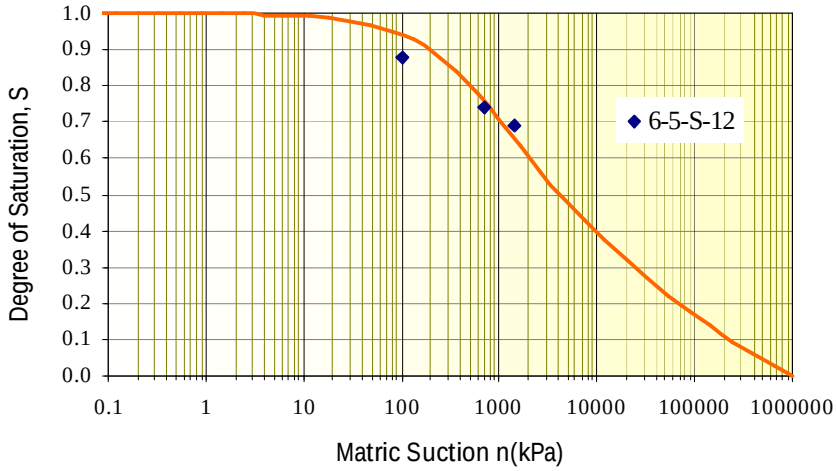

FIGURE B.74 SWCC of side sample, Albertville, MN.

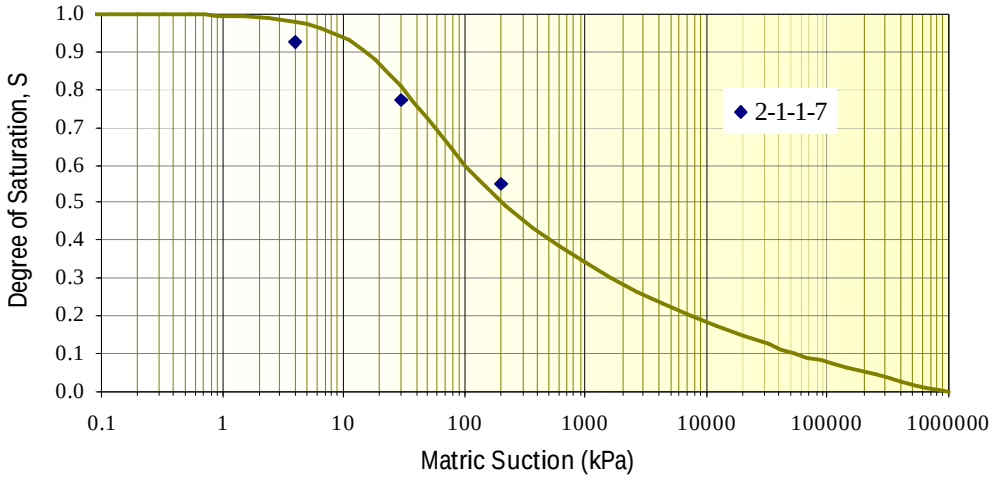

FIGURE B.75 SWCC for granular base, Silver Springs, NV.

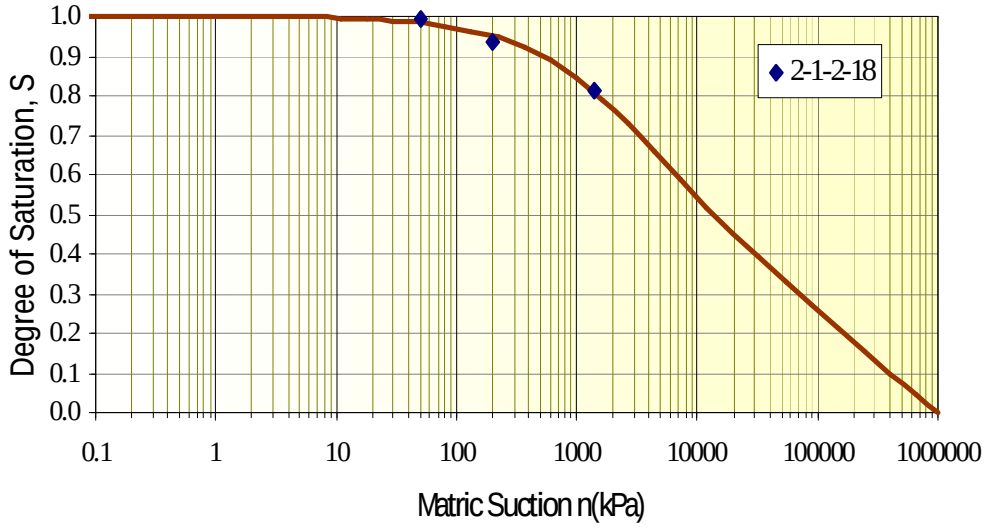

FIGURE B.76 SWCC for fill, Silver Springs, NV.

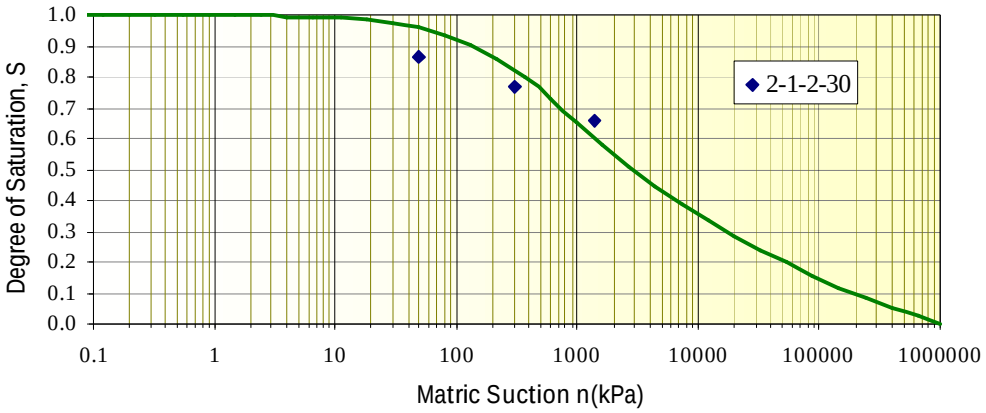

FIGURE B.77 SWCC for compacted subgrade, Silver Springs, NV.

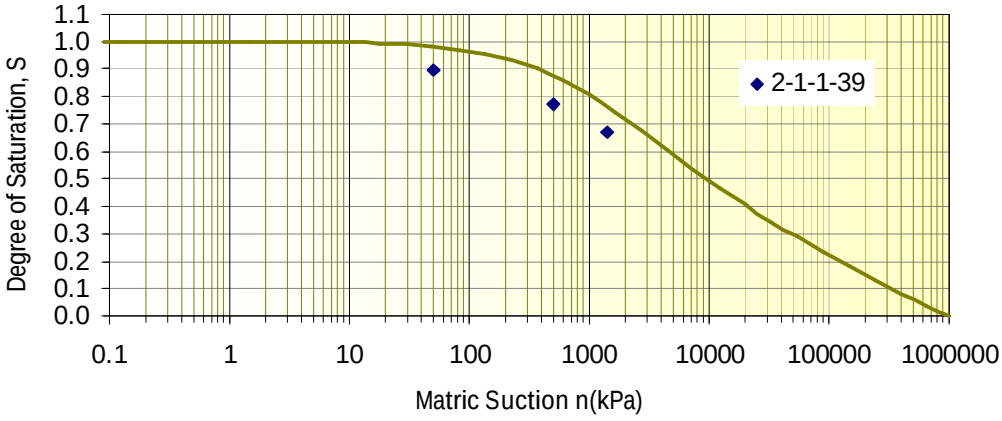

FIGURE B.78 SWCC for subgrade, Silver Springs, NV.

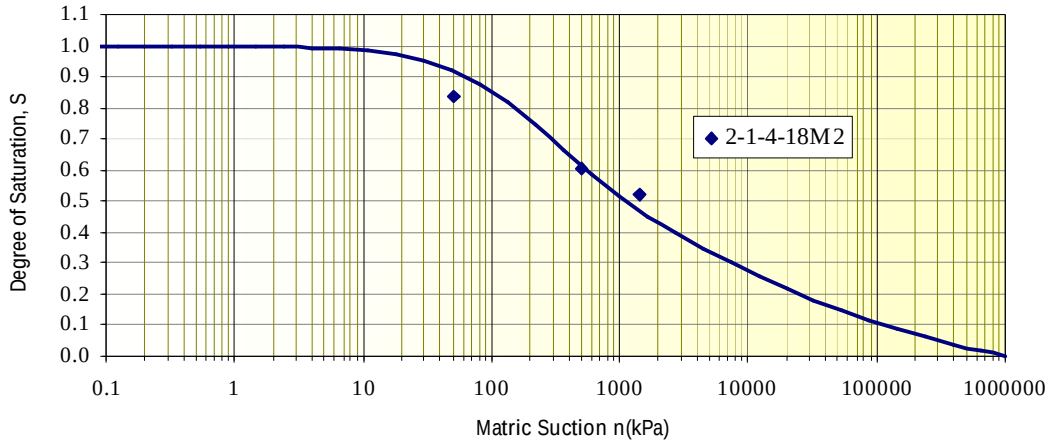

FIGURE B.79 SWCC for fill, Silver Springs, NV.

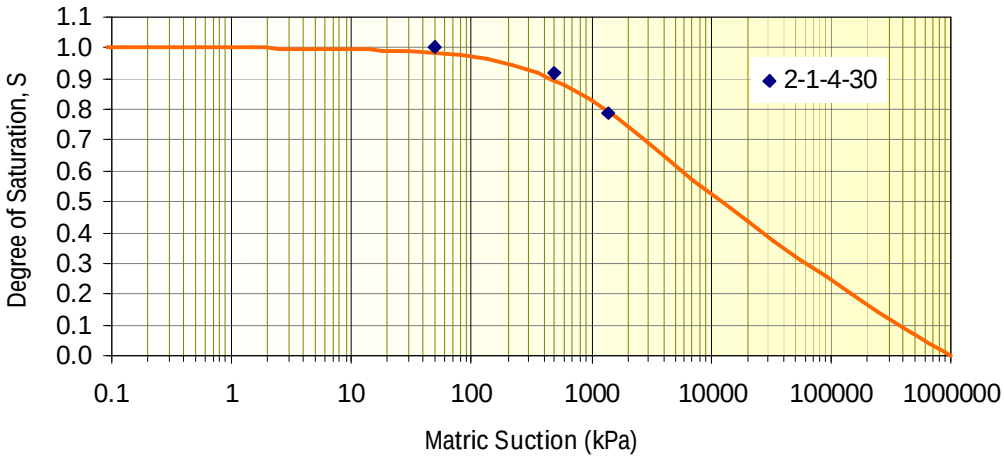

FIGURE B.80 SWCC for compacted subgrade, Silver Springs, NV.

APPENDIX C.
MEASURED MOISTURE AND FIELD DENSITY FOR FIELD SITES

Section ID	State	Sample ID	Sample Type	Layer	Grav. Moisture Content	Avg. Grav. Moisture Content	Dry Density	Measured Average Dry Density	SWCC Data Pairs Suction, Saturation (S)		
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		1-3-1-10	Grab (SC)	GB	---	---	---	---	4, 0.86	30, 0.50	300, 0.13
		1-3-2-9.5	Grab (SC)	GB							
		1-3-3-8.25	Grab (SC)	GB							
		1-3-4-7.5	Grab (SC)	GB							
		1-3-1-15	Tube	SS	23.58	23.43	97.37	99.69	5, 1.00	20, 0.94	300, 0.69
		1-3-2-15	Tube	SS	22.49		101.44				
		1-3-3-14.5	Tube	SS	24.23		100.26				
		1-3-1-23	Tube	SS		18.81		110.16	---	---	---
		1-3-2-23	Tube	SS							
010101	**AL**	1-3-3-23	Tube	SS	18.81		110.16				
		2-3-1-5.5	Grab (SC)	GB		3.19		139.56	4, 0.79	30, 0.50	200, 0.31
		2-3-2-5.5	Grab (SC)	GB	2.970		140.72				
		2-3-3-5.5	Grab (SC)	GB	3.410		138.39				
		2-3-C-6.5	Grab (SC)	GB	3.790		130.8				
		2-3-1-13.5	Grab (SC)	SS		7.515		113.690	4, 0.76	30, 0.45	300, 0.26
		2-3-2-12	Grab (SC)	SS	6.220		118.92				
		2-3-3-12	Grab (SC)	SS	8.810		108.46				
		2-3-S-20	Grab (SC)	Rd Side	3.360	3.360	122.61	122.610	4, 0.58	30, 0.25	100, 0.20
040113	**AZ**	2-3-M-15	Grab (SC)	Median	3.130		111.07				
		4-1-1-11.5	Grab (SC)	GB	4.670	5.213	139.02	136.247	4, 0.86	30, 0.47	300, 0.30
		4-1-2-11.5	Grab (SC)	GB	5.730		132.29				
		4-1-3-11.5	Grab (SC)	GB	5.240		137.43				
		4-1-1-18.5	Tube	SS	6.700	7.493	126.47	126.857	10, 0.91	50, 0.67	300, 0.42
		4-1-2-18	Grab (SC)	SS	7.880		125.82				
		4-1-3-18	Grab (SC)	SS	7.900		128.28				
040215	**AZ**	4-1-S-12	Grab (SC)	Rd Side	4.980	4.980	116.52	116.520	4,0.83	30,0.55	300, 0.33
		1-5-2-13.5	Grab	GB		19.830	---	---	---	---	---
		1-5-3-14	Grab	GB							
		1-5-4-13	Grab	GB	19.830		--				
		1-5-1-18.5	Tube	SS	18.160	18.160	103.26	103.260	20, 0.82	100, 0.51	550, 0.35
		1-5-2-15	Tube	SS	18.520	18.013		107.625			
		1-5-3-15	Tube	SS	17.250		104.91				
		1-5-4-15.5	Tube	SS	18.270		110.34				
		1-5-1-23	Tube	SS	17.280	16.960	105.41	104.235			
		1-5-2-23	Tube	SS	16.060		90.72		50, 0.82	500, 0.45	1400, 0.36
		1-5-3-24	Tube	SS	17.880		109.6				
		1-5-4-23.5	Tube	SS	16.620		111.21				
052042	**AR**	1-5-S-13	Tube	Rd Side	19.830	19.830	108.21	108.210			
063042	**CA**	8-3-1-13	Tube	CompSS	18.320	18.933	105.7	107.233			
		8-3-2-14	Tube	CompSS	19.080		109.2		20, 0.96	100, 0.92	550, 0.77
		8-3-3-14	Tube	Comp SS	19.400		106.8				

Section ID	State	Sample ID	Sample Type	Layer	Grav. Moisture Content	Avg. Grav. Moisture Content	Dry Density	Measured Average Dry Density	SWCC Data Pairs Suction, Saturation (S)		
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		8-3-1-20	Tube	SS	16.320	16.560	116.6	114.167			
		8-3-2-20	Tube	SS	16.600		113.4				
		8-3-3-21	Tube	SS	16.760		112.5		20, 0.79	100, 0.74	500, 0.60
		8-3-1-28	Tube	SS	14.170	16.543	106.86	108.720	20, 0.53	80, 0.49	500, 0.39
		8-3-2-29	Tube	SS	17.180		108.6				
		8-3-3-29	Tube	SS	18.280		110.7				
		8-3-S-12	Tube	Rd Side	12.970	12.970	96.9	96.900	--	100, 0.75	650, 0.56
		7-5-1-7.5	Grab (SC)	GB1	3.660	3.677	139.78	138.613			
		7-5-2-7.5	Grab (SC)	GB1	3.740		140.97		3, 0.85	10, 0.57	100, 0.34
		7-5-3-7.5	Grab (SC)	GB2	3.630		135.09				
		7-5-1-14	Grab (SC)	GB2	5.930	5.187	107.38	120.263	3, 0.85	10, 0.57	100, 0.34
		7-5-2-13.5	Grab (SC)	GB2	4.090		125.74				
		7-5-3-13.5	Grab (SC)	GB2	5.540		127.67				
		7-5-1-43	Tube	Nat SS	23.060	22.955	103.1	103.330	50, 0.98	500, 0.96	1400, 0.84
		7-5-3-43	Tube	SS	22.850		103.56				
		7-5-1-50	Tube	Nat SS	22.850	23.460	106.36	103.845	---	---	---
		7-5-3-50	Tube	SS	24.070		101.33				
081053	**CO**	7-5-S-12	Tube	Rd Side	19.340	19.340	103.41	103.410			
		7-4-1-14.5	Grab (SC)	GB	3.500	3.313	125.96	131.493			
		7-4-2-14.5	Grab (SC)	GB	3.270		132.02		3, 0.70	10, 0.44	100, 0.25
		7-4-3-14.5	Grab (SC)	GB	3.170		136.5				
		7-4-1-19	Tube	SB	6.710	6.640	116.02	115.293			
		7-4-2-19	Tube	SB	6.390		117.36				
		7-4-3-19	Tube	SB	6.820		112.5		4, 0.68	20, 0.32	100, 0.27
		7-4-1-37	Tube	SB	9.730	9.730	116.97	116.970			
		7-4-3-37	Grab	SB			--		--	--	--
		7-4-1-48	Tube	SS	19.860	19.977	110.88	107.573			
		7-4-2-48	Tube	SS	20.170		104.77				
		7-4-3-48	Tube	SS	19.900		107.07		50, 1.00	300, 0.90	1400, 0.71
087035	**CO**	7-4-S-15	Tube	Rd Side	14.890	14.890	106.42	106.420	50, 0.80	300, 0.55	1400, 0.44
		6-1-1-11	Grab (SC)	GB	5.000	5.030	142.68	138.600			
		6-1-2-12.5	Grab (SC)	GB	5.040		143.85		3, 0.85	9, 0.57	100, 0.28
		6-1-3-10	Grab (SC)	GB	5.050		129.27				
		6-1-1-20	Grab (SC)	SS	6.420	7.130	123.43	126.425	2, 0.91	10, 0.64	200, 0.26
		6-1-2-21	Grab (SC)	SS	7.840		129.42				
091803	**CT**	6-1-S-12	Grab (SC)	Rd Side	9.800	9.800	114.86	114.860	4, 0.84	30, 0.59	200, 0.31
		5-3-2-16.5	Tube	SS	21.130	22.020	102.14	102.870	50, 0.93	300, 0.80	1400, 0.71
		5-3-3-16	Tube	SS	22.910		103.6				
		5-3-2-27	Tube	SS	17.120	17.120	119.58	119.580			
		5-3-3-22	Tube	SS	21.170	21.170	105.12	105.120			
		5-3-S-12	Tube	Rd Side	17.860	17.860	110.7	110.700			
204054	**KS**	5-3-S2-8	Tube	Rd Side	20.940	20.940	103.96	103.960	52, 0.98	207, 0.96	690, 0.86

Section ID	State	Sample ID	Sample Type	Layer	Grav. Moisture Content	Avg. Grav. Moisture Content	Dry Density	Measured Average Dry Density	SWCC Data Pairs Suction, Saturation (S)		
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		3-1-1-24	Tube	SS	19.980	16.620	92.8	105.323			
		3-1-2-24	Tube	SS	14.920		113.8				
		3-1-3-24	Tube	SS	14.960		109.37		50, 0.91	500, 0.80	1400, 0.61
		3-1-1-34	Tube	SS	22.630	22.630	102.71	102.710			
		3-1-2-29	Tube	SS	16.830	16.830	107.01	107.010			
		3-1-3-32	Tube	SS	21.450	21.450	105.64	105.640			
220118	**LA**	3-1-S-12	Tube	Rd Side	19.280	19.280	108.04	108.040			
		1-4-1-9.5	Grab (SC)	GB		10.100		124.210			
		1-4-2-10.5	Tube	GB	10.740		124.52				
		1-4-3-10.5	Tube	GB	9.460		123.9				
		1-4-1-19	Tube	GB	10.000	10.335	120.18	122.170			
		1-4-3-18	Tube	GB	10.670		124.16		5, 0.93	20, 0.61	300, 0.34
		1-4-1-27	Tube	GB	7.590	7.590	113.09	113.090			
		1-4-2-42	Tube	SS	16.070	16.680	112.22	109.170	5, 0.89	20, 0.80	300, 0.39
		1-4-3-40	Tube	SS	17.290		106.12				
281802-A	**MS**	1-4-S-12	Tube	Rd Side	9.320	9.320	126.6	126.600			
		1-4-1-9.5	Grab (SC)	GB		10.100		124.210			
		1-4-2-10.5	Tube	GB	10.740		124.52				
		1-4-3-10.5	Tube	GB	9.460		123.9				
		1-4-1-19	Tube	GB	10.000	10.335	120.18	122.170			
		1-4-3-18	Tube	GB	10.670		124.16		5, 0.93	20, 0.61	300, 0.34
		1-4-1-27	Tube	GB	7.590	7.590	113.09	113.090			
		1-4-2-42	Tube	SS	16.070	16.680	112.22	109.170	5, 0.89	20, 0.80	300, 0.39
		1-4-3-40	Tube	SS	17.290		106.12				
281802-B	**MS**	1-4-S-12	Tube	Rd Side	9.320	9.320	126.6	126.600			
		7-1-1-10	Grab (SC)	GB	6.000	5.935	144.7	144.420			
		7-1-2-10.5	Grab (SC)	GB	5.870		144.14		3, 0.93	10, 0.85	100, 0.60
		7-1-1-13.5	Grab (SC)	SB	5.360	5.393	141.14	138.987	3, 0.86	10, 0.73	100, 0.43
		7-1-2-13.5	Grab (SC)	SB	5.330		137.41				
		7-1-3-13	Grab (SC)	SB	5.490		138.41				
		7-1-1-30	Tube	SS	13.210	13.857	119.7	116.817	50, 0.90	300, 0.77	600, 0.70
		7-1-2-29	Tube	SS	14.380		115.06				
		7-1-3-30	Tube	SS	13.980		115.69				
		7-1-1-39	Tube	SS	14.520	14.520	124.17	124.170			
		7-1-3-38	Tube	SS			--				
307066	**MT**	7-1-S-15	Tube	Rd Side	22.650	22.650	101.76	101.760			
310114	**NE**	5-4-1-9	Grab (SC)	GB	2.400	2.370	141.63	141.473	4, 0.60	30, 0.38	300, 0.23
		5-4-2-7.5	Grab (SC)	GB	2.330		139.25				
		5-4-3-7.5	Grab (SC)	GB	2.380		143.54				
		5-4-1-19	Tube	SS	28.500	26.273	97.79	99.497			
		5-4-2-19	Tube	SS	25.190		100.55				
		5-4-3-19	Tube	SS	25.130		100.15				

Section ID	State	Sample ID	Sample Type	Layer	Grav. Moisture Content	Avg. Grav. Moisture Content	Dry Density	Measured Average Dry Density	SWCC Data Pairs Suction, Saturation (S)		
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		5-4-1-27	Tube	SS	24.730	24.560	99.47	101.137			
		5-4-2-25	Tube	SS	23.540		102.38		50, 0.99	200, 0.98	1400, 0.87
		5-4-3-28	Tube	SS	25.410		101.56				
		5-4-S-12	Tube	Rd Side	21.280	21.280	104.15	104.150	50, 1.00	200, 0.96	1400, 0.89
		8-2-1-12	Grab (SC)	GB	4.510	5.077	145.59	144.673			
		8-2-2-12	Grab (SC)	GB	5.230		146.41		9, 0.97	100, 0.68	300, 0.55
		8-2-3-12	Grab (SC)	GB	5.490		142.02				
		8-2-1-19	Grab (SC)	SB	5.780	5.937	125.18	129.570			
		8-2-2-18	Grab (SC)	SB	5.830		134.87				
		8-2-3-18	Grab (SC)	SB	6.200		128.66		3, 0.86	9, 0.76	100, 0.49
320204	**NV**	8-2-S-18	Tube	Rd Side	11.780	11.780	102.63	102.630	21, 0.96	100, 0.62	500, 0.42
		1-1-1-11	Grab	GB	---	---	---	---	---	---	---
		1-1-2-10	Grab	GB							
		1-1-1-13	Tube	SS	22.710	20.450	103.69	107.160	50, 0.88	500, 0.66	1400, 0.58
		1-1-2-13	Tube	SS	19.080		110.85				
		1-1-3-13	Tube	SS	19.560		106.94				
		1-1-1-22	Tube	SS	---	---	---	---	---	---	---
		1-1-2-22	Tube	SS							
350105	**NM**	1-1-3-22	Tube	SS							
		6-3-1-10.5	Grab (SC)	SS	5.060	5.293	144.09	140.860			
		6-3-2-10	Grab (SC)	SS	5.360		135.09				
		6-3-3-10	Grab (SC)	SS	5.460		143.4				
		6-3-1-19	Grab (SC)	SS	4.920	5.065	141.57	139.535	3, 0.68	9, 0.59	100, 0.44
		6-3-2-18	Grab (SC)	SS	5.210		137.5				
364018	**NY**	6-3-S-12	Grab (SC)	Rd Side	12.290	12.290	99.93	99.930	4, 0.92	30, 0.72	300, 0.3
		5-1-1-16	Tube	SS	31.760	31.443	83	84.463			
		5-1-2-16	Tube	SS	31.030		84.96				
		5-1-3-16	Tube	SS	31.540		85.43				
		5-1-1-24	Tube	SS	26.850	28.013	94.78	93.520			
		5-1-2-24	Tube	SS	29.680		91.61		50, 0.99	200, 0.90	690, 0.74
		5-3-3-24	Tube	SS	27.510		94.17				
370205	**NC**	5-1-S-12	Tube	Rd Side	21.610	21.610	98.48	98.480	50, 0.99	200, 0.95	1400, 0.80
416011	**OR**	2-2-1-15	Grab (SC)	GB	---	---	---	---	4, 0.63	30, 0.37	100, 0.30
		6-4-1-17	Grab (SC)	GB	3.630	3.807	139.76	140.893			
		6-4-2-17	Grab (SC)	GB	4.140		140.55		3, 0.73	10, 0.63	100, 0.34
		6-4-3-15.5	Grab (SC)	GB	3.650		142.37				
		6-4-1-23	Grab (SC)	CompSS	10.930	10.350	124.36	122.523			
		6-4-2-23	Grab (SC)	SS	11.060		120.29				
		6-4-3-22.5	Grab (SC)	SS	9.060		122.92		9, 0.99	100, 0.84	300, 0.67
420603	**PA**	6-4-S-19	Grab (SC)	Rd Side	5.330	5.330	109.67	109.670	4, 0.99	30, 0.36	300, 0.22
473101	**TN**	5-2-1-17	Tube	SS	31.510	32.760	93.94	91.060			
		5-2-2-17	Tube	SS	34.010		88.18		50, 0.99	690, 0.90	1400, 0.85

Section ID	State	Sample ID	Sample Type	Layer	Grav. Moisture Content	Avg. Grav. Moisture Content	Dry Density	Measured Average Dry Density	SWCC Data Pairs Suction, Saturation (S)		
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		5-2-3-20	Tube	SS	36.100	36.100	87.29	87.290			
		5-2-1-25	Tube	SS	35.210	35.207	87.69	88.547			
		5-2-2-26	Tube	SS	36.100		89.61				
		5-2-3-24	Tube	SS	34.310		88.34				
		5-2-S-12	Tube	Rd Side	32.660	32.660	87.76	87.760	50, 0.98	200, 0.95	1400, 0.85
		3-3-1-7.5	Grab (SC)	TB	---	---	---	---	---	---	---
		3-3-2-17	Grab (SC)	GB		8.400		117.750	4, 0.84	30, 0.65	300, 0.40
		3-3-3-17	Grab (SC)	GB	8.400		117.75				
		3-3-1-24	Tube	SS	18.040	19.145	104.53	99.160			
		3-3-2-23	Tube	SS	20.250		93.79		50, 0.78	500, 0.54	1400, 0.43
		3-3-3-26	Tube	SS	17.830	17.830	106.37	106.370			
		3-3-1-34	Tube	SS		21.365		106.160	80, 0.086	500, 0.69	1400, 0.50
		3-3-2-32	Tube	SS	20.920		105.08				
		3-3-3-34	Tube	SS	21.810		107.24				
481060-A	**TX**	3-3-S-18	Tube	SS	21.920	21.920	82.24	82.240			
		3-3-1-7.5	Grab (SC)	TB							
		3-3-2-17	Grab (SC)	GB		8.400		117.750	4, 0.84	30, 0.65	300, 0.40
		3-3-3-17	Grab (SC)	GB	8.400		117.75				
		3-3-1-24	Tube	SS	18.040	19.145	104.53	99.160			
		3-3-2-23	Tube	SS	20.250		93.79		50, 0.78	500, 0.54	1400, 0.43
		3-3-3-26	Tube	SS	17.830	17.830	106.37	106.370			
		3-3-1-34	Tube	SS		21.365		106.160	80, 0.086	500, 0.69	1400, 0.50
		3-3-2-32	Tube	SS	20.920		105.08				
		3-3-3-34	Tube	SS	21.810		107.24				
481060-B	**TX**	3-3-S-18	Tube	SS	21.920	21.920	82.24	82.240			
		1-2-1-5	Grab (SC)	TB	---	---	---	---	---	---	---
		1-2-1-16	Grab (SC)	GB	3.290	3.290	133.27	133.270	4, 0.78	30, 0.48	200, 0.25
		1-2-2-15	Grab (SC)	GB							
		1-2-3-15	Grab (SC)	GB							
		1-2-1-22	Tube	SS	9.260	9.073	103.81	103.653	3, 0.84	20, 0.68	500, 0.28
		1-2-2-22	Tube	SS	8.840		104.07				
		1-2-3-22	Tube	SS	9.120		103.08				
		1-2-1-31	Tube	SS	---	---	---	---	---	---	---
		1-2-2-30.5	Tube	SS							
481077	**TX**	1-2-3-31	Tube	SS							
		3-2-1-15	Grab (SC)	CompSB	25.550	25.550	92.33	92.330	20, 0.86	100, 0.67	500, 0.47
		3-2-1-25	Tube	SS	20.030	19.670	109.04	108.730			
		3-2-2-25	Tube	SS	19.310		108.42		40, 0.99	300, 0.90	1400, 0.75
		3-2-1-35	Tube	SS	19.650	19.970	108.56	107.490	50, 0.99	500, 0.88	1400, 0.82
		3-2-2-36	Tube	SS	20.290		106.42				
484143	**TX**	3-2-S-12	Tube	Rd Side	19.790	19.790	102.24	102.240			
501681	**VT**	6-2-1-11.5	Grab (SC)	GB	2.990	2.990	130.91	130.910			

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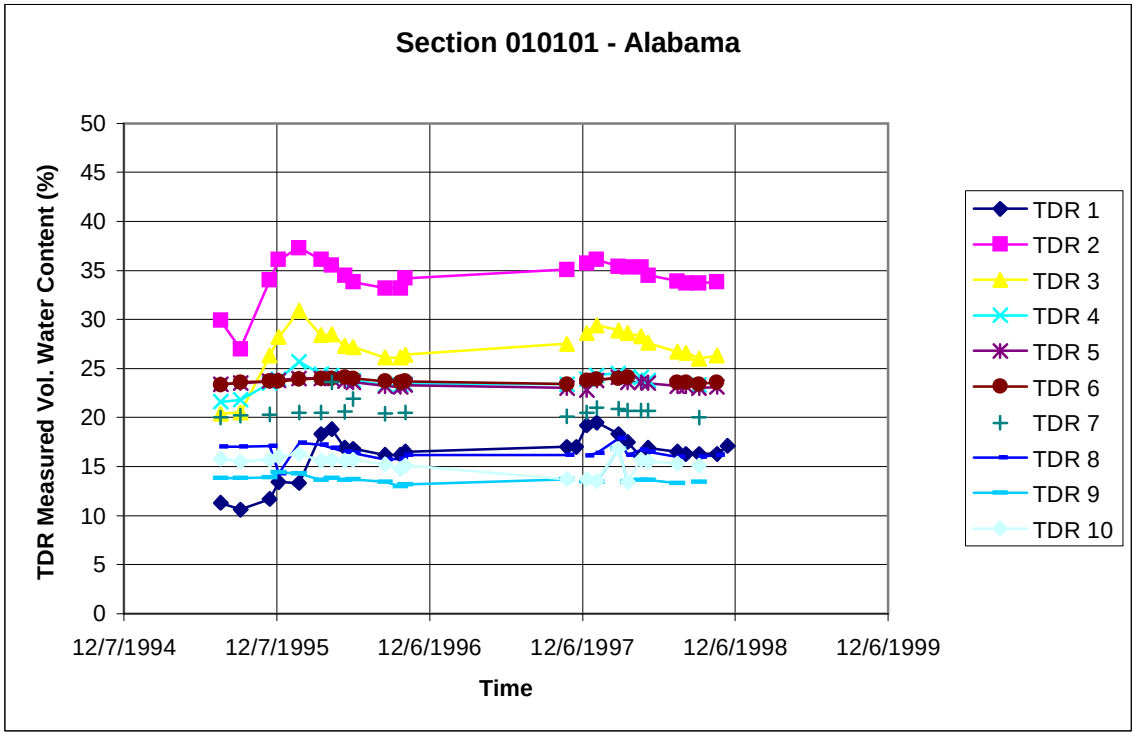
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		6-2-1-20	Grab (SC)	GB	3.640	3.580	130.45	134.695	2, 0.66	10, 0.23	--
		6-2-2-17	Grab (SC)	GB	3.520		138.94				
		6-2-3-13	Grab (SC)	GB	2.850	2.850	139.68	139.680			
		6-2-2-35	Tube	SB	8.700	9.385	121.93	127.135	3, 0.65	10, 0.46	100, 0.33
		6-2-3-33	Tube	SB	10.070		132.34		3, 0.77	10, 0.40	--
		6-2-1-44	Tube	SS	17.020	12.550	113.34	118.763			
		6-2-2-44	Tube	SS	10.130		116.84				
		6-2-3-44	Tube	SS	10.500		126.11		40, 0.68	518, 0.41	--
		6-2-S1-15	Tube	Rd Side	55.120	55.120	65.25	65.250	20, 0.87	100, 0.69	500, 0.55
		6-2-S2-24	Tube	Rd Side	16.310	16.310	--				
		8-1-1-11	Grab (SC)	GB	4.840	5.050	137.17	137.013			
		8-1-2-10.5	Grab (SC)	GB	5.250		137.32		4, 0.85	30, 0.46	300, 0.31
		8-1-3-10	Grab (SC)	GB	5.060		136.55				
		8-1-1-20	Tube	SS	21.320	21.367	93.39	100.697			
		8-1-2-22	Tube	SS	22.020		102.52		40, 0.99	200, 0.98	1400, 0.87
		8-1-3-20	Tube	SS	20.760		106.18				
		8-1-1-29	Tube	SS	20.580	20.567	107.35	105.370	41, 0.96	200, 0.95	1400, 0.84
		8-1-2-31	Tube	SS	21.080		100.44				
		8-1-3-29	Tube	SS	20.040		108.32				
537322	**WA**	8-1-S-12	Tube	Rd Side	22.580	22.580	102.88	102.880	40, 0.93	200, 0.90	1400, 0.81
		7-3-1-19.5	Tube	SB	14.870	14.233	109.08	111.017			
		7-3-2-19.5	Tube	SB	14.310		114.01		20, 0. 82	100, 0.64	550, 0.47
		7-3-3-19	Tube	SB	13.520		109.96				
		7-3-1-30	Tube	SS	17.420	19.680	109.86	108.115			
		7-3-2-30	Grab	SS	21.050		--				
		7-3-4-30	Tube	SS	20.570		106.37				
		7-3-4-39	Tube	SS	22.330	22.330	100.83	100.830			
		7-3-4-46	Tube	SS	23.220	23.220	96.41	96.410			
562019	**WY**	7-3-S-16	Tube	Rd Side	17.570	17.570	109.29	109.290	50, 0.94	500, 0.86	1400, 0.72
		7-2-1-20	Tube	SS	14.190	14.740	121.39	120.483			
		7-2-2-20.5	Tube	SS	15.170		119.41		50, 0.95	500, 0.82	1400, 0.66
		7-2-3-21	Tube	SS	14.860		120.65				
		7-2-1-29	Tube	SS	15.670	14.667	121.55	123.877	50, 0.98	200, 0.87	600, 0.76
		7-2-2-30	Tube	SS	14.930		125.2				
		7-2-3-29	Tube	SS	13.400		124.88				
562020	**WY**	7-2-S-14	Tube	SS	13.210	13.210	127.52	127.520			
MnRoad 4	**MN**	6-5-1-12	Tube	CompSS	13.680	14.440	117.94	116.743			
		6-5-2-11	Tube	CompSS	14.810		116.41				
		6-5-3-9	Tube	CompSS	14.980		116.8				
		6-5-4-9	Tube	CompSS	14.290		115.82				
		6-5-1-20	Tube	CompSS	14.760	13.660	116.41	115.235	100, 0.92	500, 0.88	1400, 0.79
		6-5-2-19	Tube	CompSS	12.560		114.06				

Section ID	State	Sample ID	Sample Type	Layer	Grav. Moisture Content	Avg. Grav. Moisture Content	Dry Density	Measured Average Dry Density	SWCC Data Pairs Suction, Saturation (S)		
					(%)	(%)	(pcf)	(pcf)	kPa , -	kPa , -	kPa , -
		6-5-3-15	Tube	CompSS	14.880	14.375	116.92	117.525	21, 0.92	100, 0.90	500, 0.80
		6-5-4-17	Tube	CompSS	13.870		118.13				
		6-5-S-12	Tube	Rd Side	22.410	22.410	101.84	101.840	100, 0.88	690, 0.74	1400, 0.69
		2-1-1-7	Grab (SC)	GB	7.420	7.057	131.94	131.693	4, 0.92	30, 0.77	200, 0.57
		2-1-2-8	Grab (SC)	GB	7.450		127.87				
		2-1-3-6.5	Grab (SC)	GB	6.300		135.27				
		2-1-1-17.5	Tube	Eng. Fill	18.790	18.267	105.26	106.593			
		2-1-2-18	Tube	Eng. Fill	17.140		106.78		50, 0.99	200, 0.94	1400, 0.81
		2-1-3-18	Tube	Eng. Fill	18.870		107.74				
		2-1-1-30	Tube	CompSS	21.520	20.973	97.52	99.770			
		2-1-2-30	Tube	CompSS	18.690		102.71		50, 0.86	300, 0.77	1400, 0.66
		2-1-3-30	Tube	CompSS	22.710		99.08				
Wstk 12	**NV**	2-1-1-39	Tube	SS	---	---	---	---	50, 0.9	500, 0.79	1400, 0.67
		2-1-4-8	Grab (SC)	GB	8.370	7.240	127.42	132.267			
		2-1-5-6.5	Grab (SC)	GB	6.780		134.52				
		2-1-6-6.5	Grab (SC)	GB	6.570		134.86				
		2-1-4-18	Tube	Eng. Fill	22.530	22.550	102.49	100.907	50, 0.92	500, 0.68	1400, 0.60
		2-1-5-18	Tube	Eng. Fill	22.110		98.14				
		2-1-6-18	Tube	Eng. Fill	23.010		102.09				
		2-1-4-30	Tube	CompSS	22.530	22.063	100.81	102.507	50, 1.0	500, 0.93	1400, 0.86
		2-1-5-30	Tube	CompSS	22.190		103.36				
		2-1-6-30	Tube	CompSS	21.470		103.35				
Wstk 15	**NV**	2-1-S-12	Tube	Rd Side	11.520	11.520	96.75	96.750			

APPENDIX D.
TDR MOISTURE CONTENT DATA FROM DATABASE


Section 010101 - Alabama
TDR Measured Vol. Water Content (%)
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40
35
30
25
20
15
10
5
0
12/7/1994
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12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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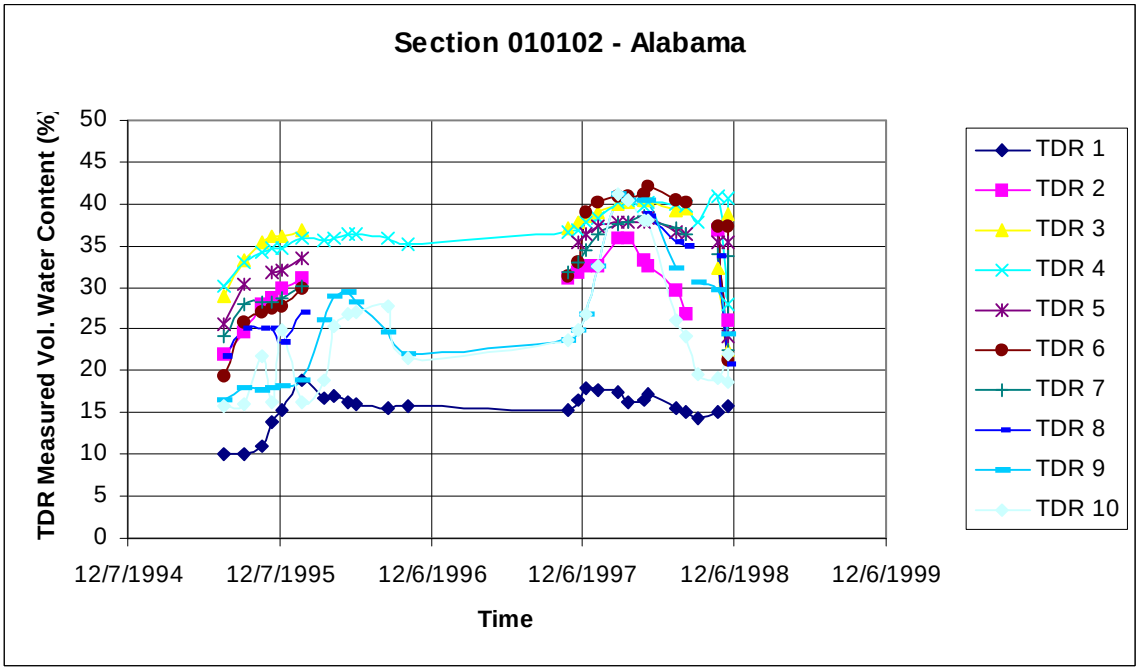
TDR 10


Section 010102 - Alabama
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
5
0
12/7/1994
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12/6/1997
12/6/1998
12/6/1999
Time
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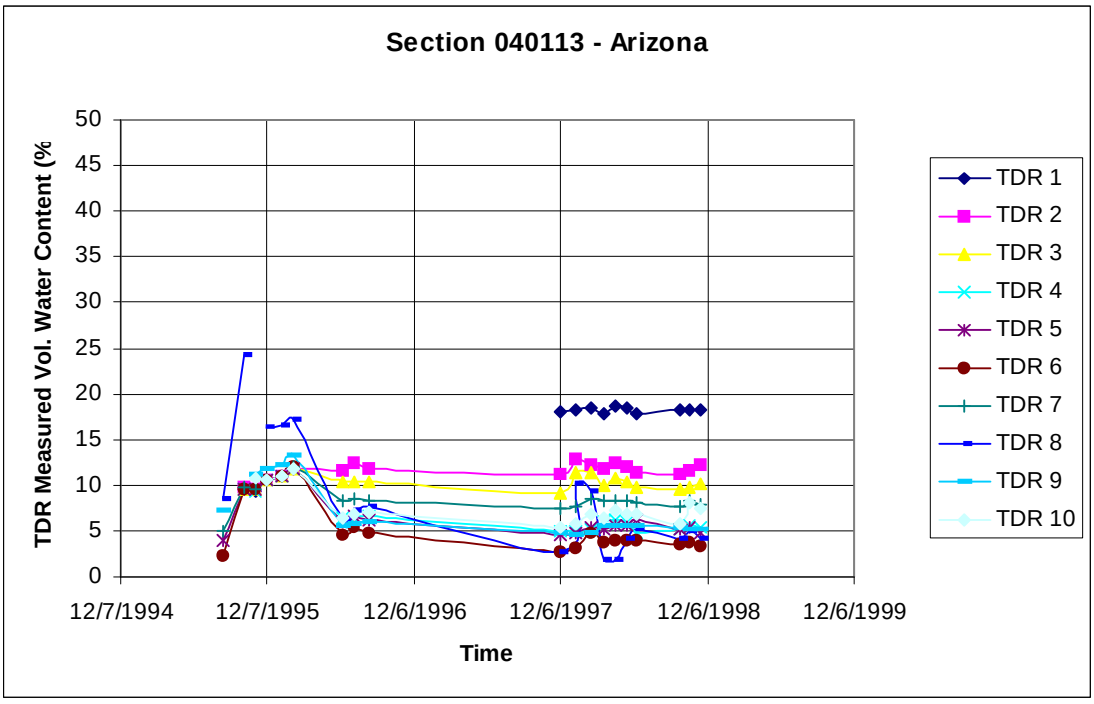
Section 040113 - Arizona
TDR Measured Vol. Water Content (%
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40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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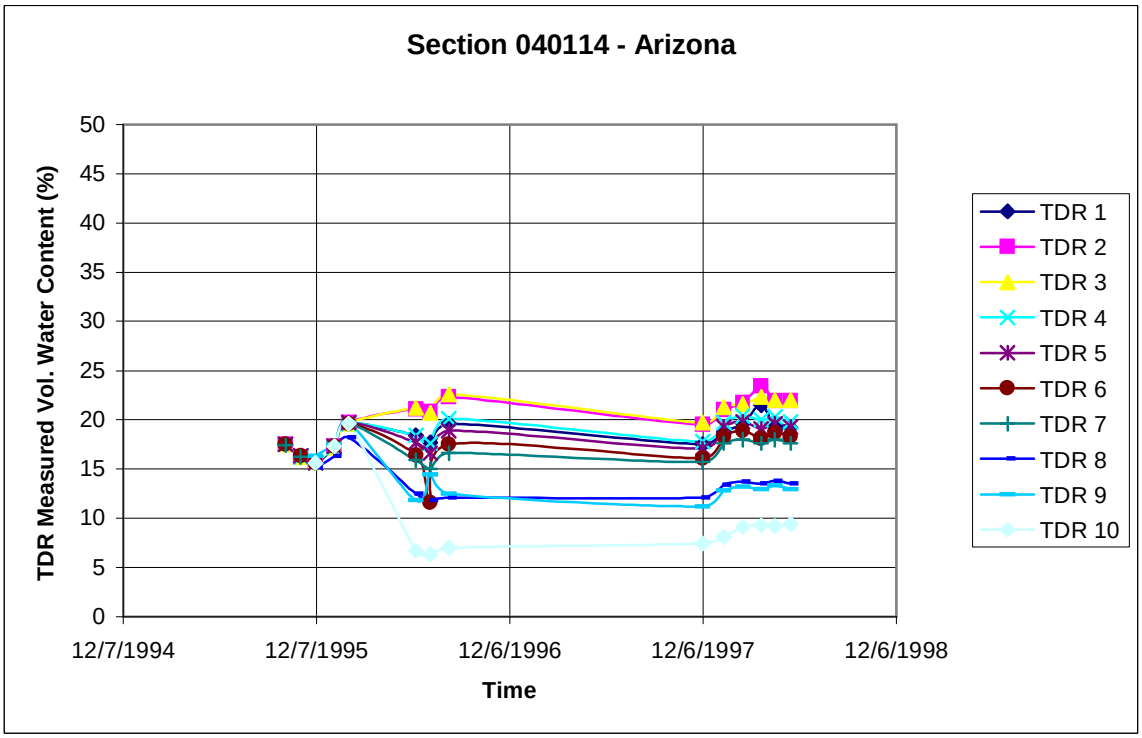
Section 040114 - Arizona
TDR Measured Vol. Water Content (%)
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40
35
30
25
20
15
10
5
0
12/7/1994
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12/6/1996
12/6/1997
12/6/1998
Time
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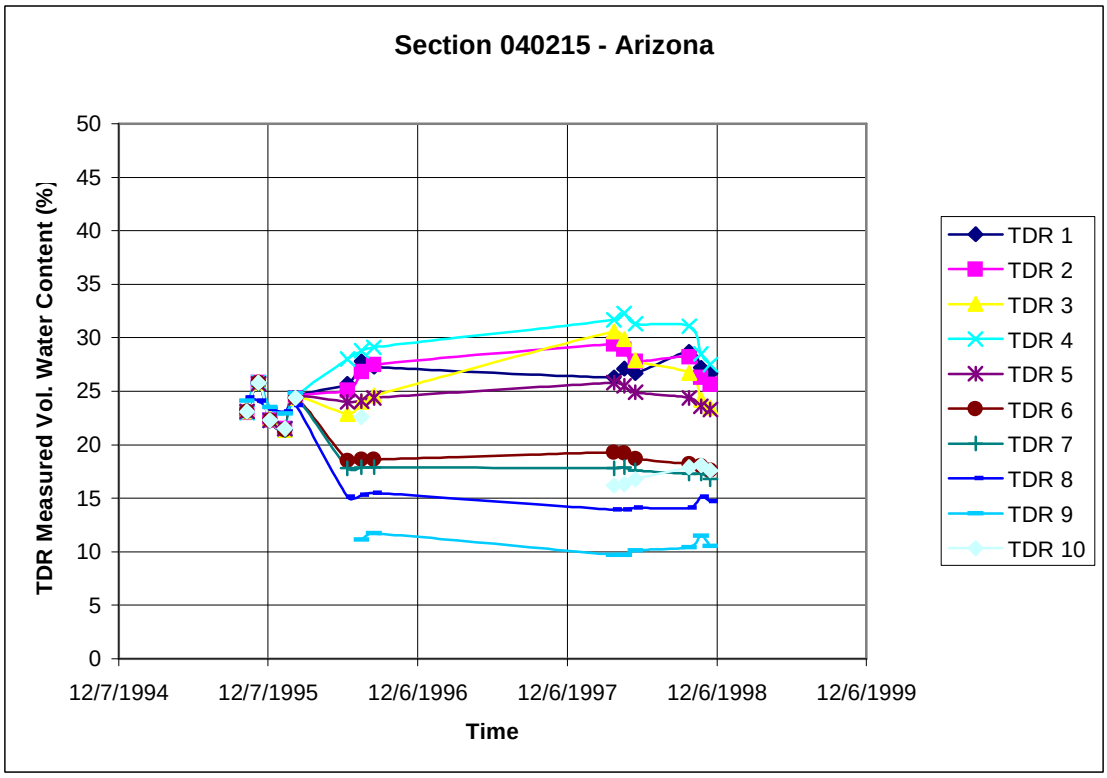
TDR 10


Section 040215 - Arizona
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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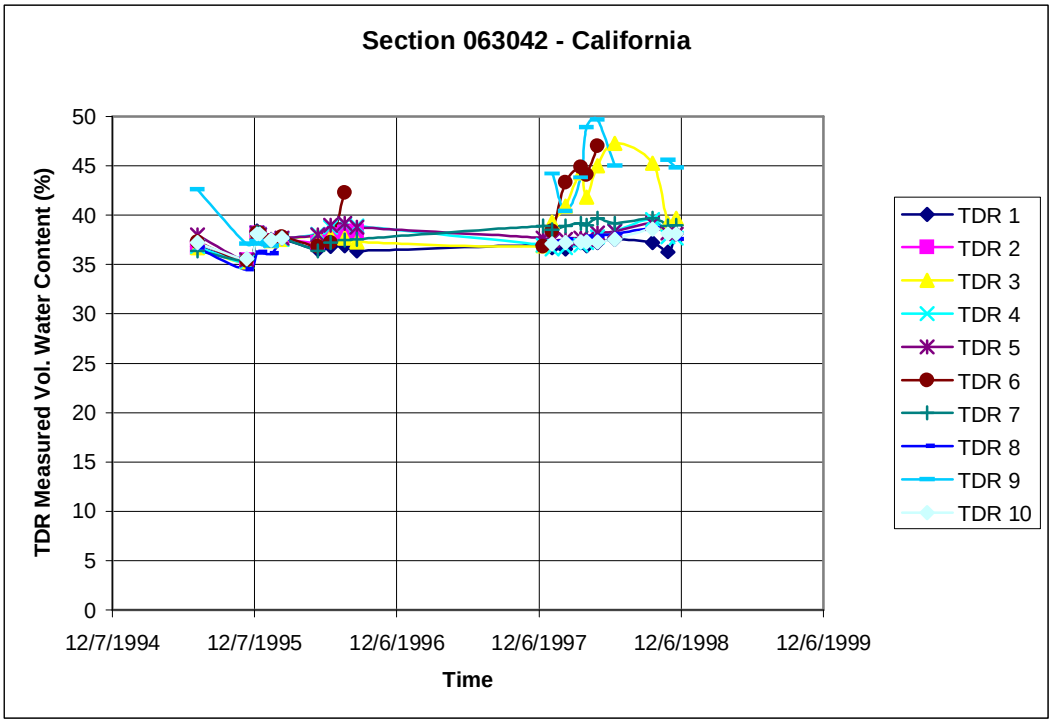
TDR 10


Section 063042 - California
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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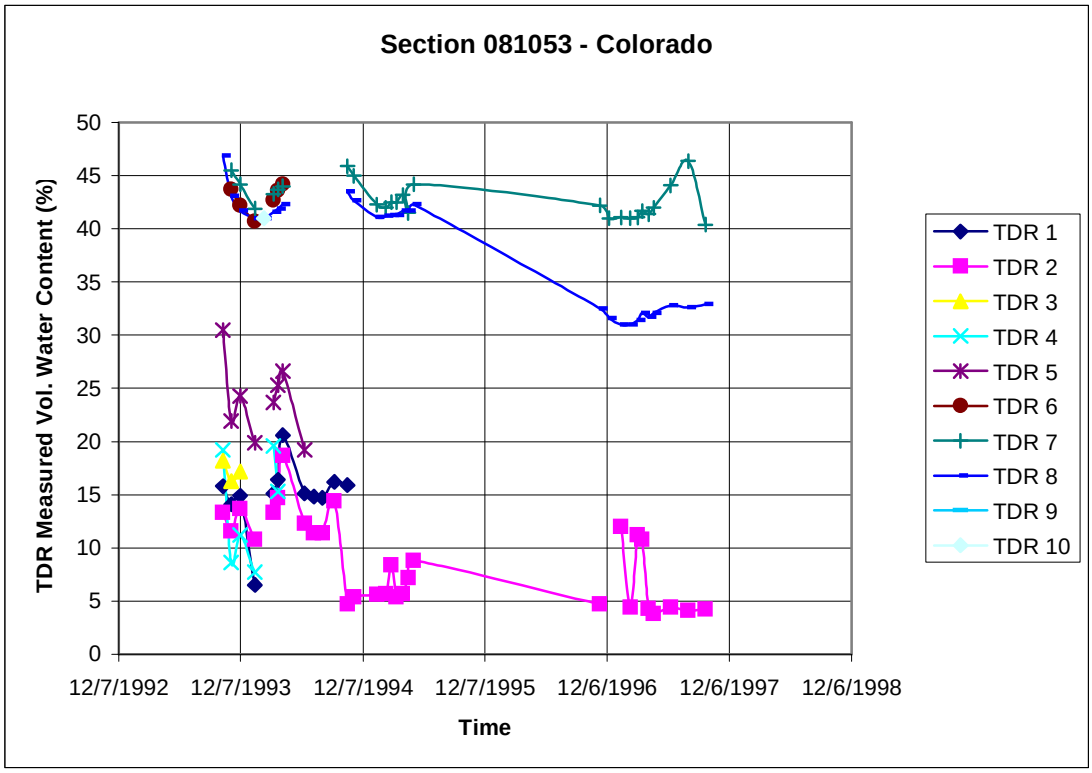
TDR 10


Section 081053 - Colorado
TDR Measured Vol. Water Content (%)
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40
35
30
25
20
15
10
5
0
12/7/1992
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12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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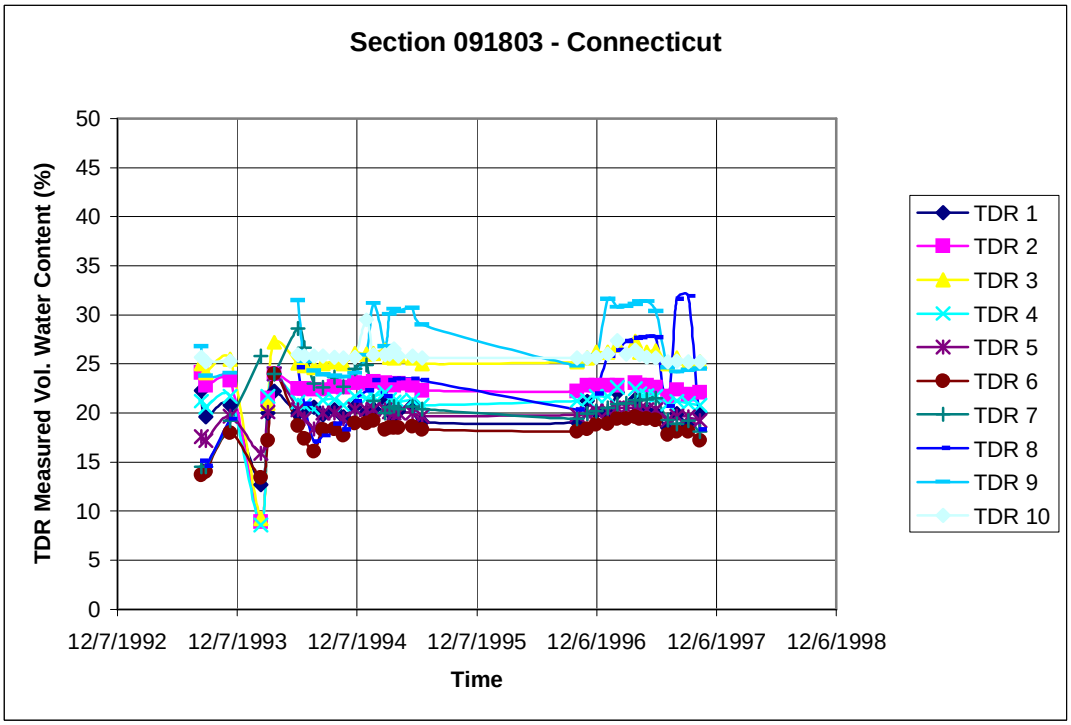
TDR 10


Section 091803 - Connecticut
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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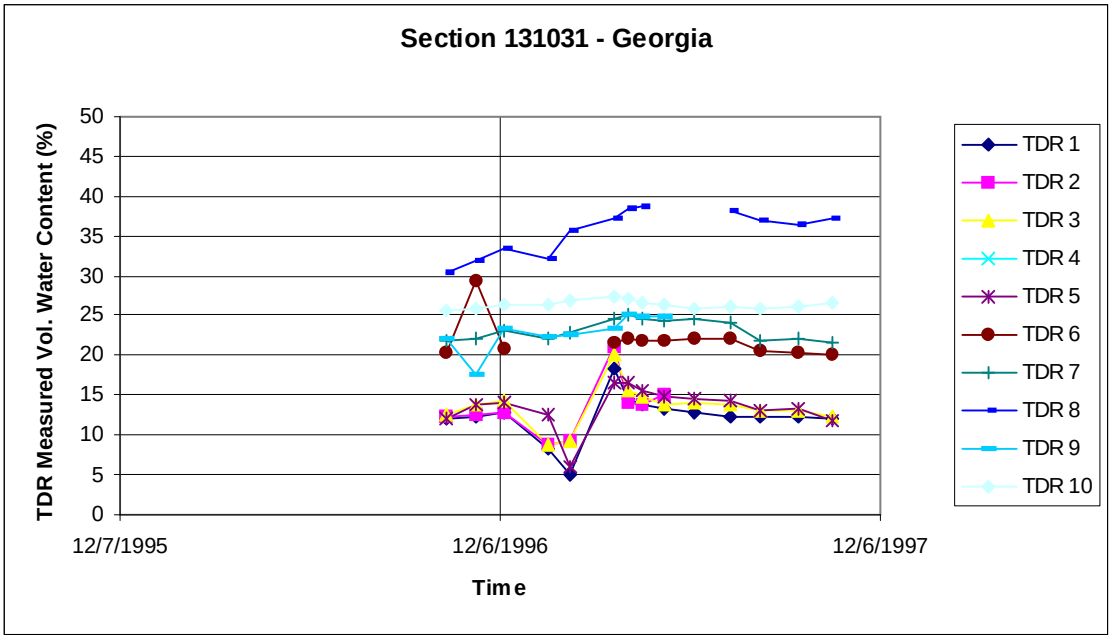
TDR 10


Section 131031 - Georgia
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1995
12/6/1996
12/6/1997
Time
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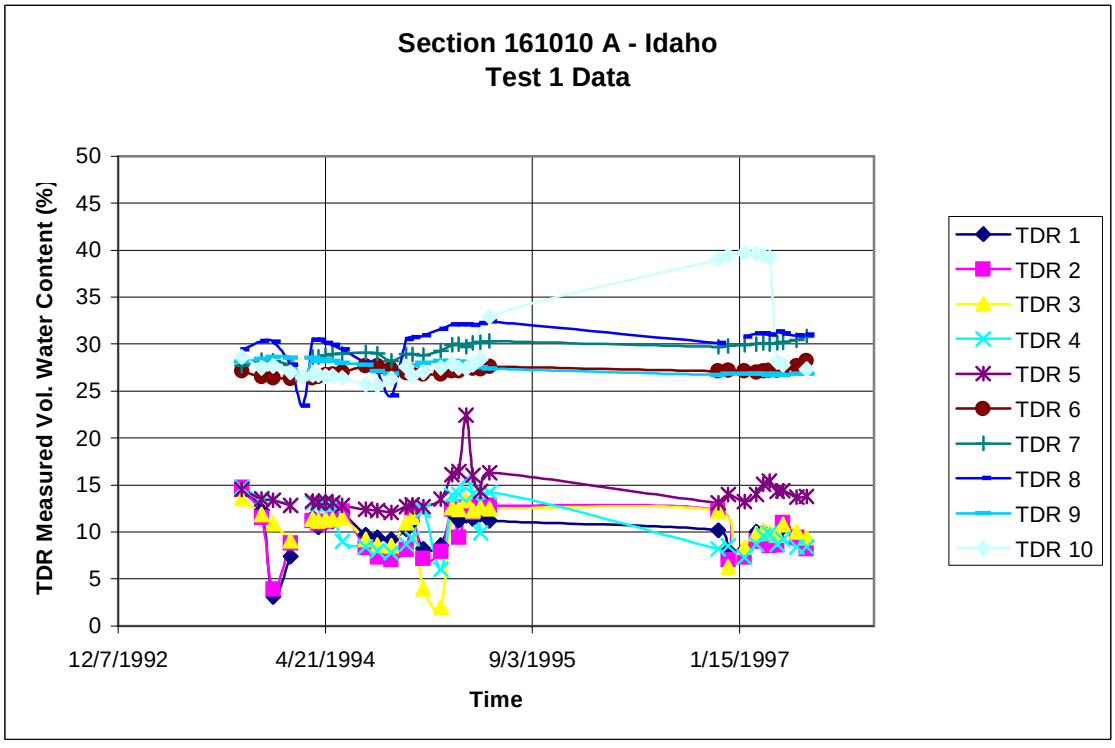
Section 161010 A - Idaho
Test 1 Data
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1992
4/21/1994
9/3/1995
1/15/1997
Time
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TDR 4
TDR 5
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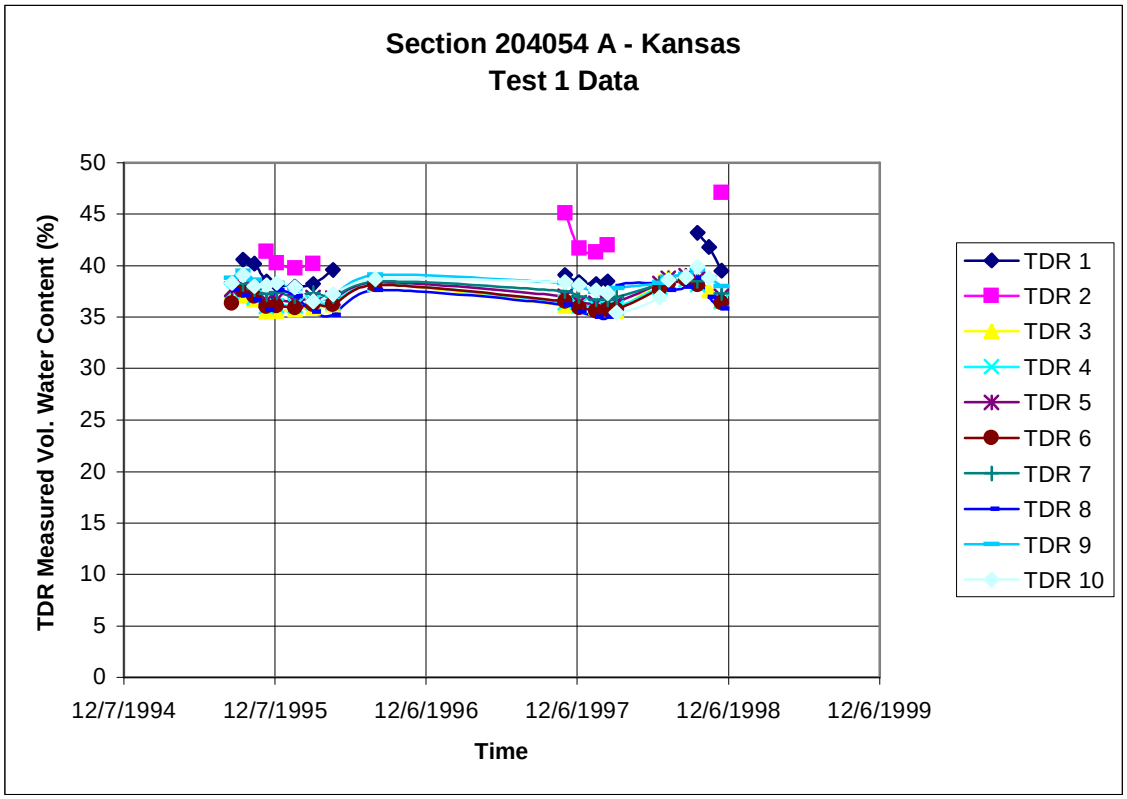
TDR 10


Section 204054 A - Kansas
Test 1 Data
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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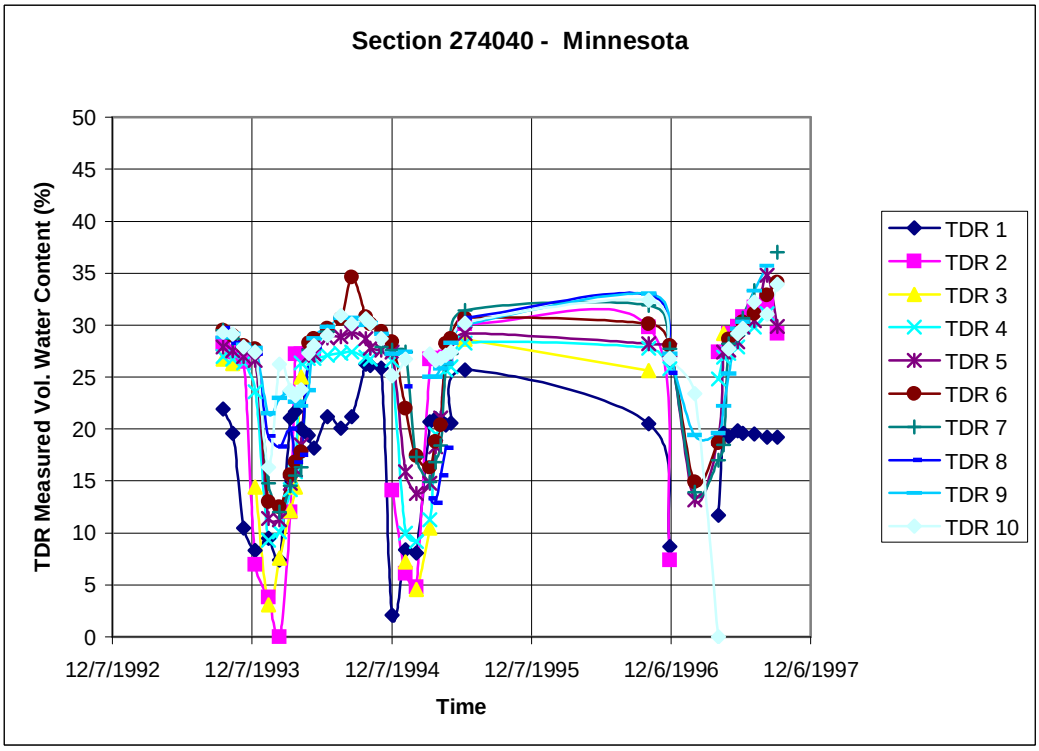
TDR 10


Section 274040 - Minnesota
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
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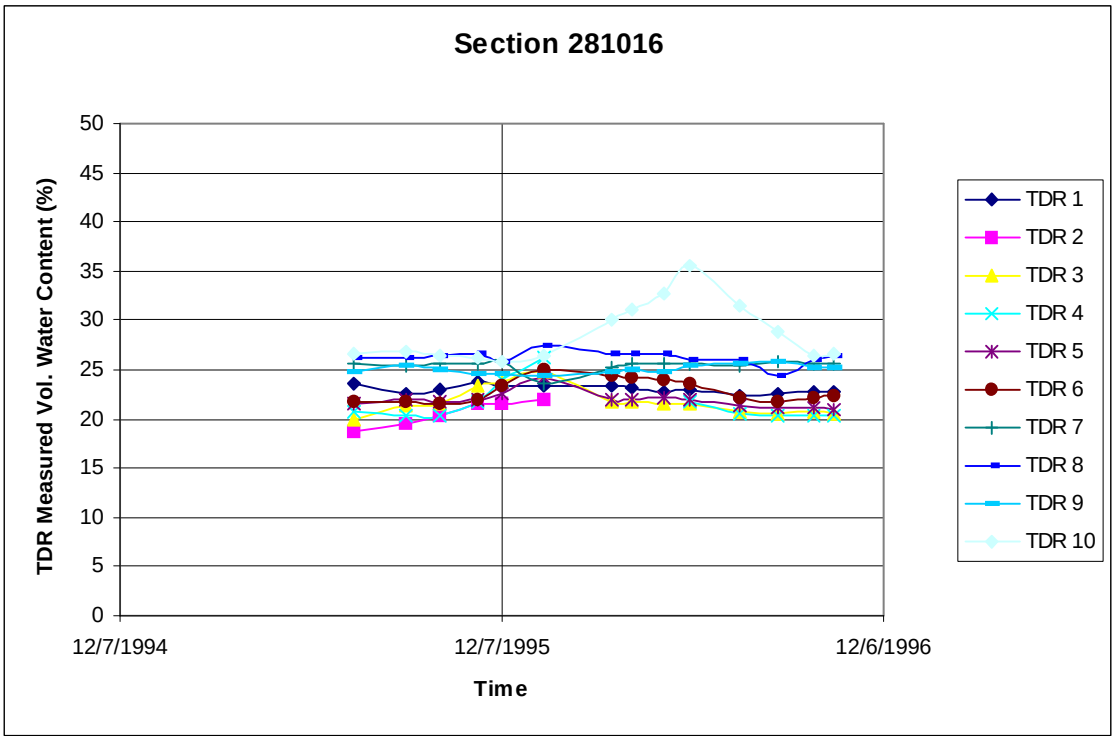
Section 281016
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
Time
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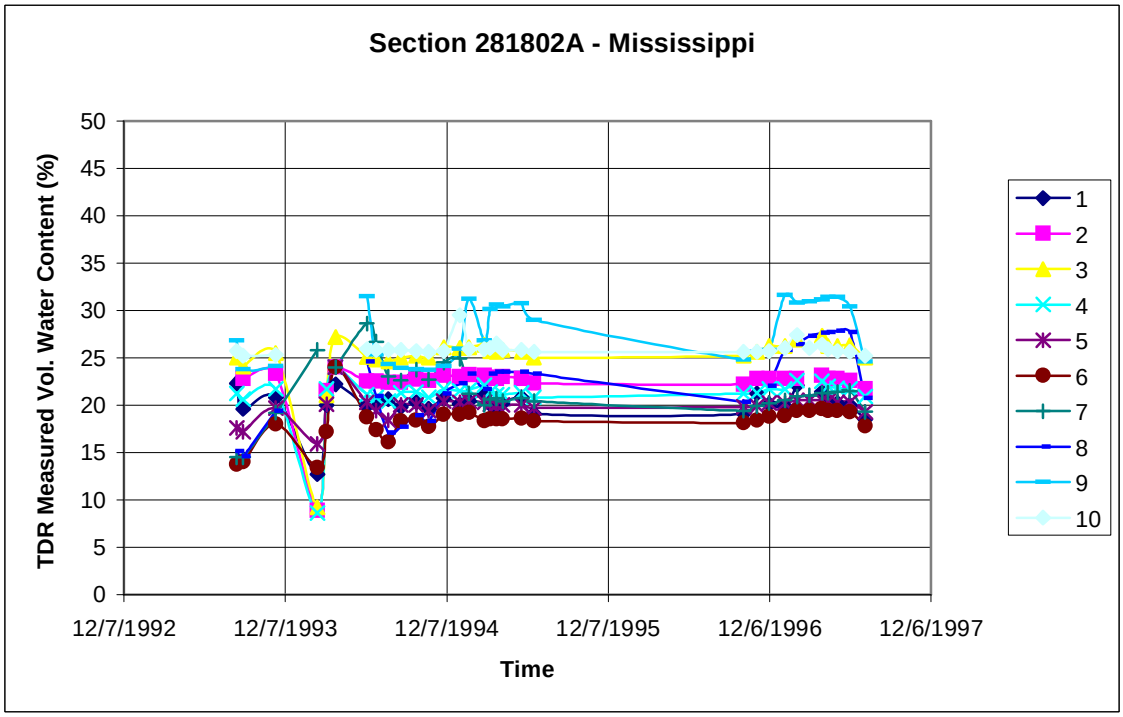
TDR 10


Section 281802A - Mississippi
TDR Measured Vol. Water Content (%)
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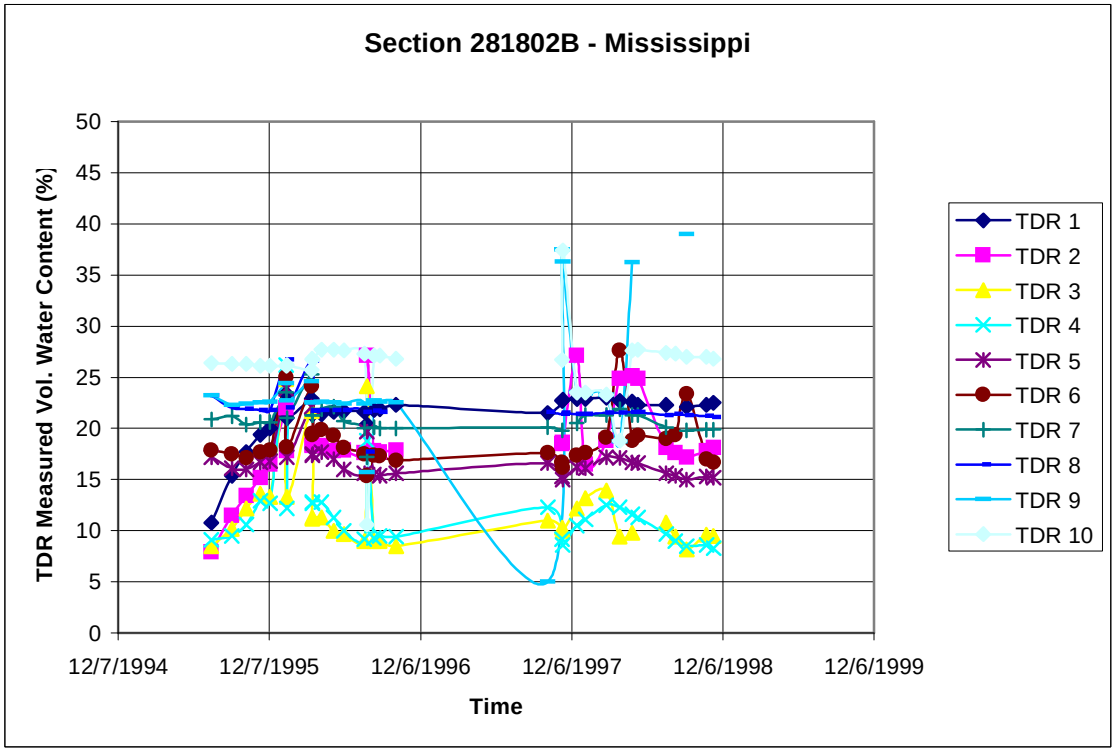
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
1
2
3
4
5
6
7
8
9
10


Section 281802B - Mississippi
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
5
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12/7/1994
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12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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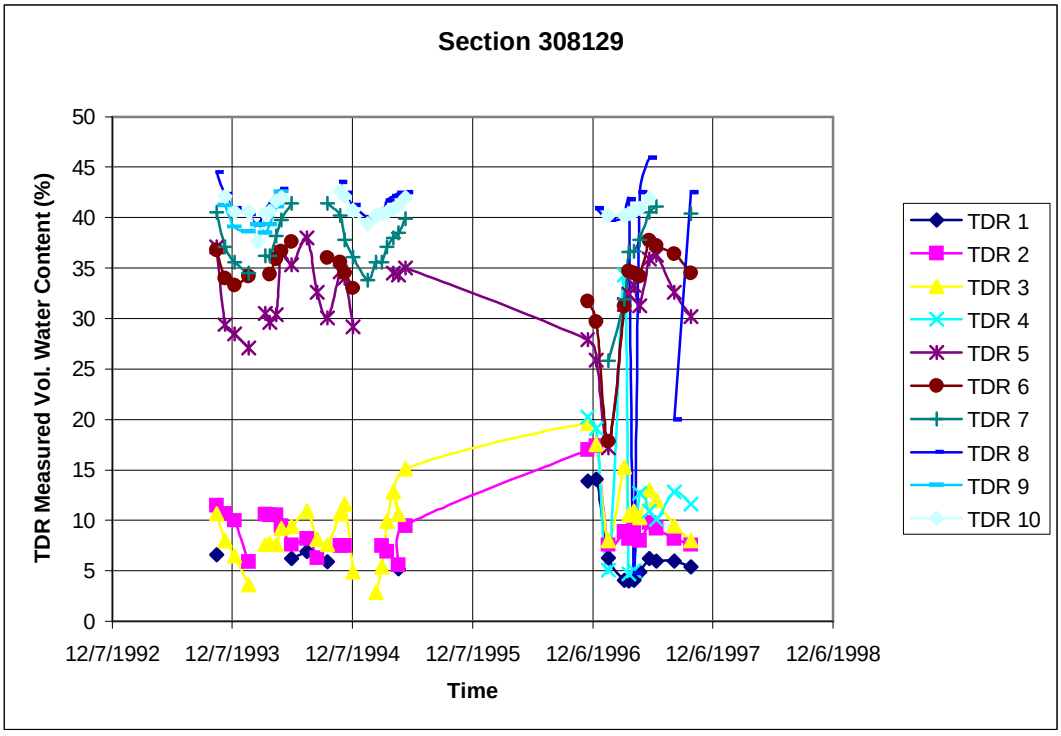
Section 308129
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
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12/7/1992
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12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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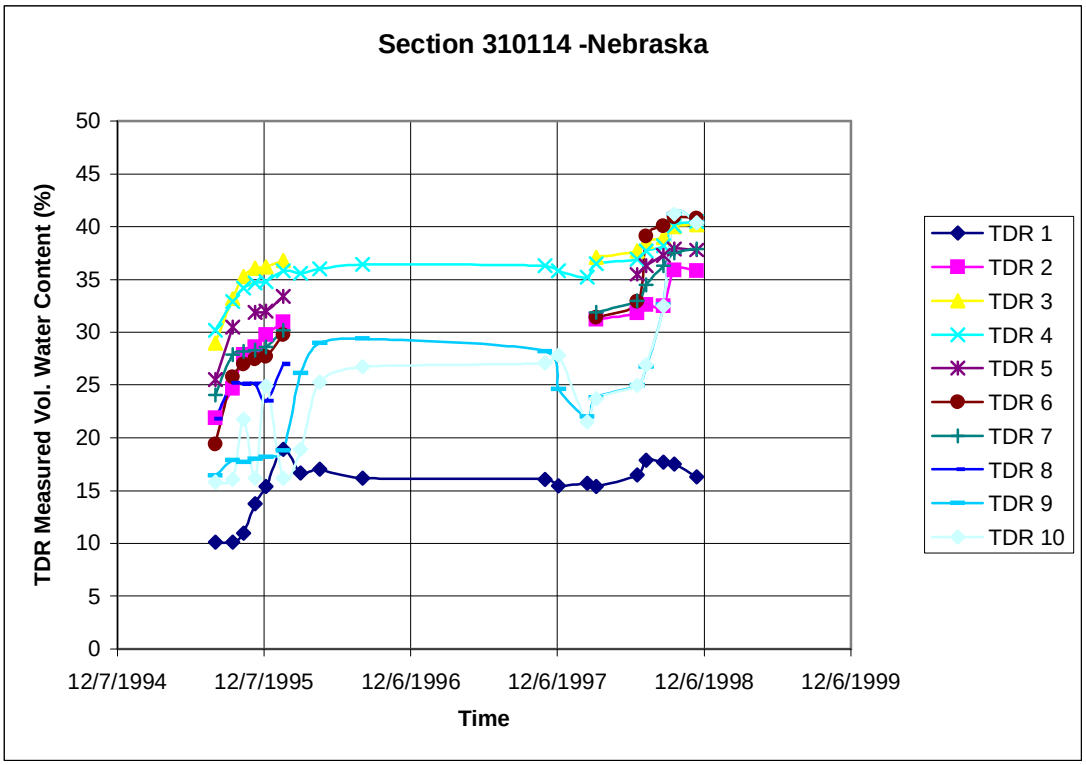
Section 310114 -Nebraska
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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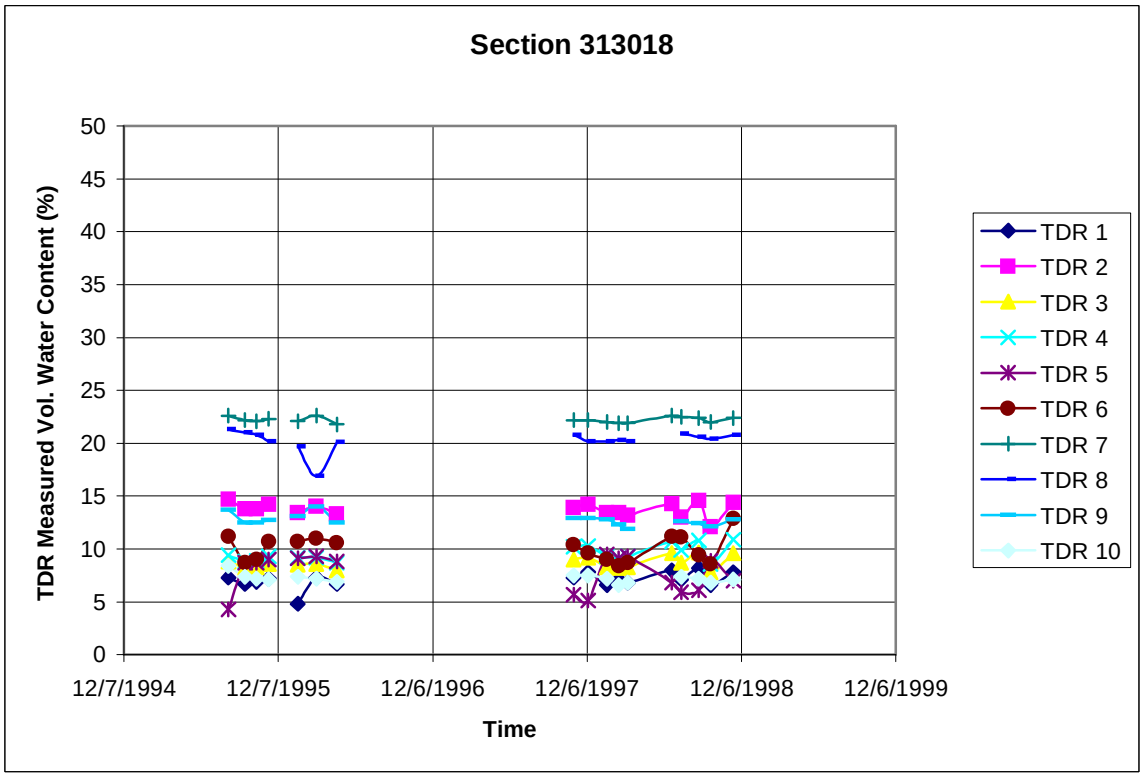
Section 313018
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
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12/7/1994
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12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
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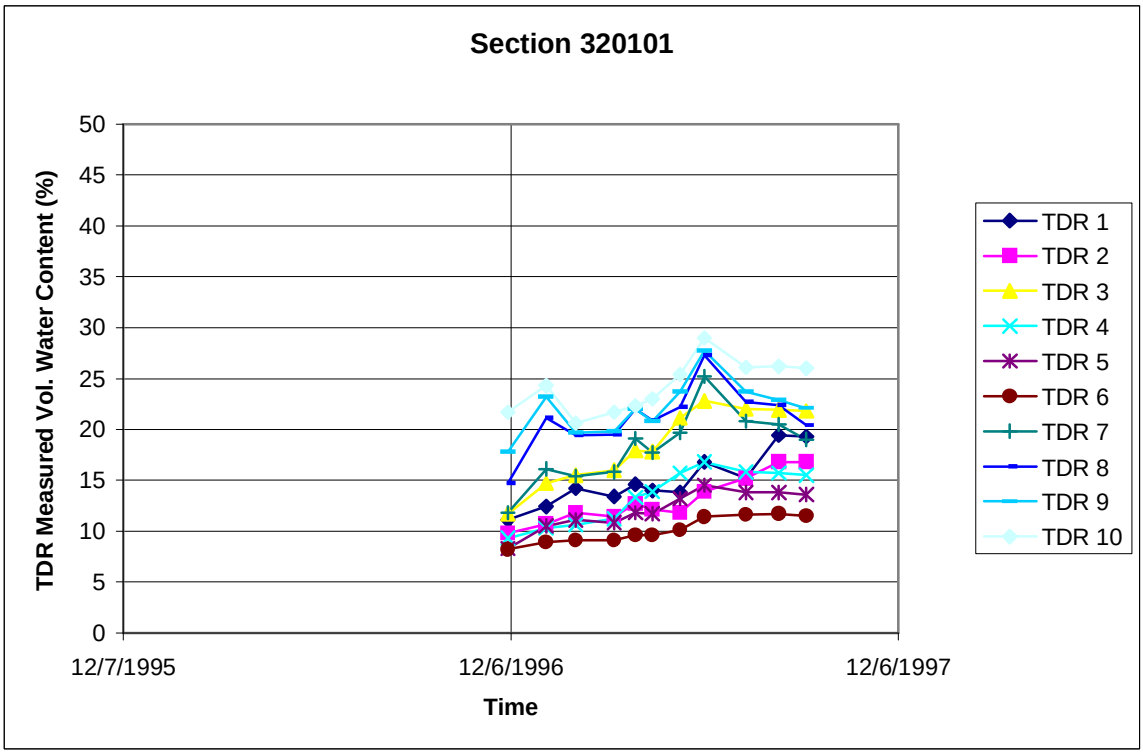
TDR 10


Section 320101
TDR Measured Vol. Water Content (%)
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20
15
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5
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12/7/1995
12/6/1996
12/6/1997
Time
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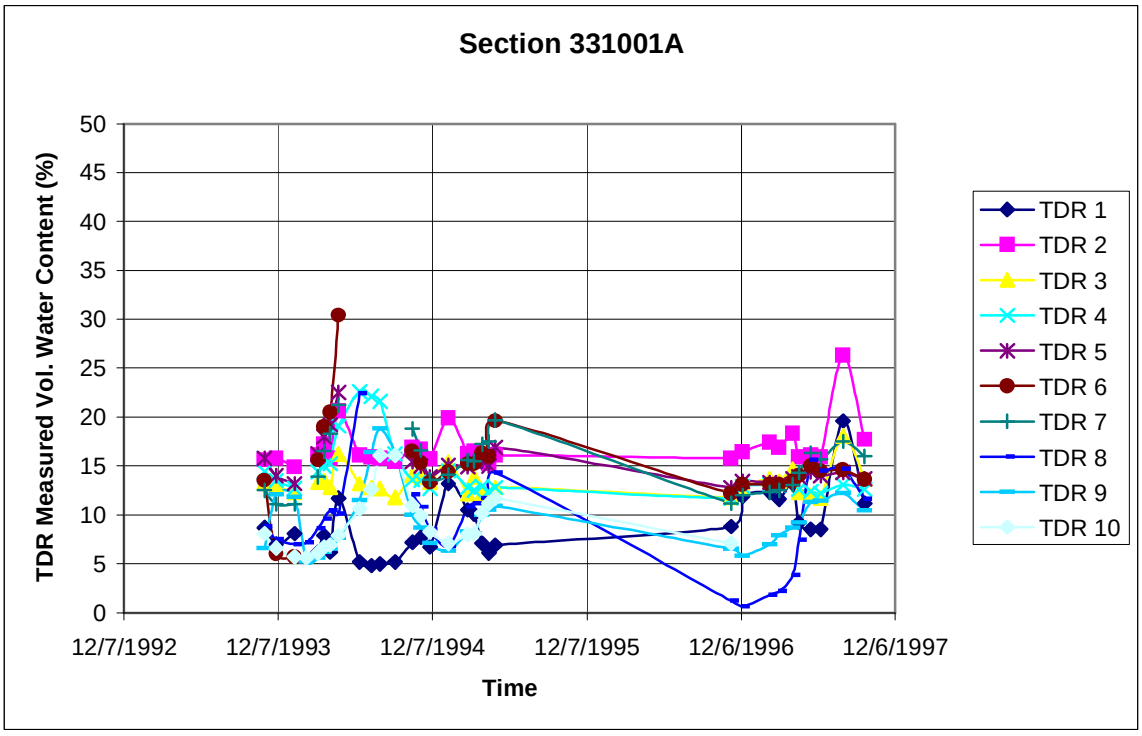
Section 331001A
TDR Measured Vol. Water Content (%)
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30
25
20
15
10
5
0
12/7/1992
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12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
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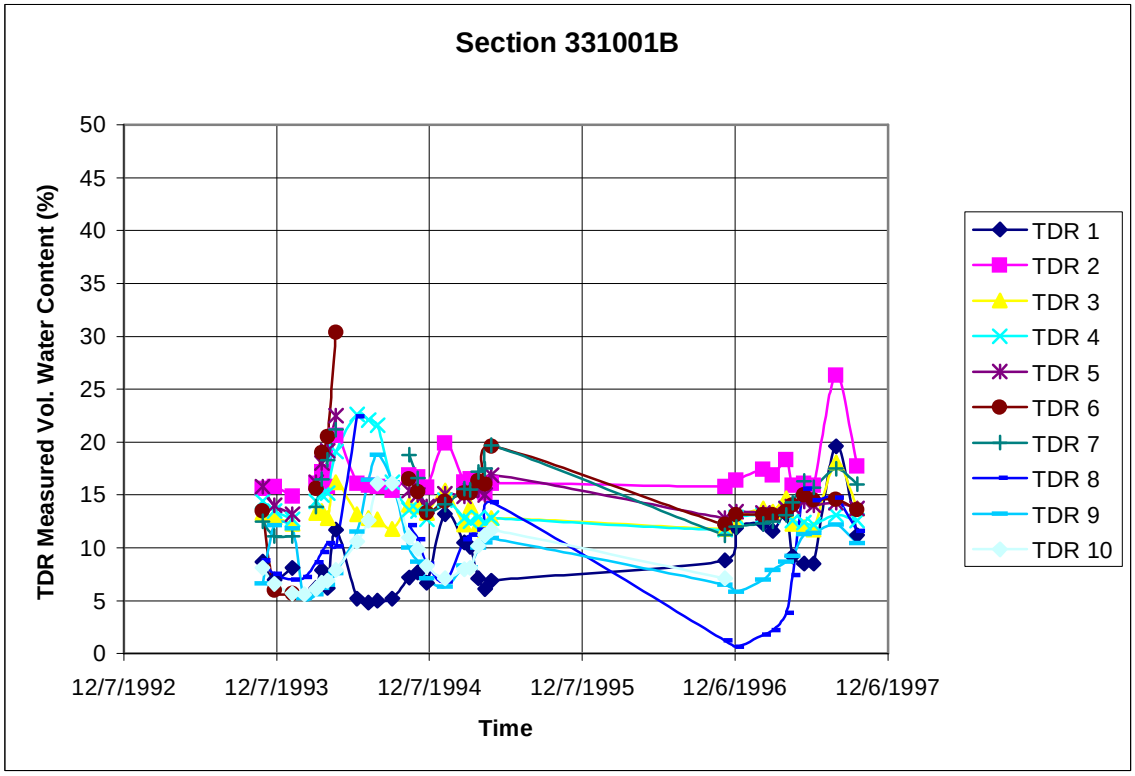
Section 331001B
TDR Measured Vol. Water Content (%)
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25
20
15
10
5
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12/7/1992
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12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
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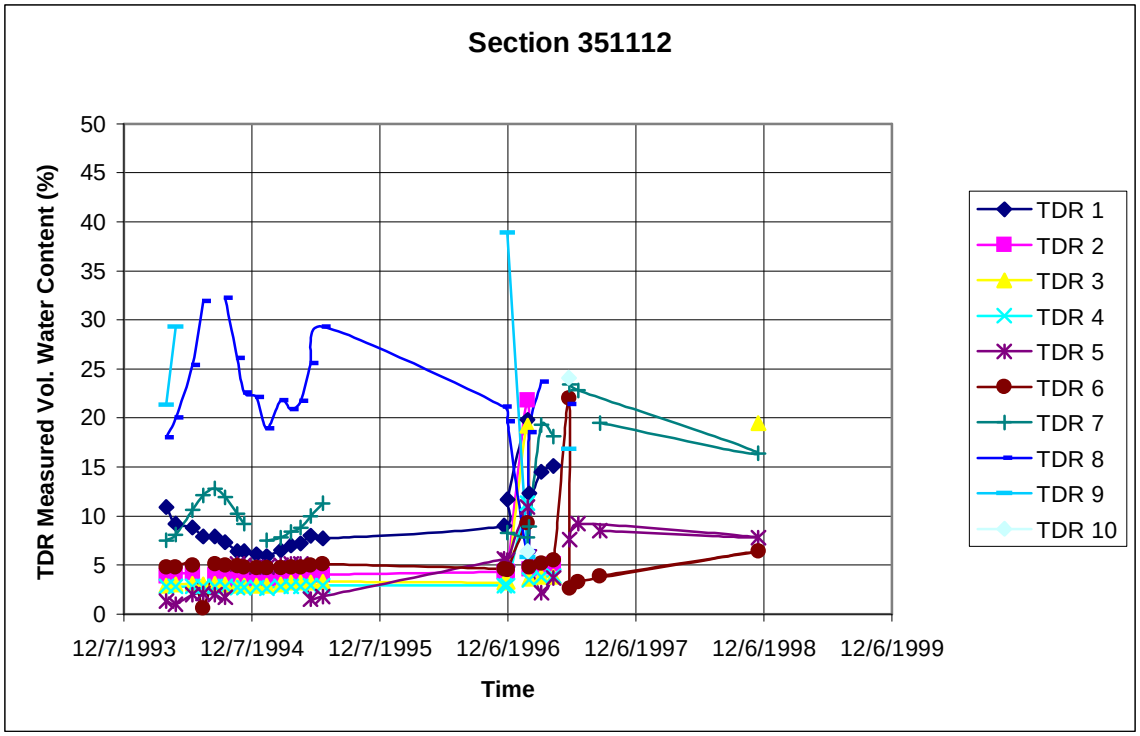
Section 351112
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
5
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12/7/1993
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12/7/1995
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12/6/1997
12/6/1998
12/6/1999
Time
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TDR 6
TDR 7
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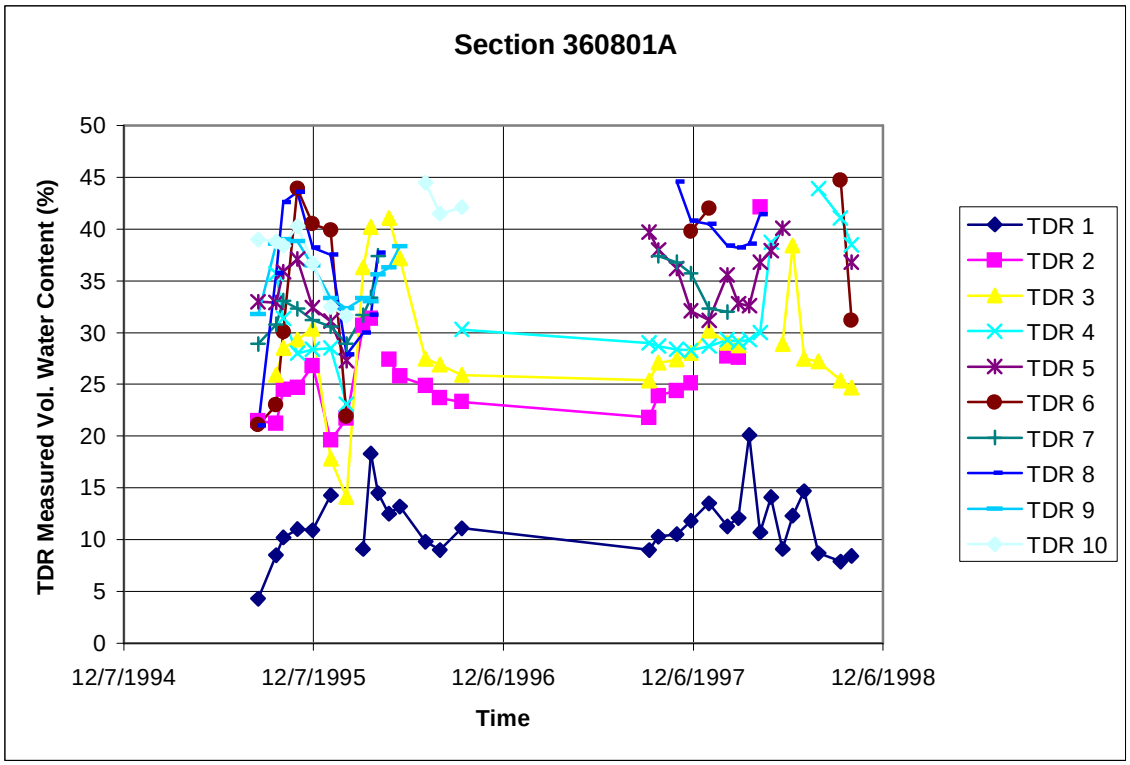
Section 360801A
TDR Measured Vol. Water Content (%)
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35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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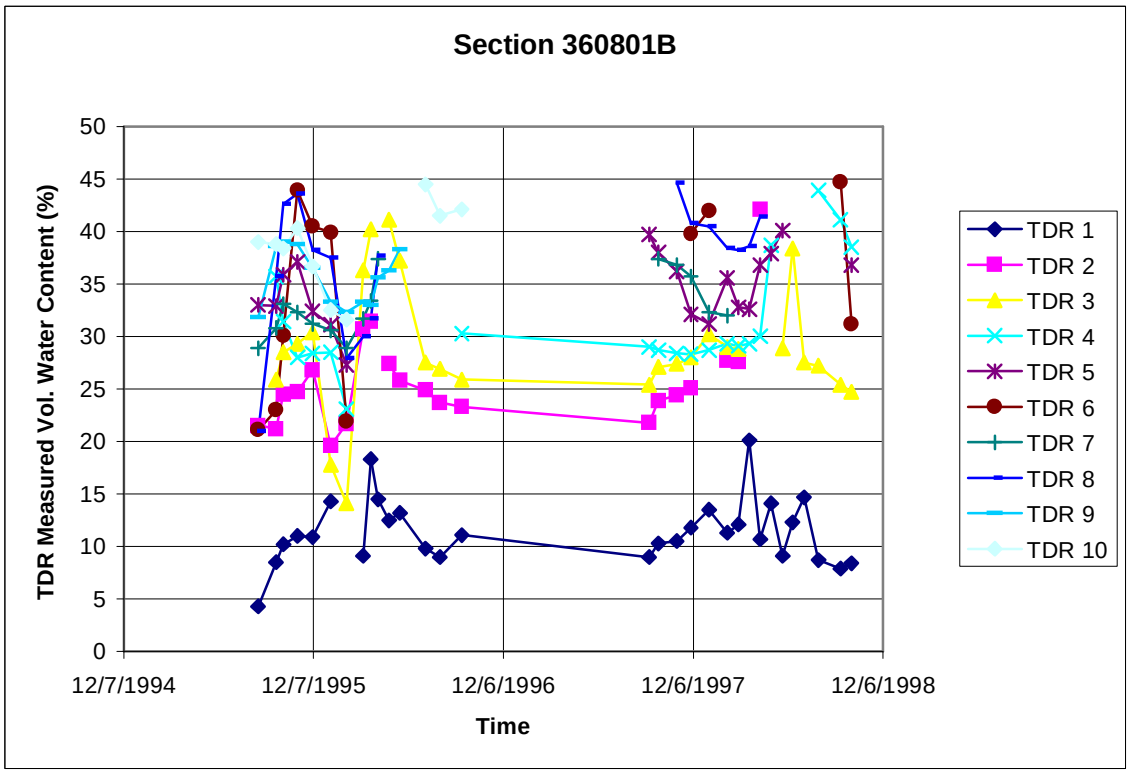
Section 360801B
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1994
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12/6/1996
12/6/1997
12/6/1998
Time
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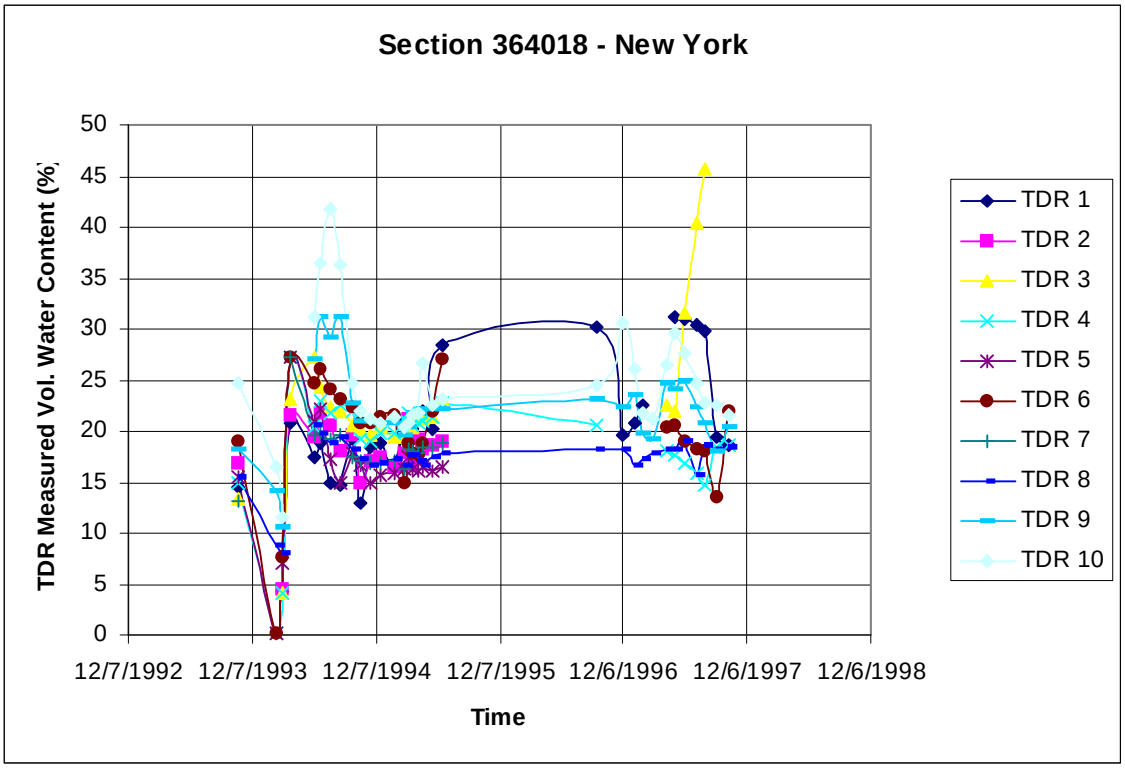
Section 364018 - New York
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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TDR 7
TDR 8
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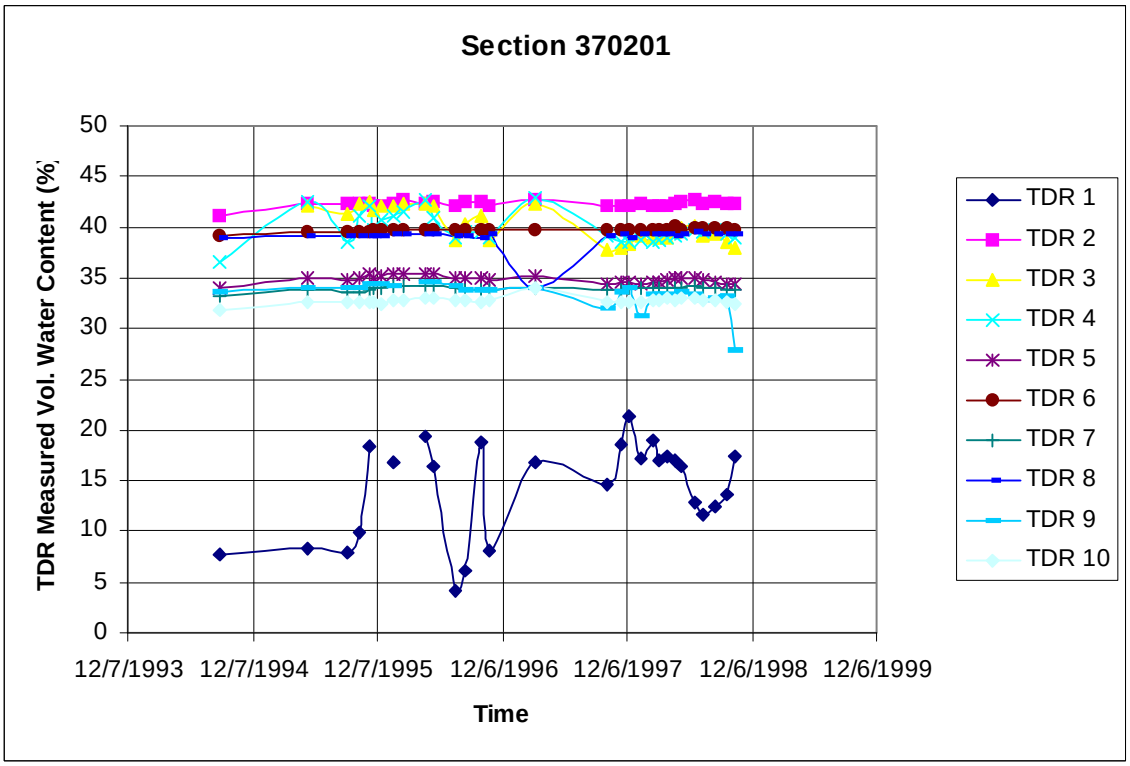
TDR 10


Section 370201
TDR Measured Vol. Water Content (%)
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45
40
35
30
25
20
15
10
5
0
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
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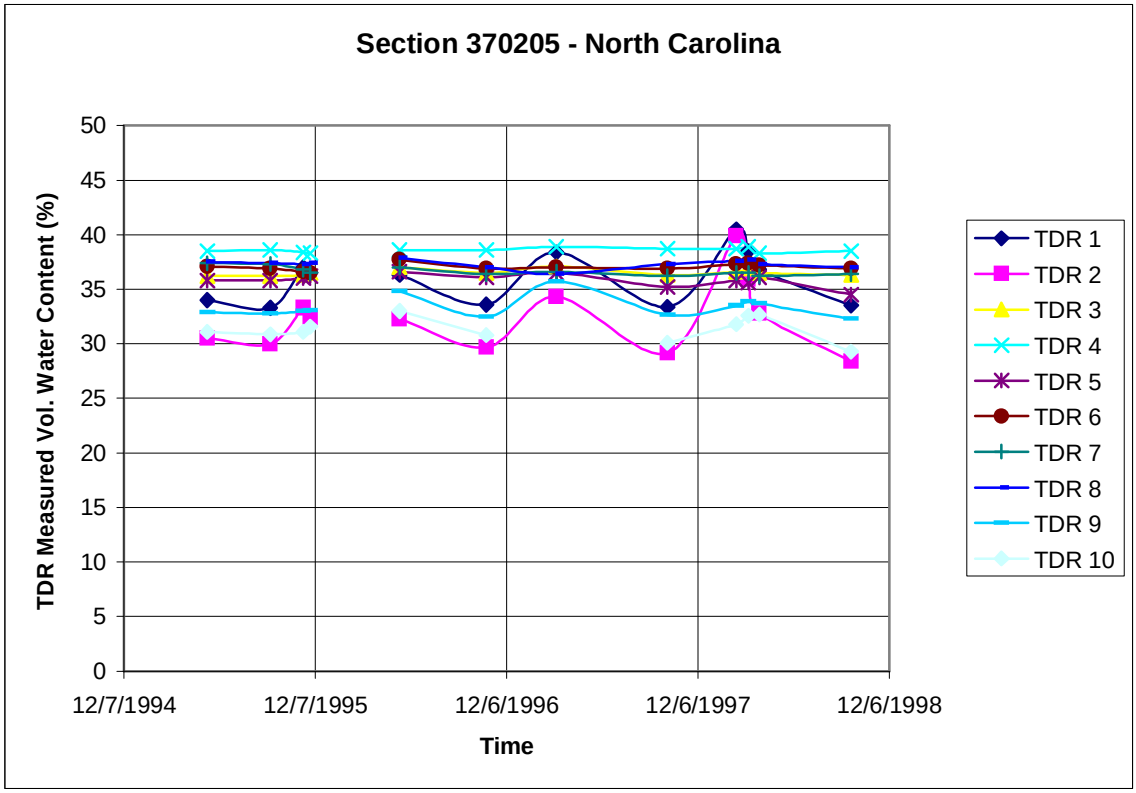
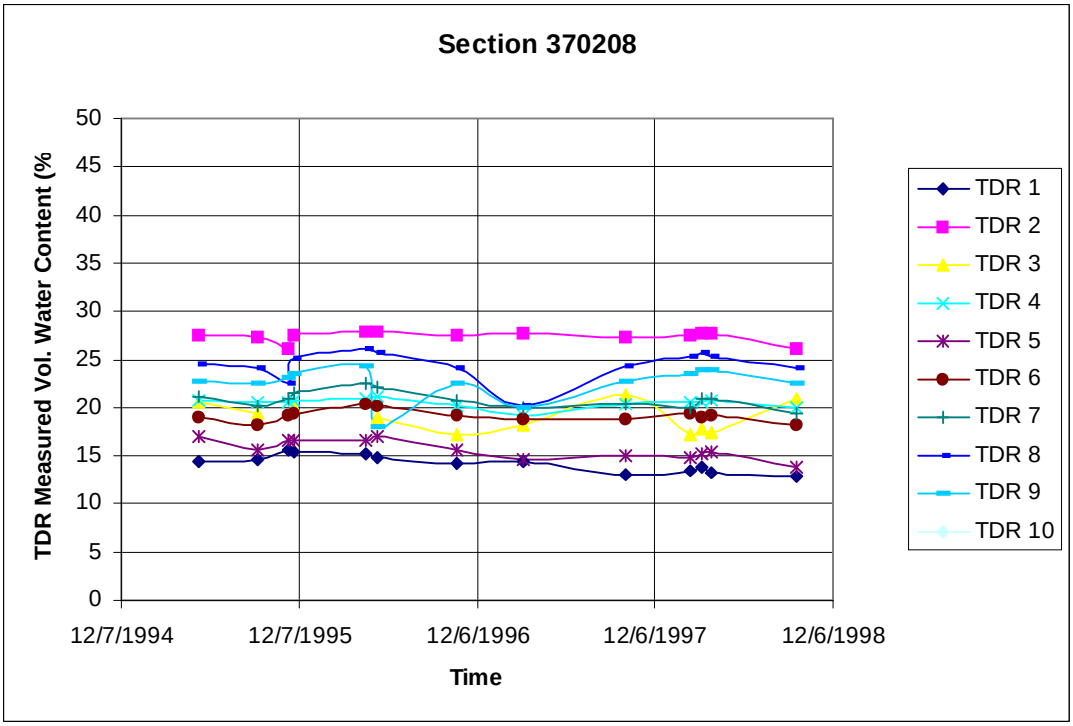
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 370205 - North Carolina
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 370208
TDR Measured Vol. Water Content (%
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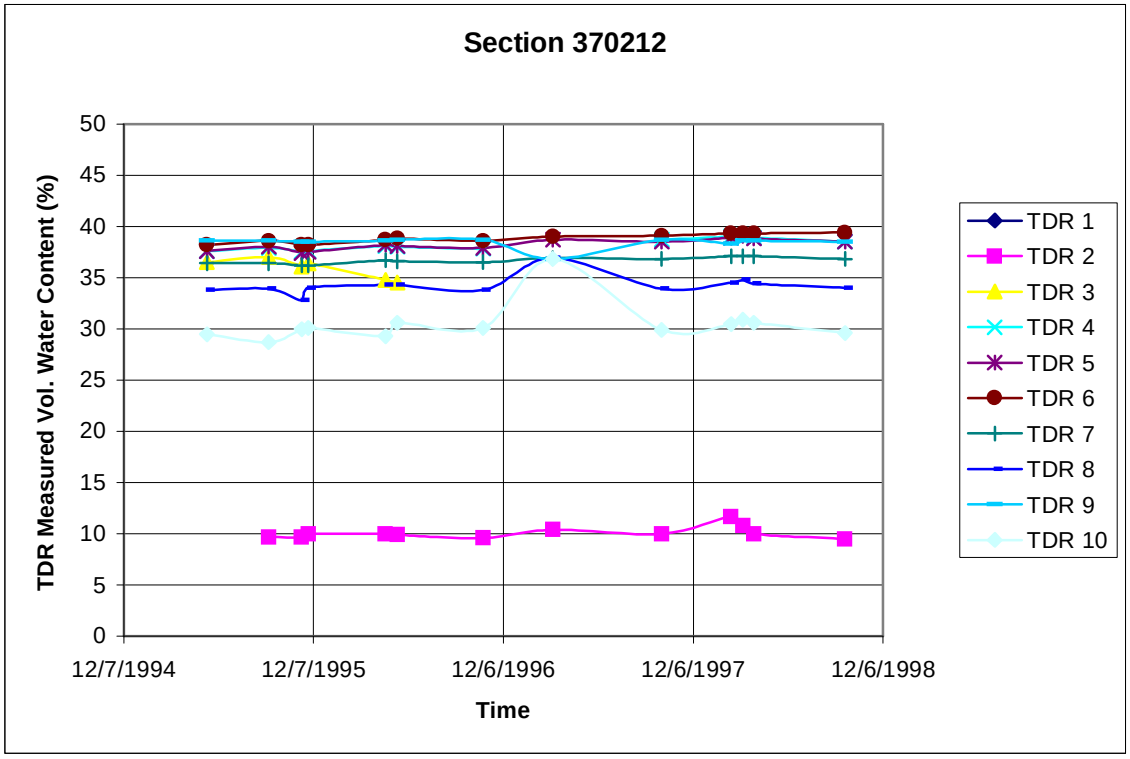
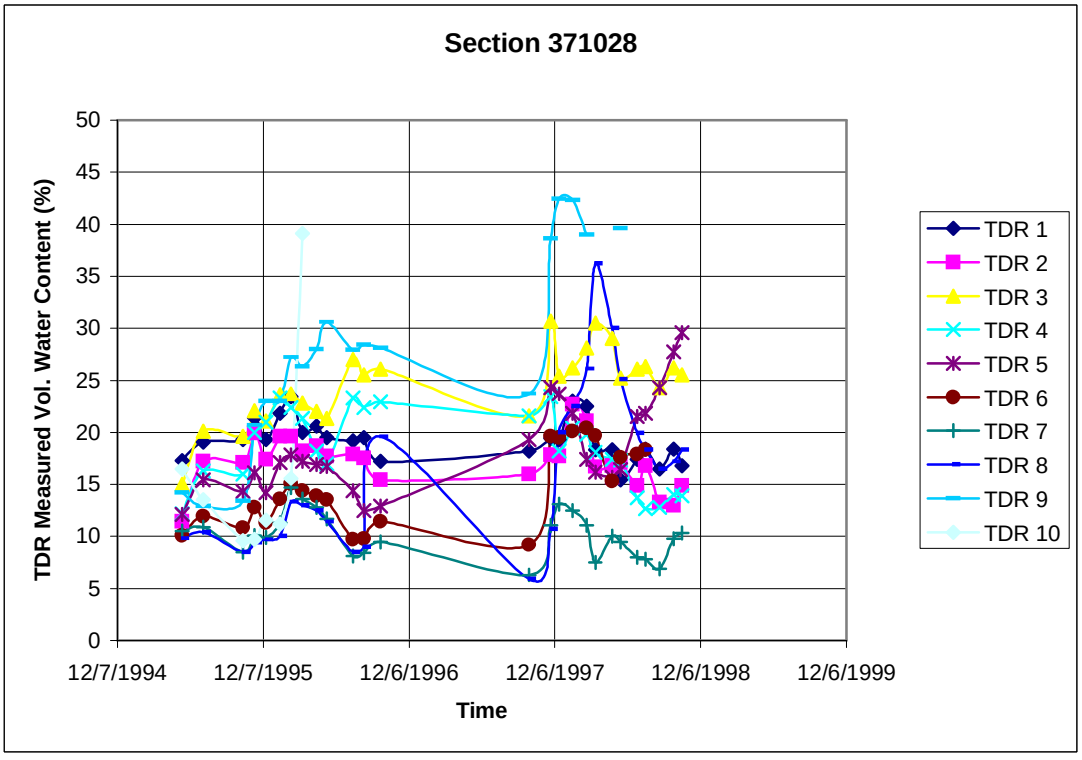
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 370212
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 371028
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
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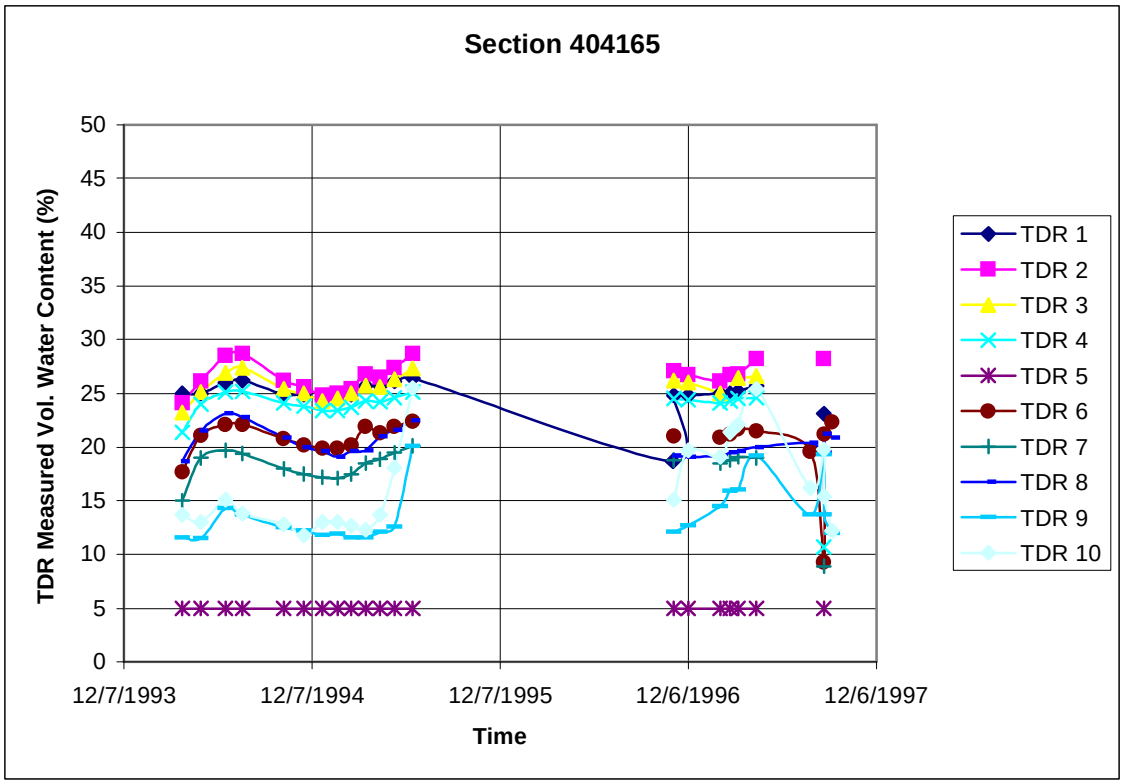
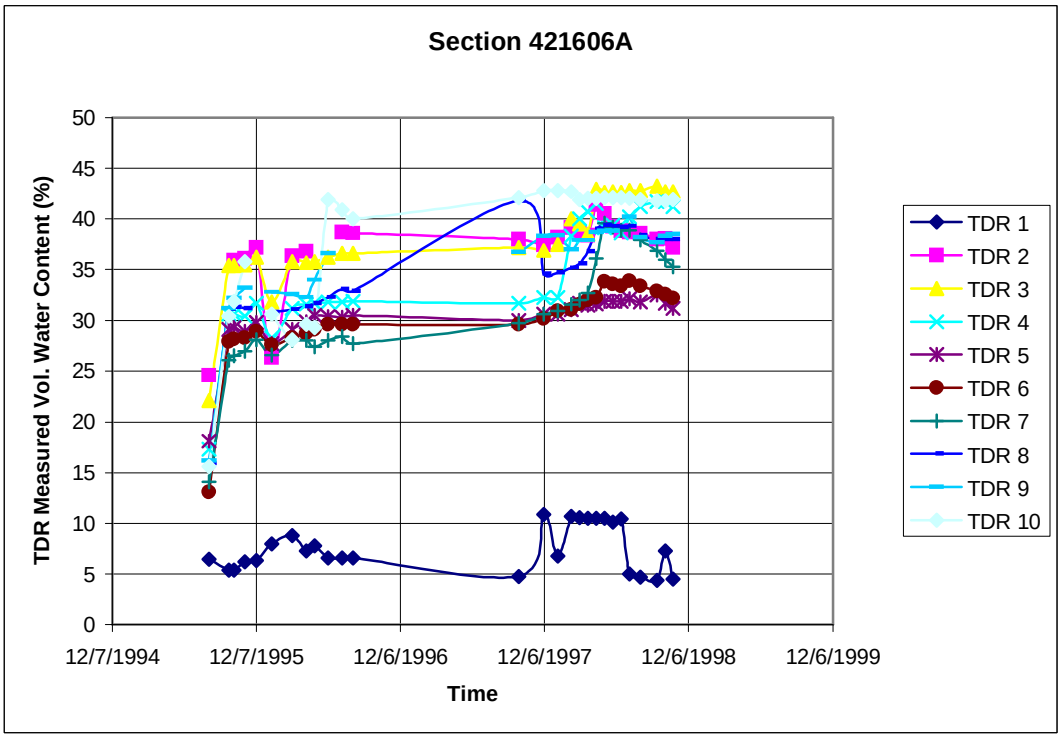
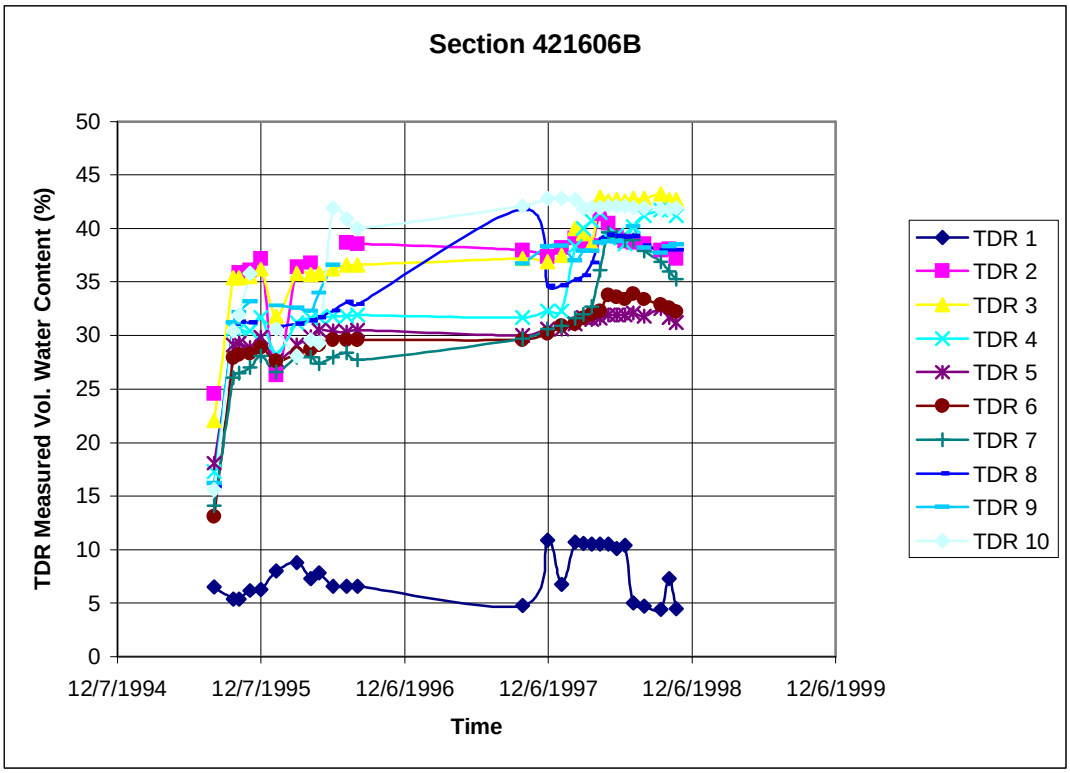
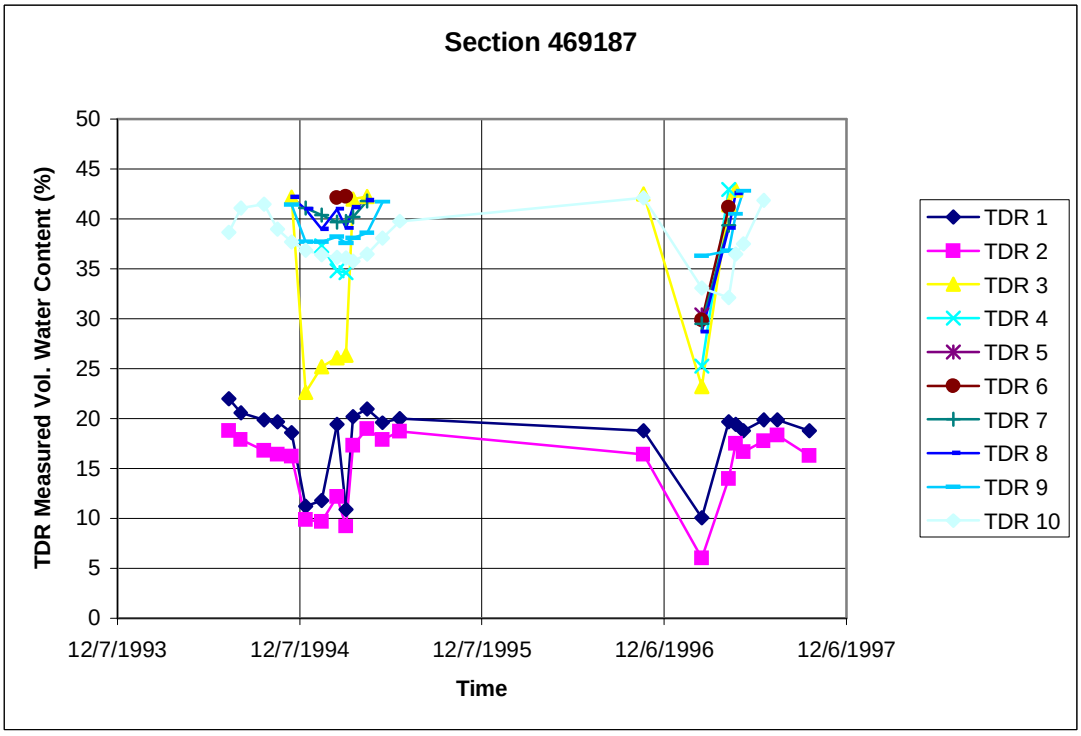
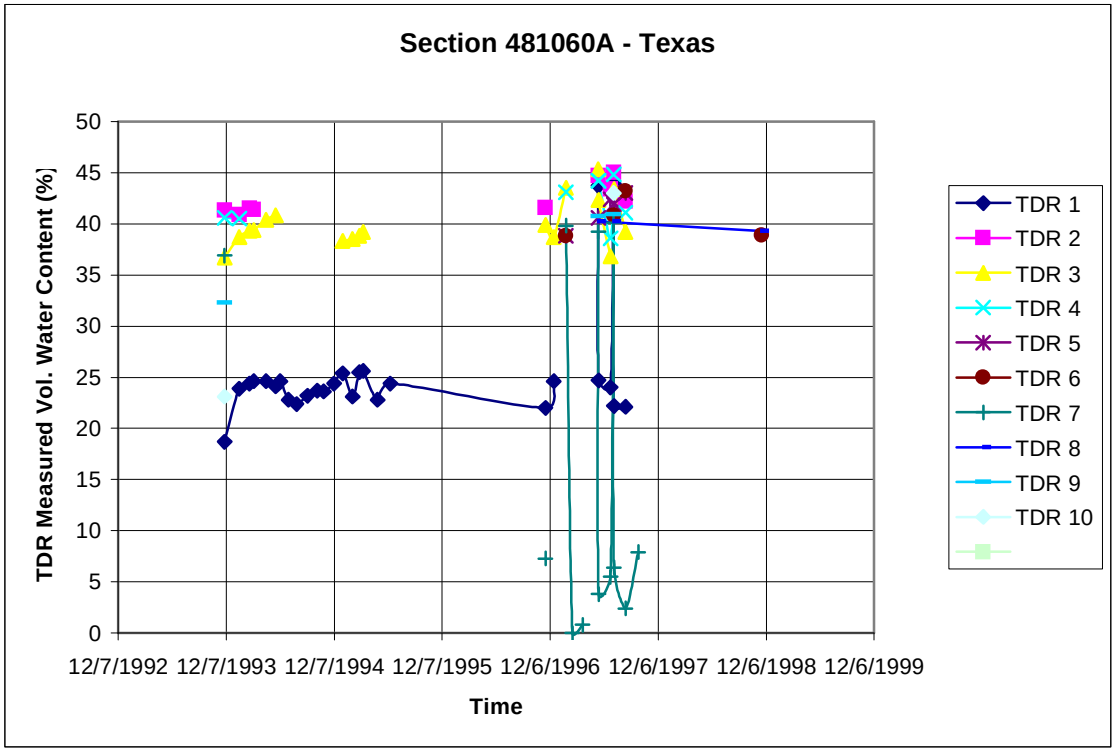
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

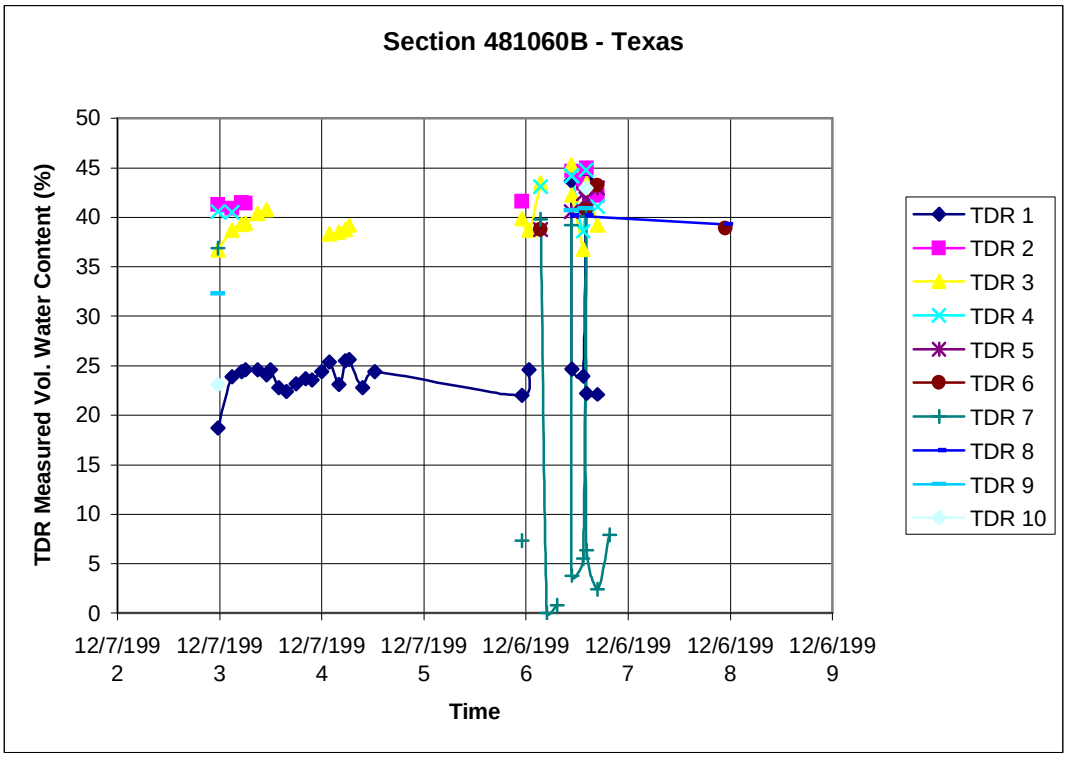

Section 404165
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 421606A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 421606B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 469187
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 481060A - Texas
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 481060B - Texas
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
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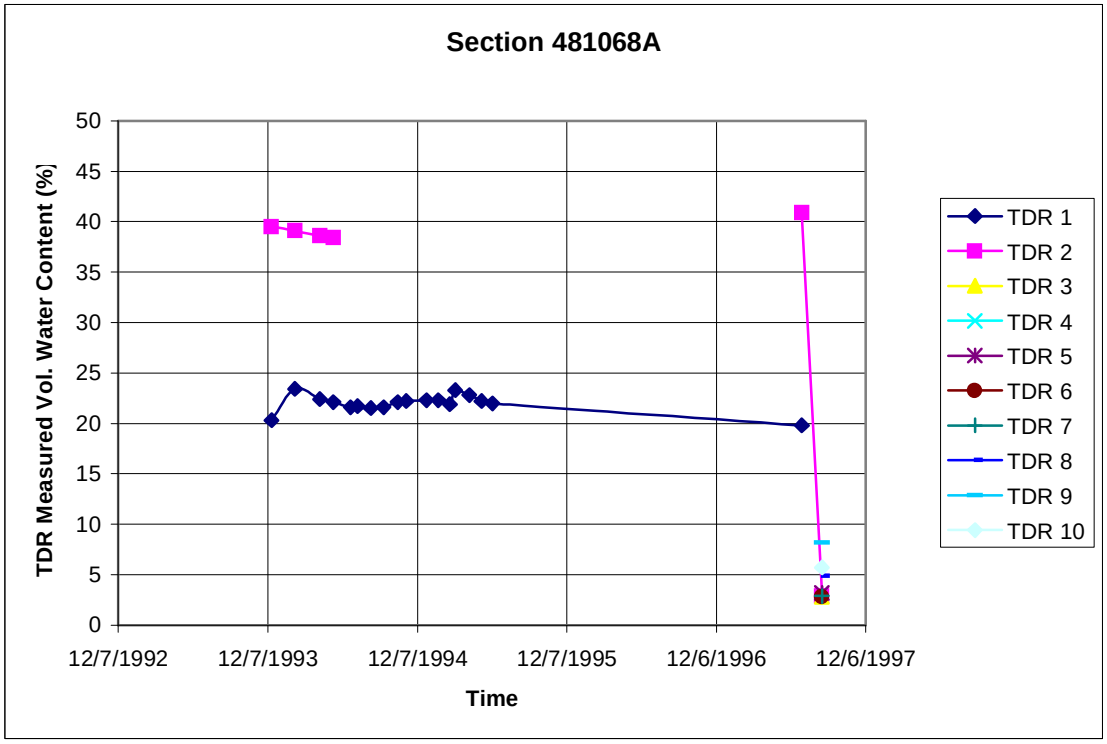
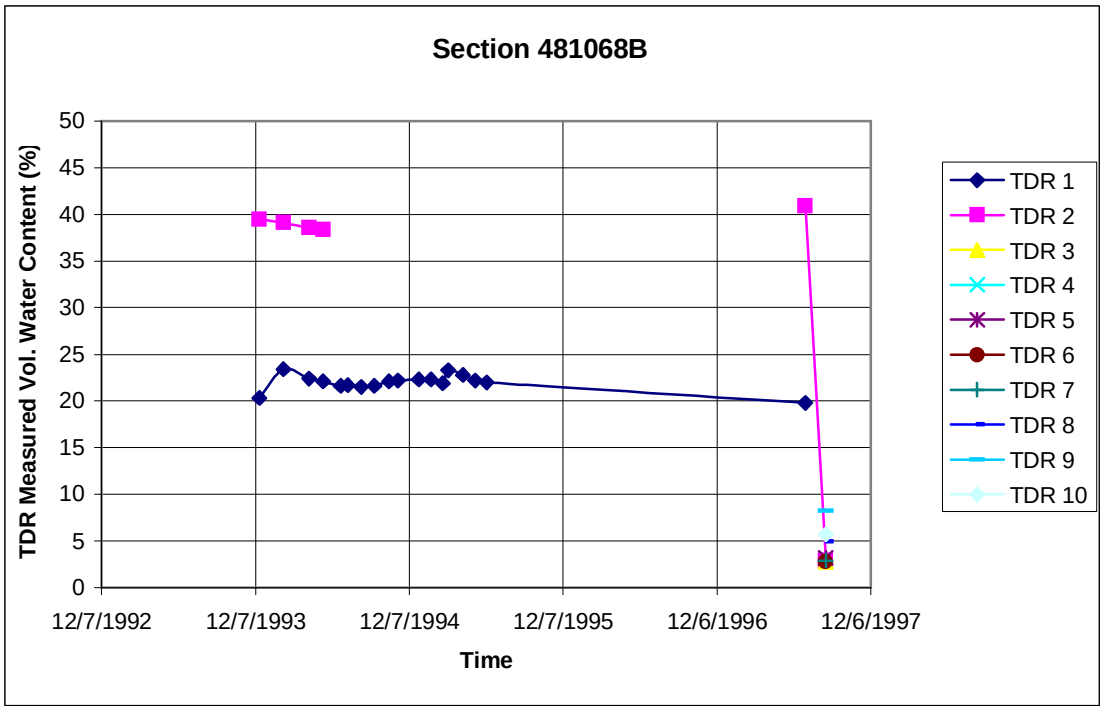
TDR 10


Section 481068A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 481068B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
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TDR 2
TDR 3
TDR 4
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TDR 7
TDR 8
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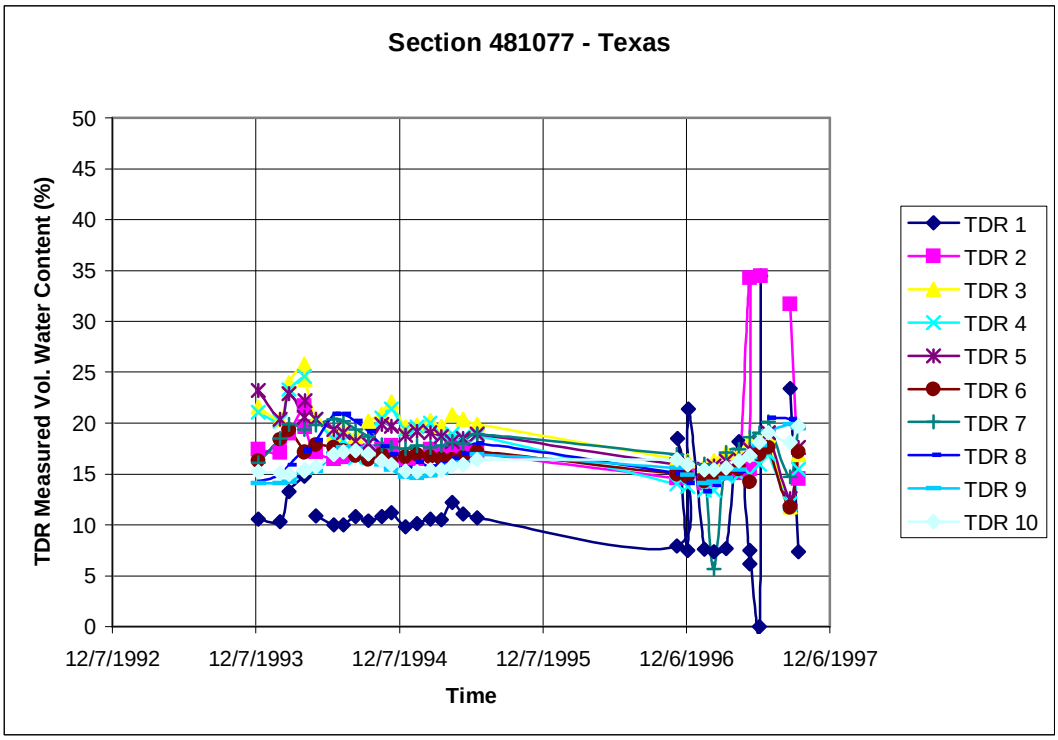
TDR 10


Section 481077 - Texas
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
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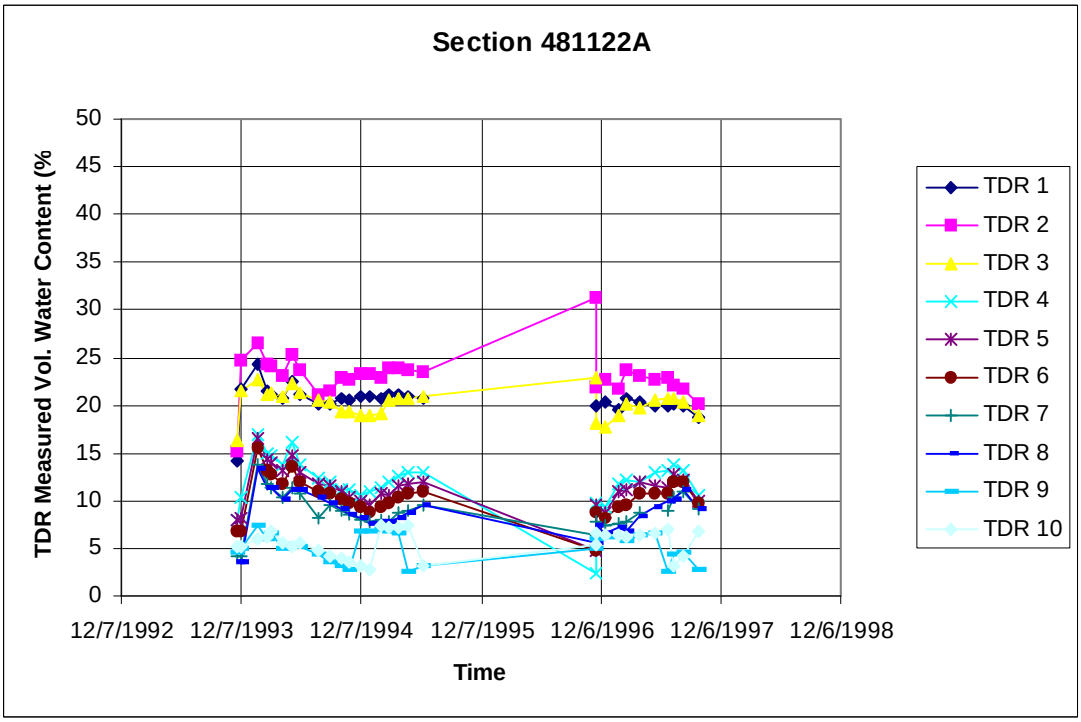
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 481122A
TDR Measured Vol. Water Content (%
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
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TDR 6
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TDR 8
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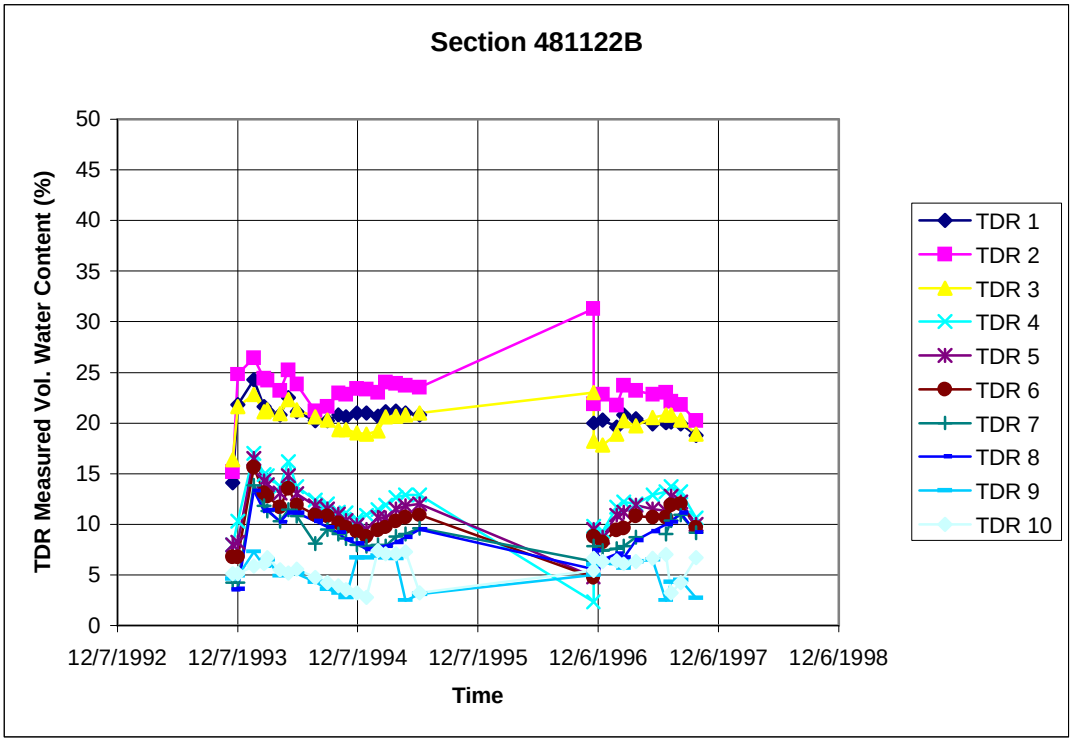
TDR 10


Section 481122B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
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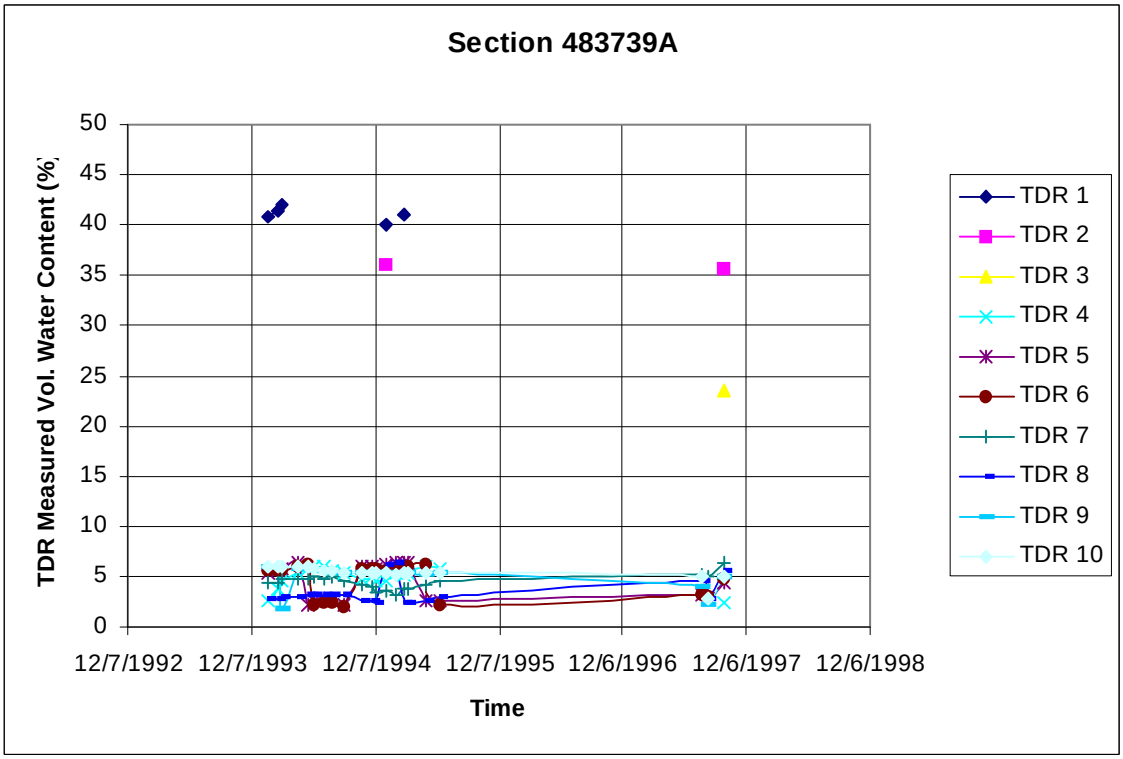
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 483739A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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TDR 2
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TDR 4
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TDR 6
TDR 7
TDR 8
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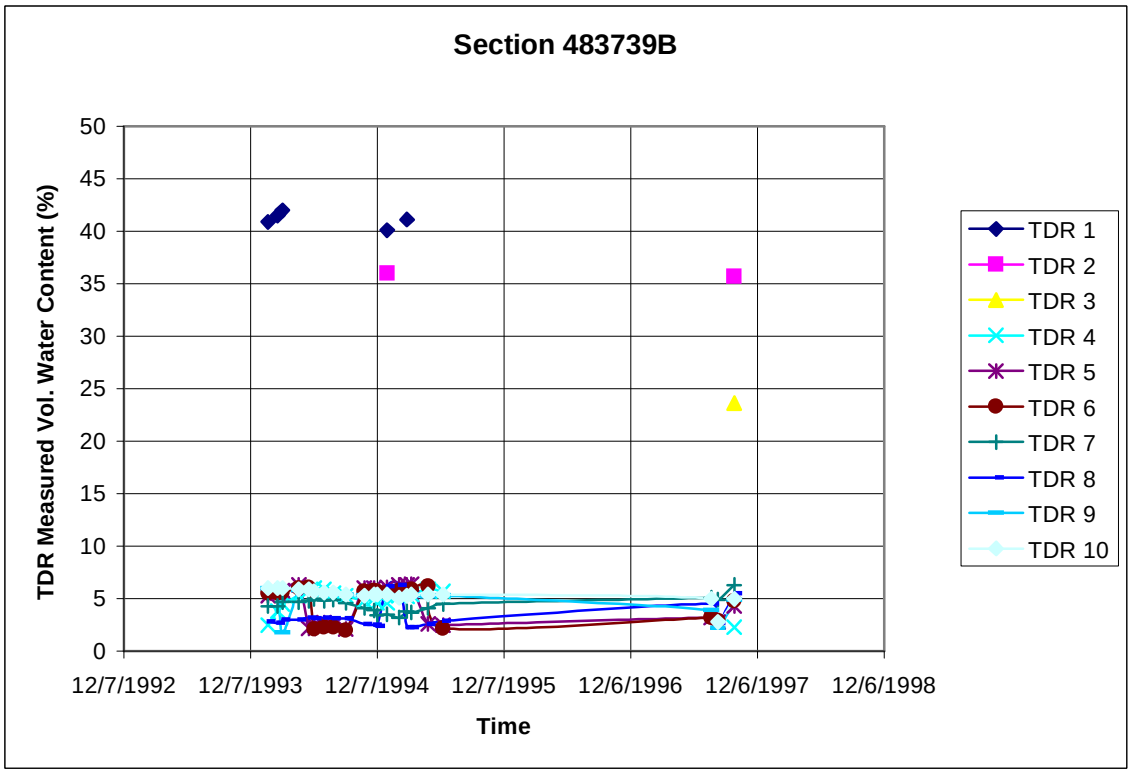
TDR 10


Section 483739B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
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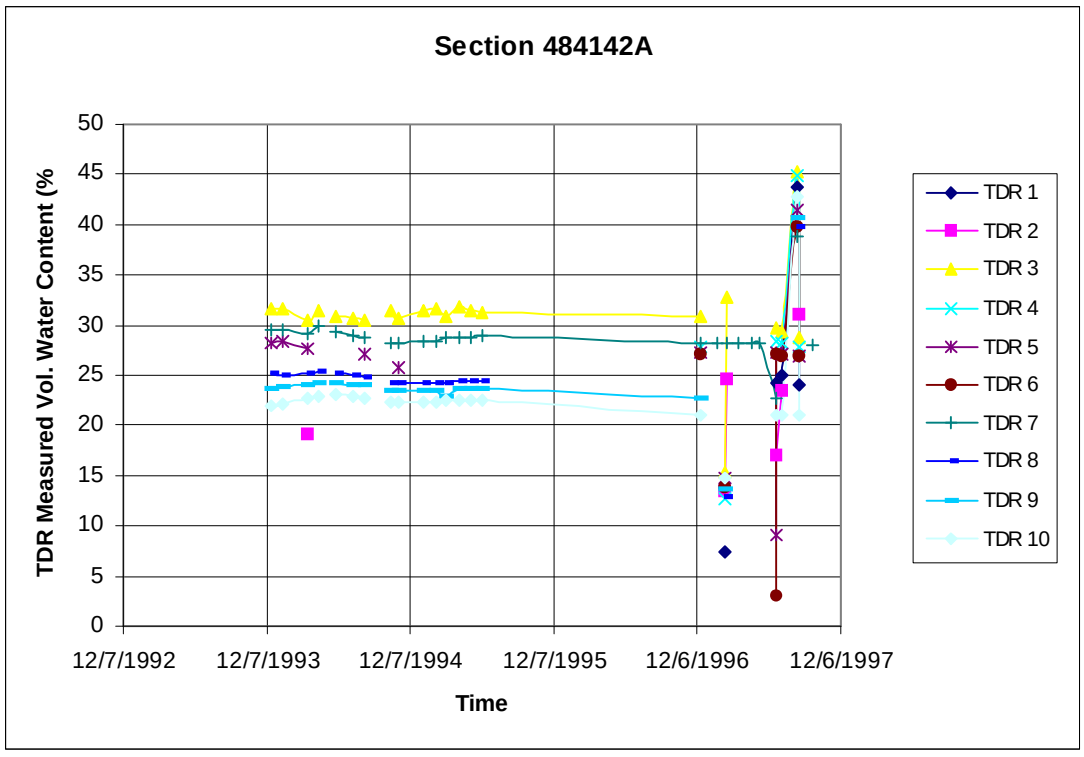
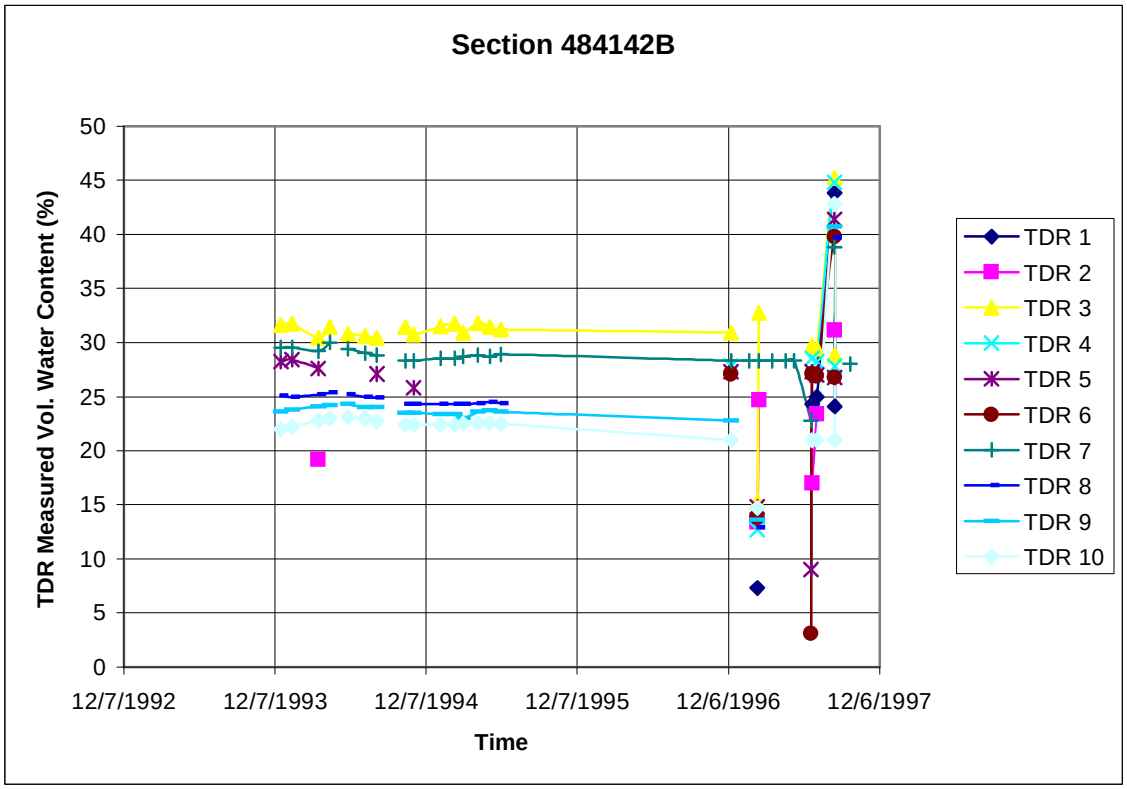
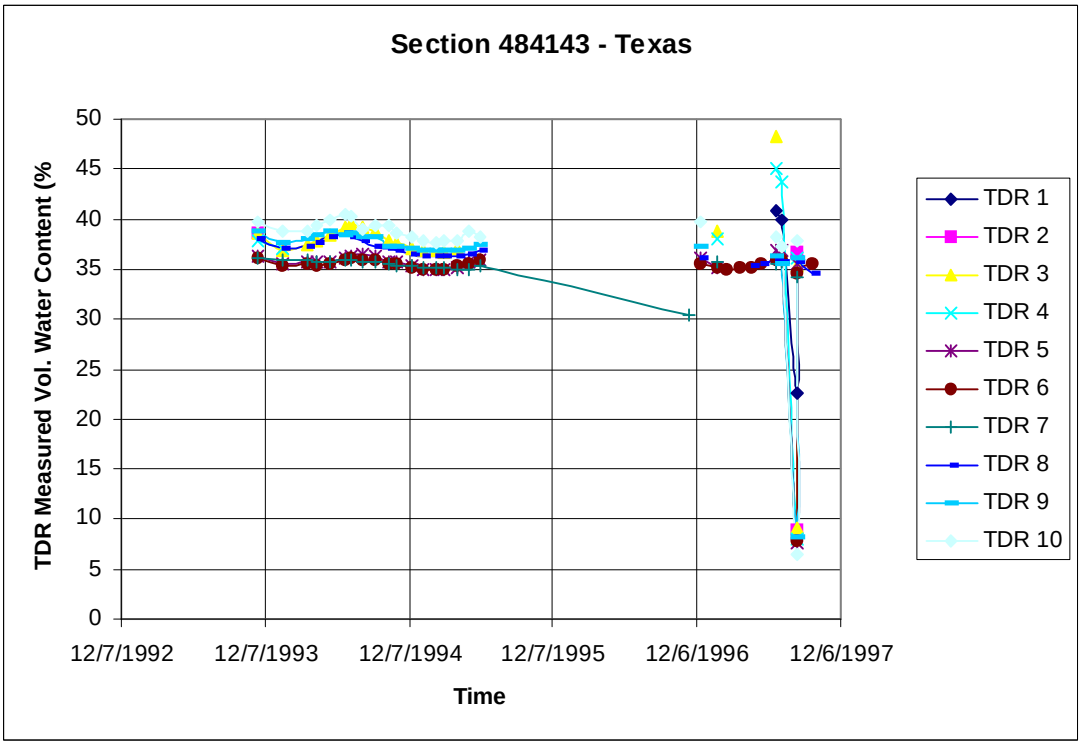
TDR 10


Section 484142A
TDR Measured Vol. Water Content (%
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 484142B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 484143 - Texas
TDR Measured Vol. Water Content (%
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
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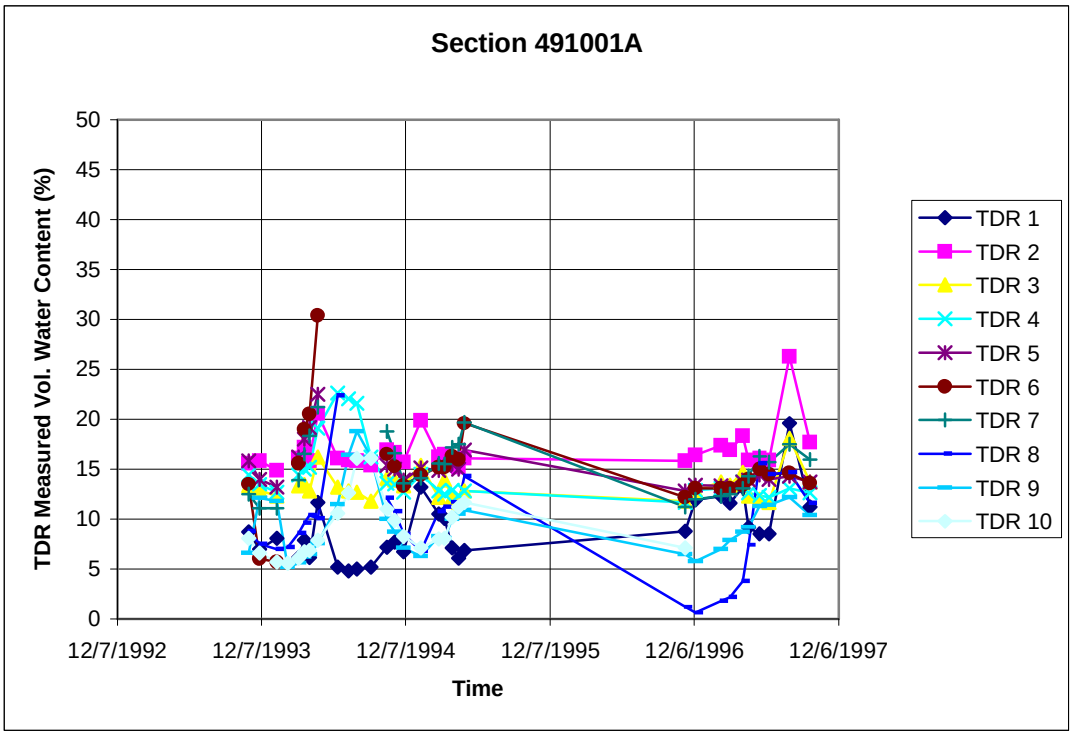
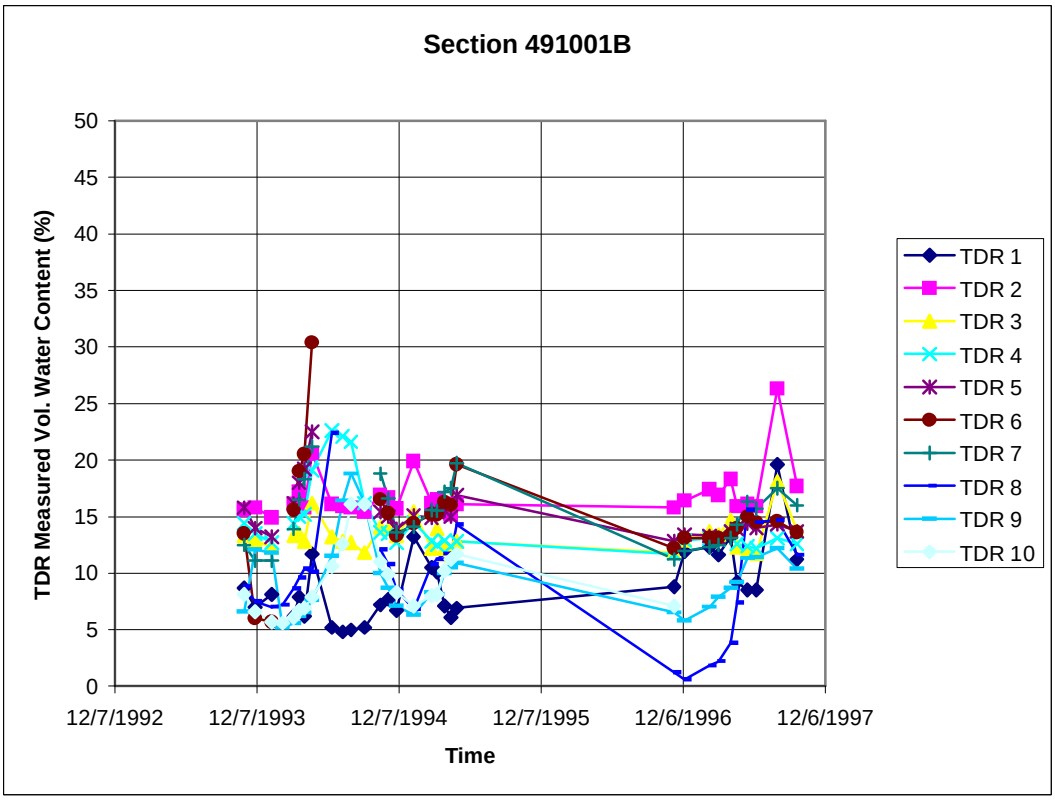
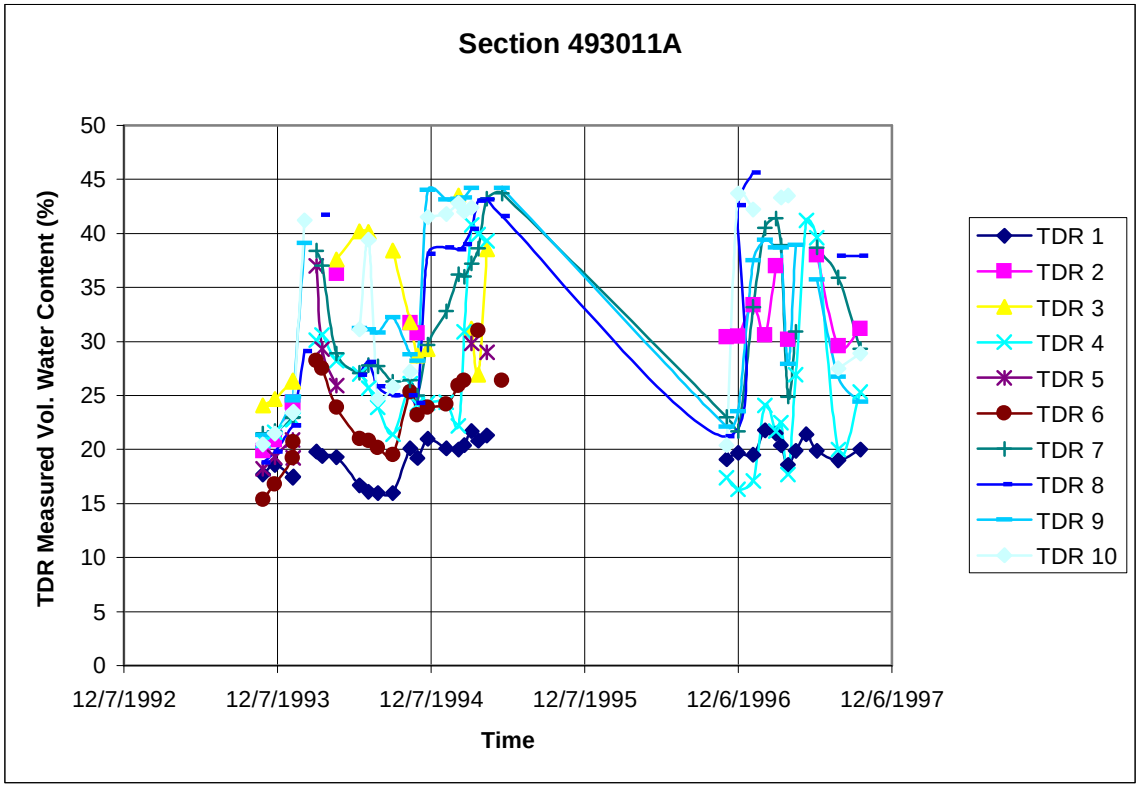
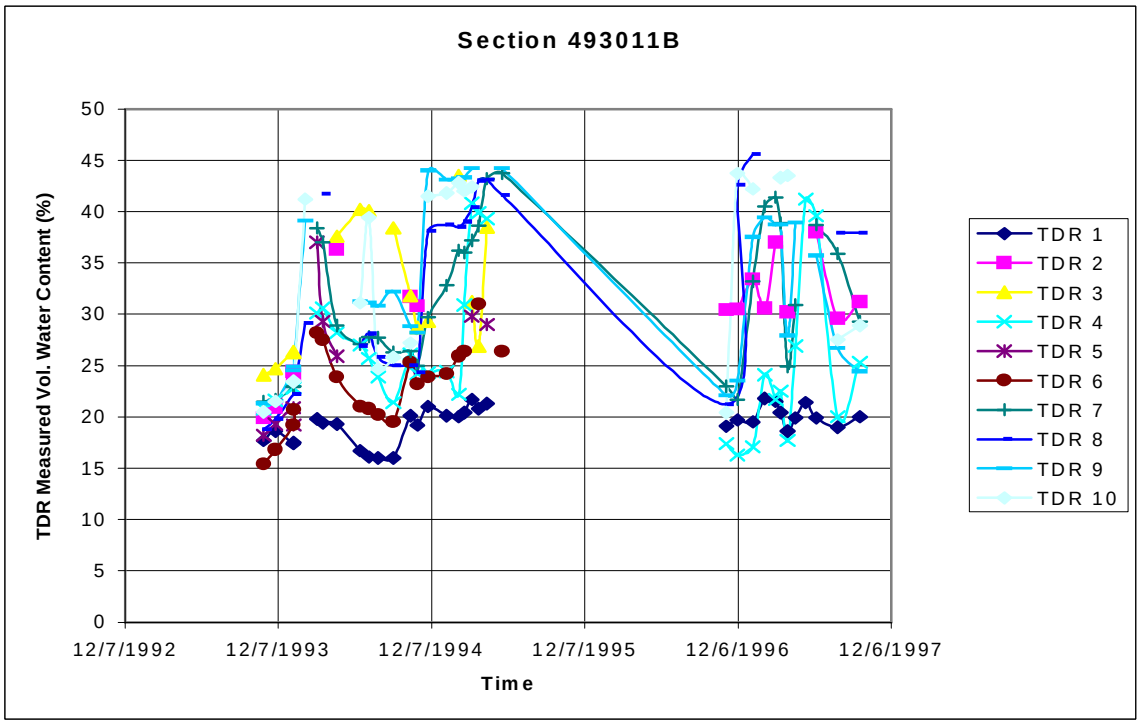
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 491001A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 491001B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 493011A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 493011B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
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TDR 6
TDR 7
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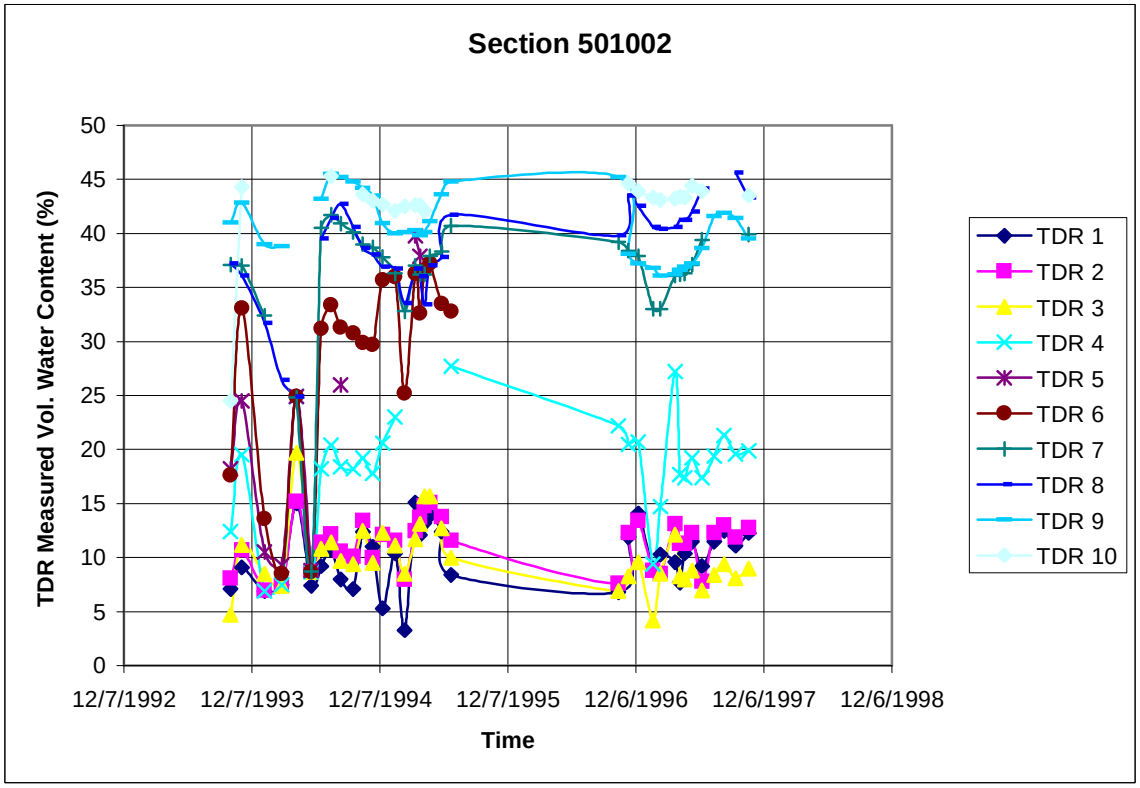
TDR 10


Section 501002
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
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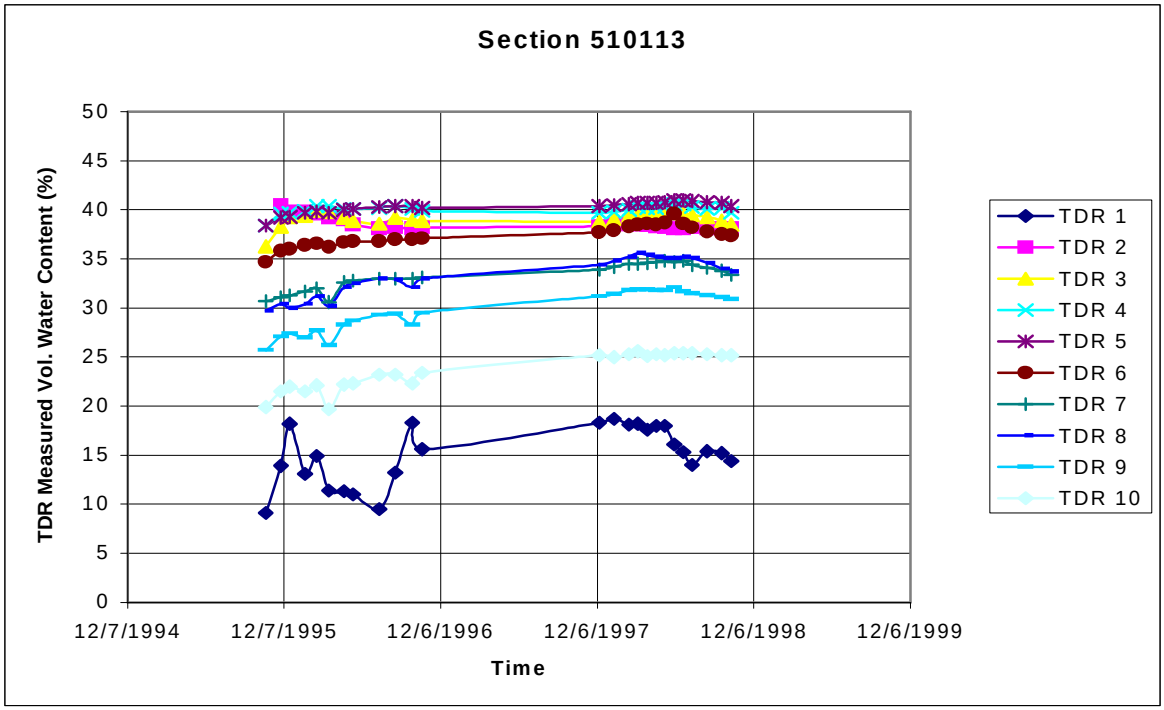
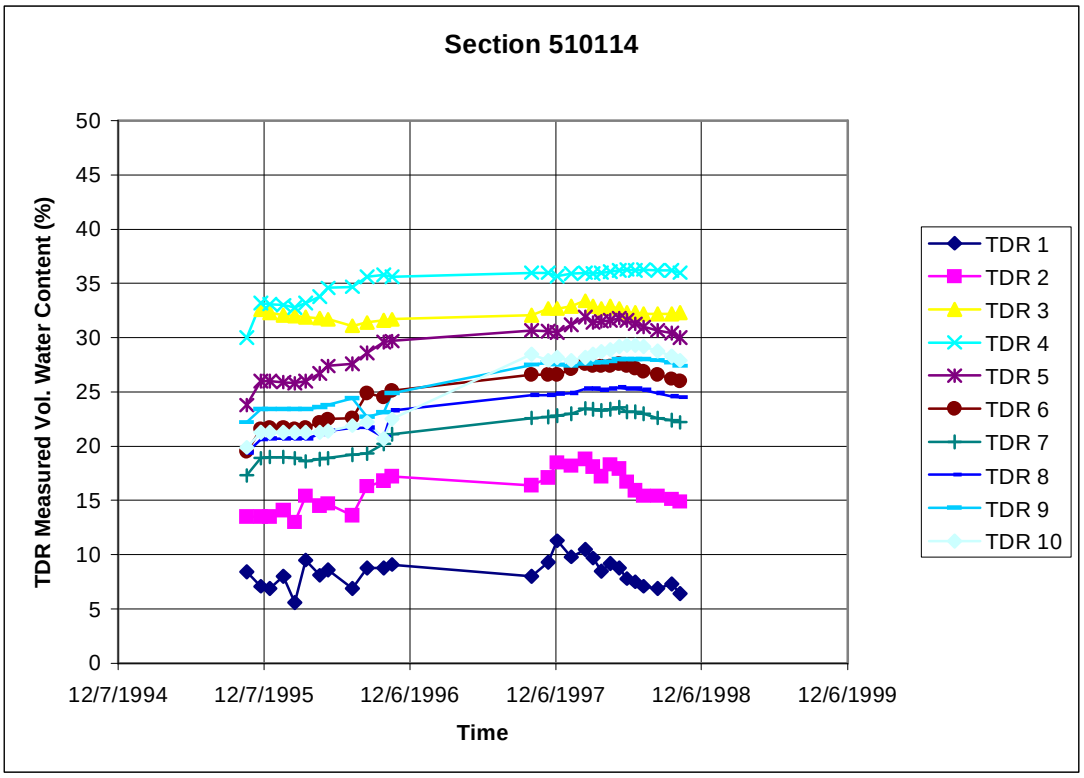
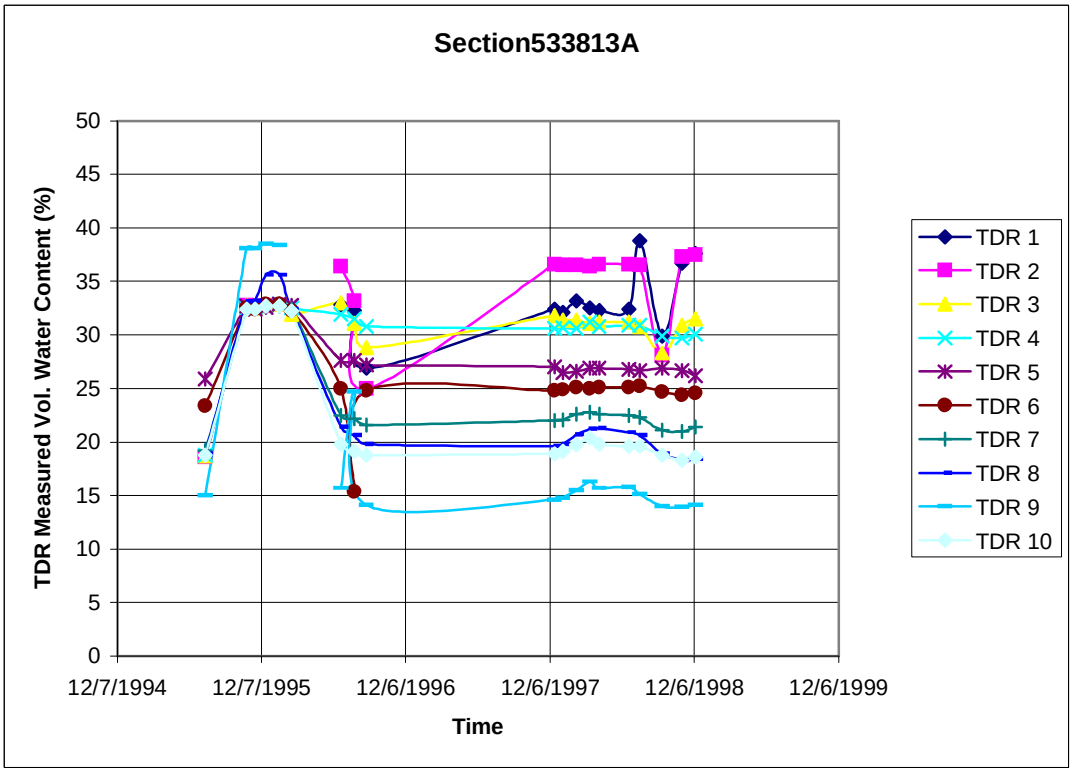
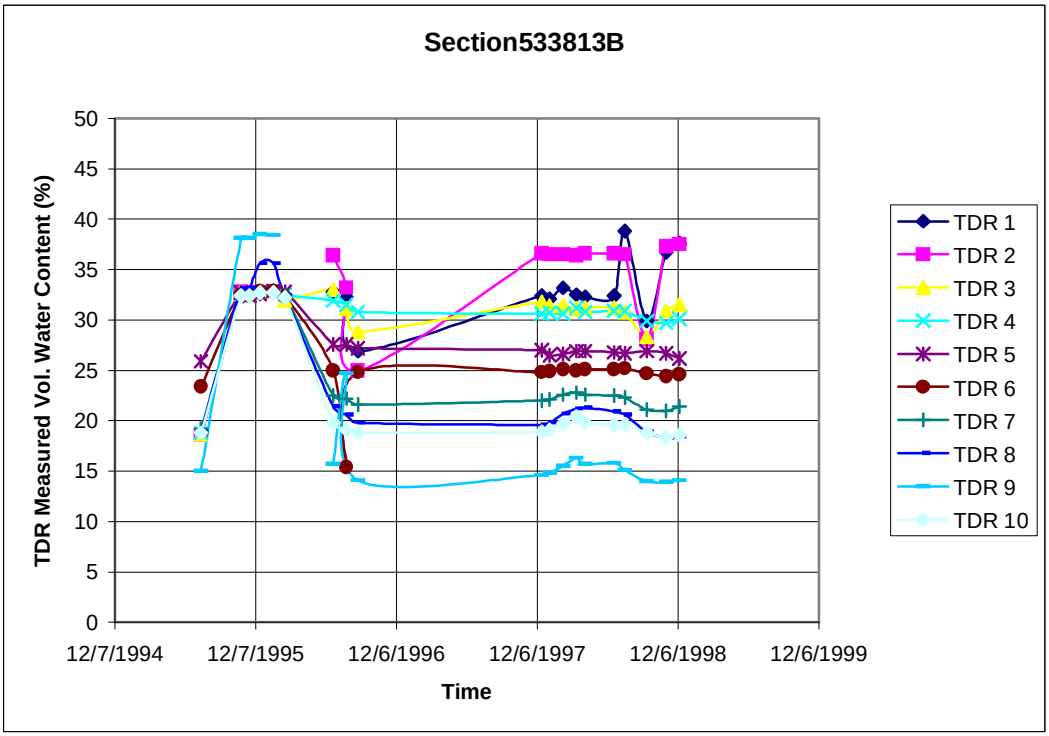
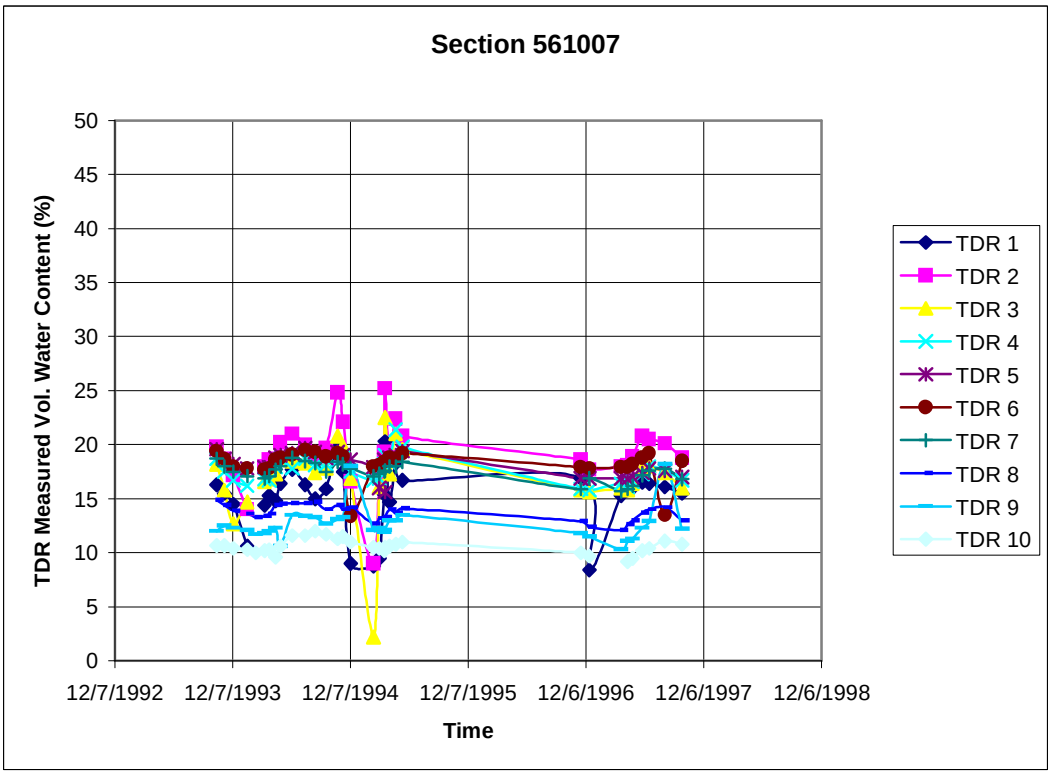
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

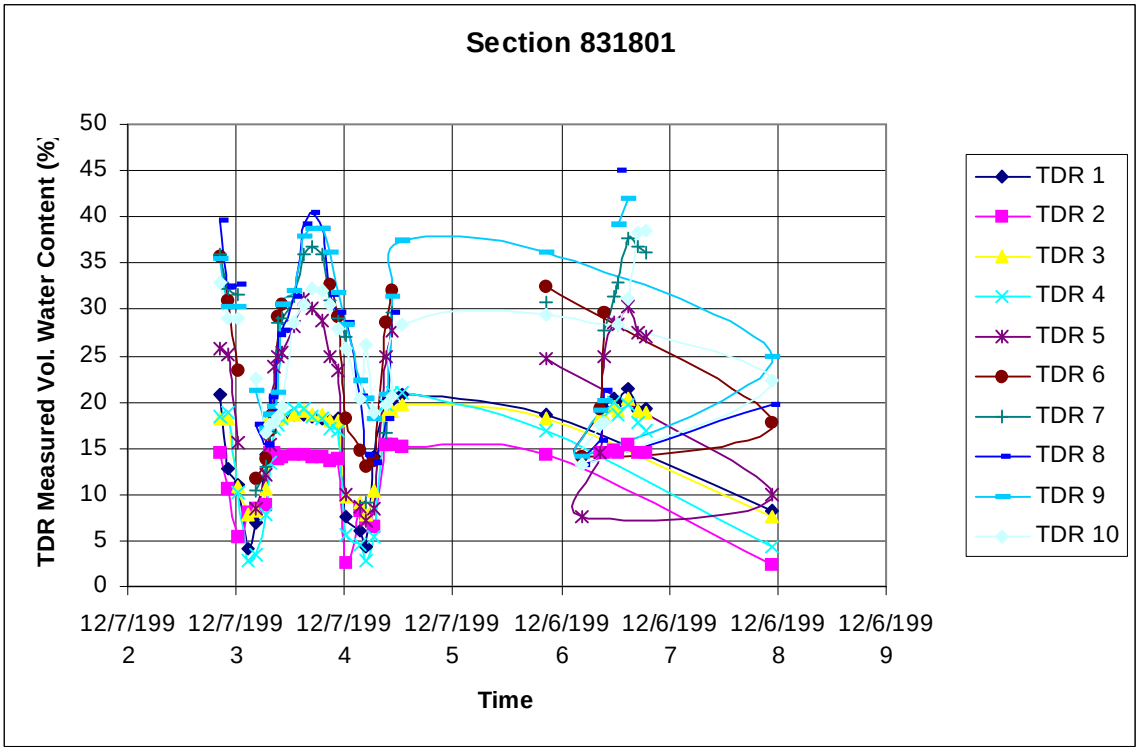

Section 510113
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

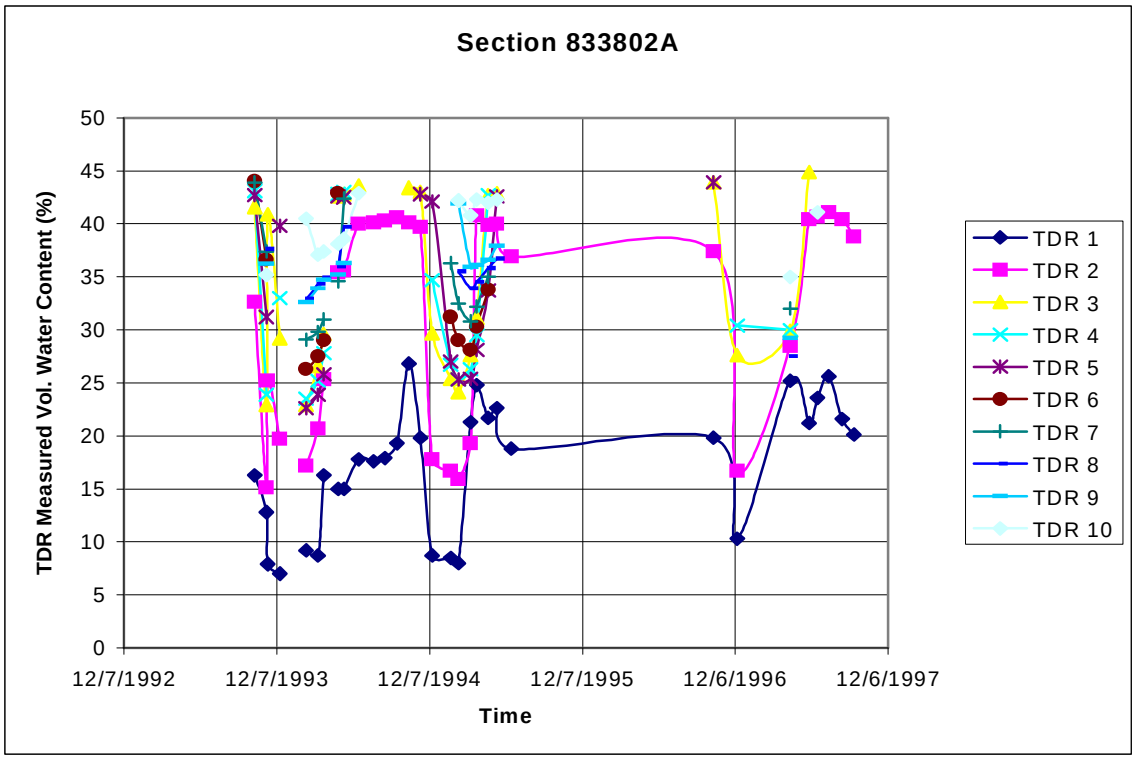

Section 510114
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

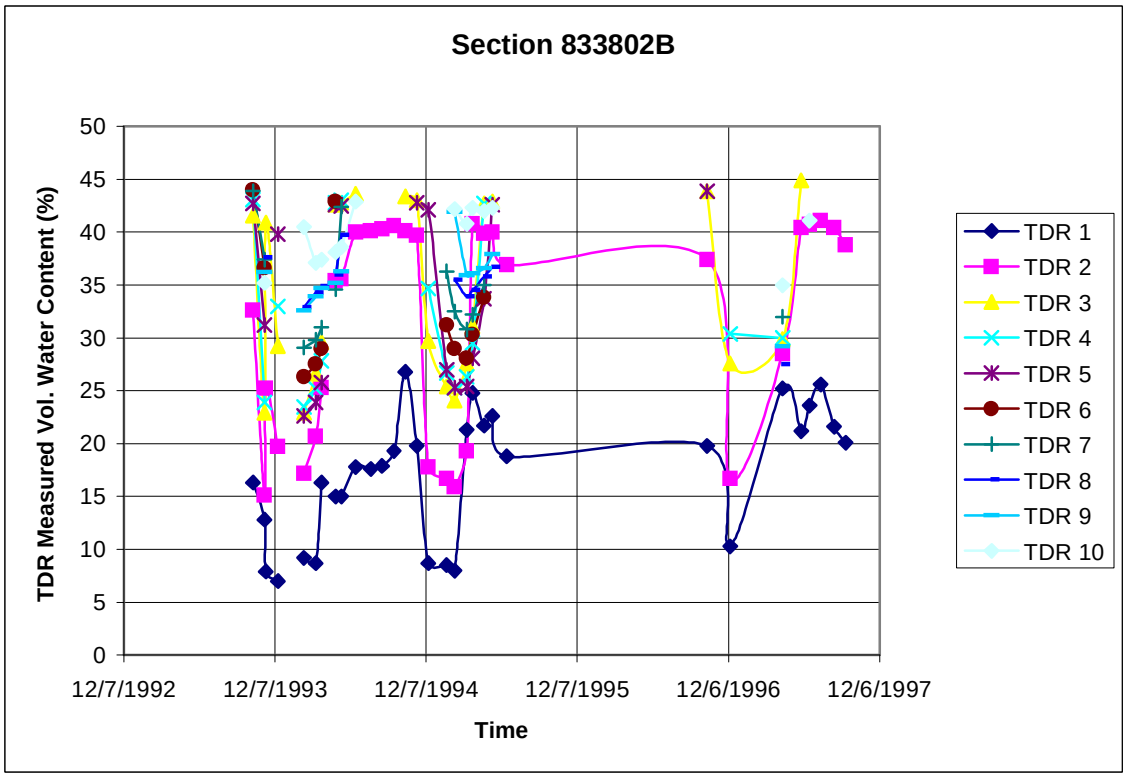

Section533813A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

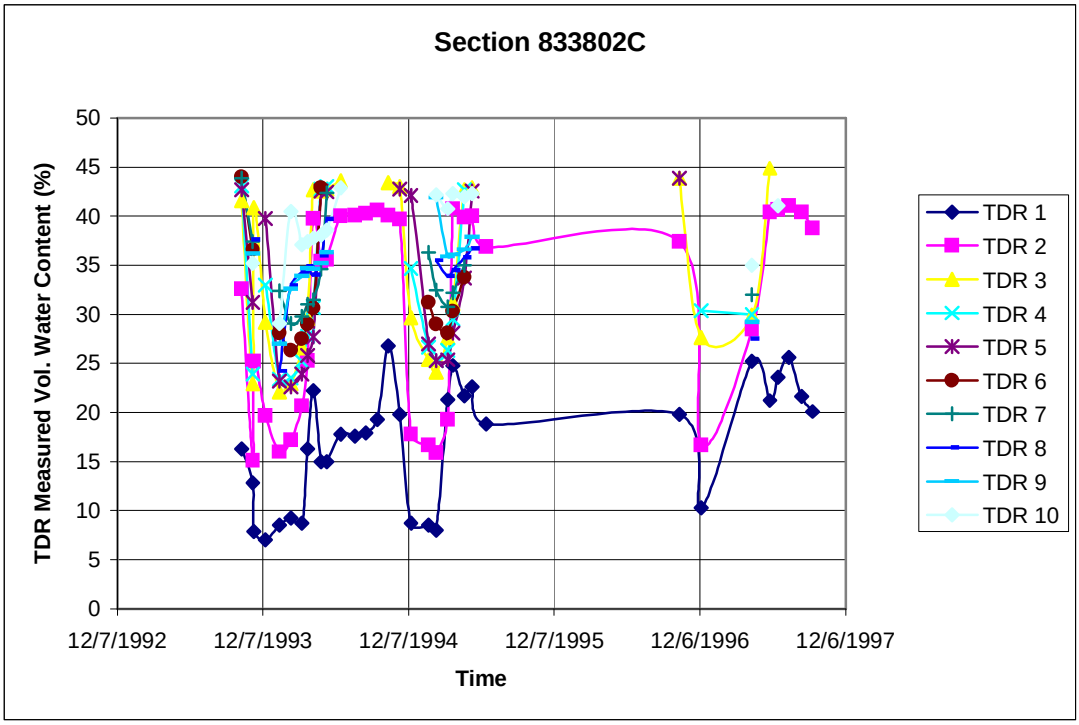

Section533813B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

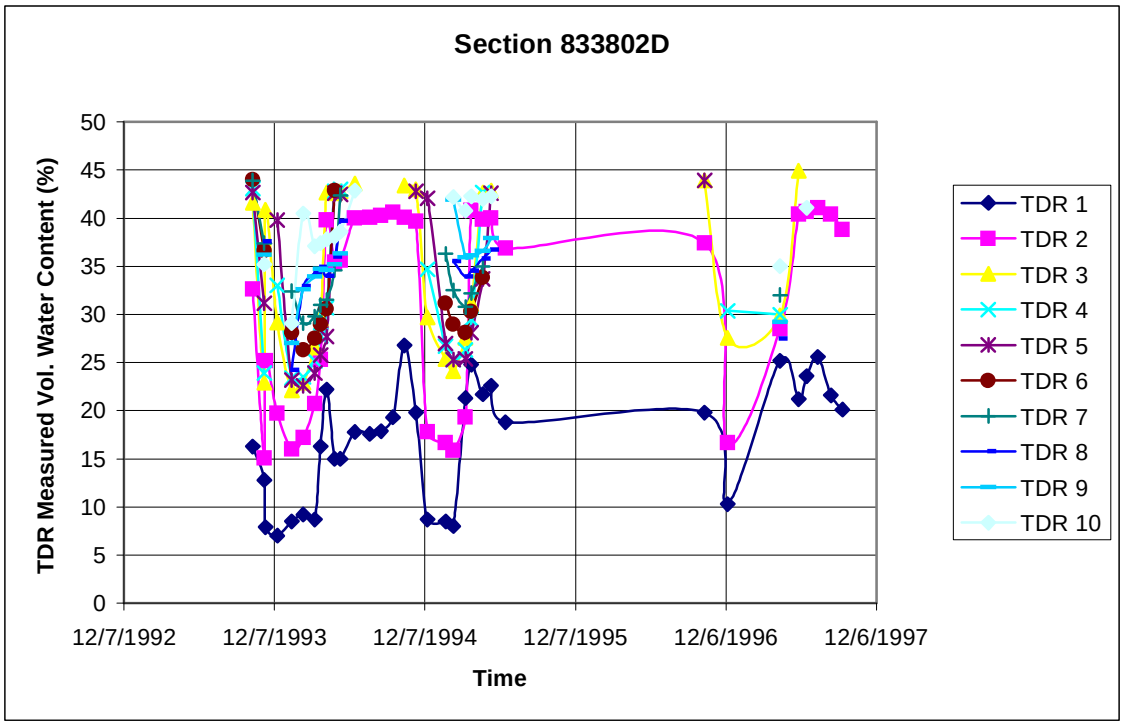

Section 561007
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

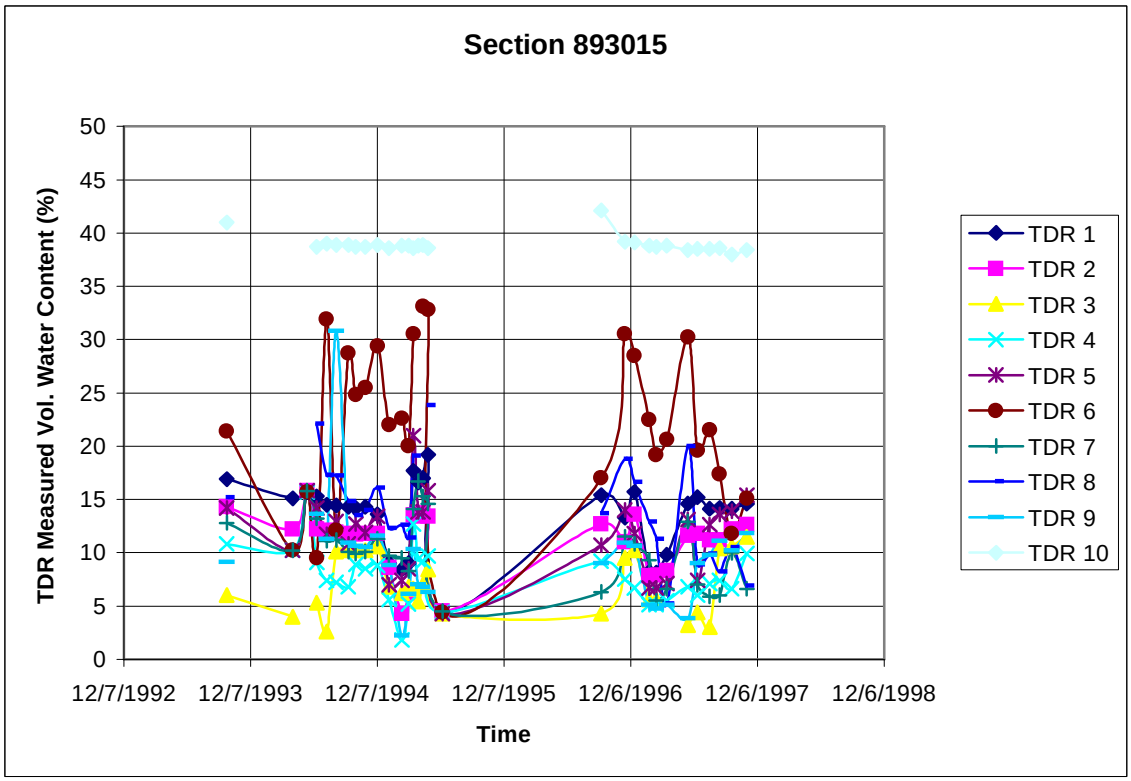

Section 831801
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
12/6/1999
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

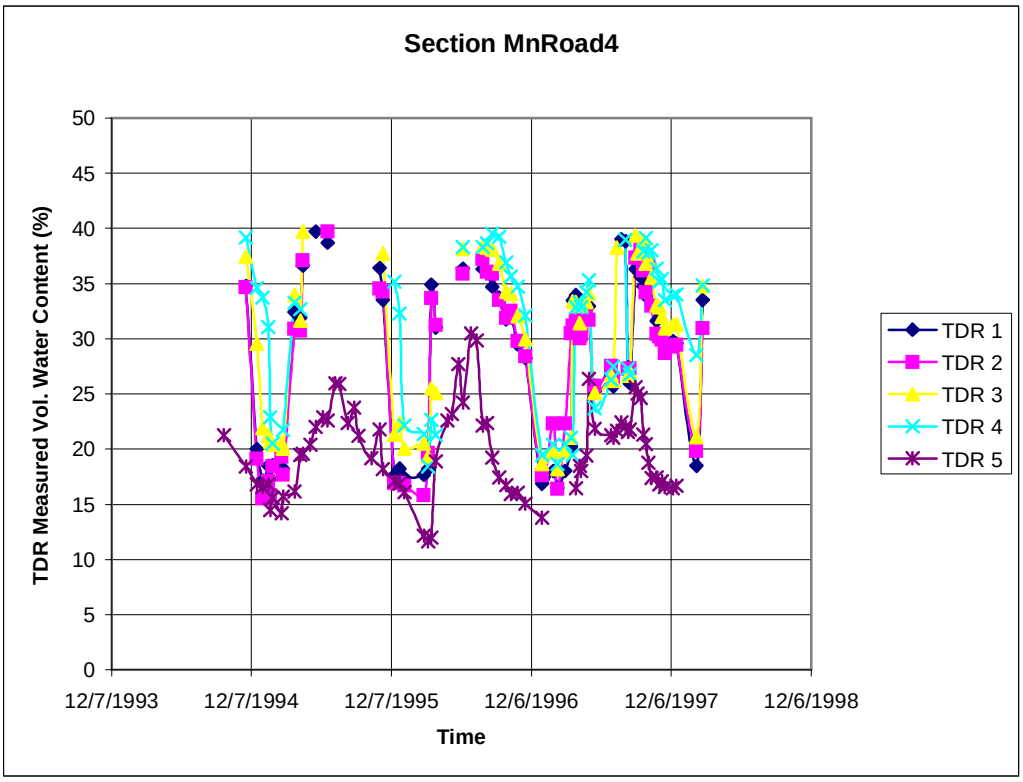

Section 833802A
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

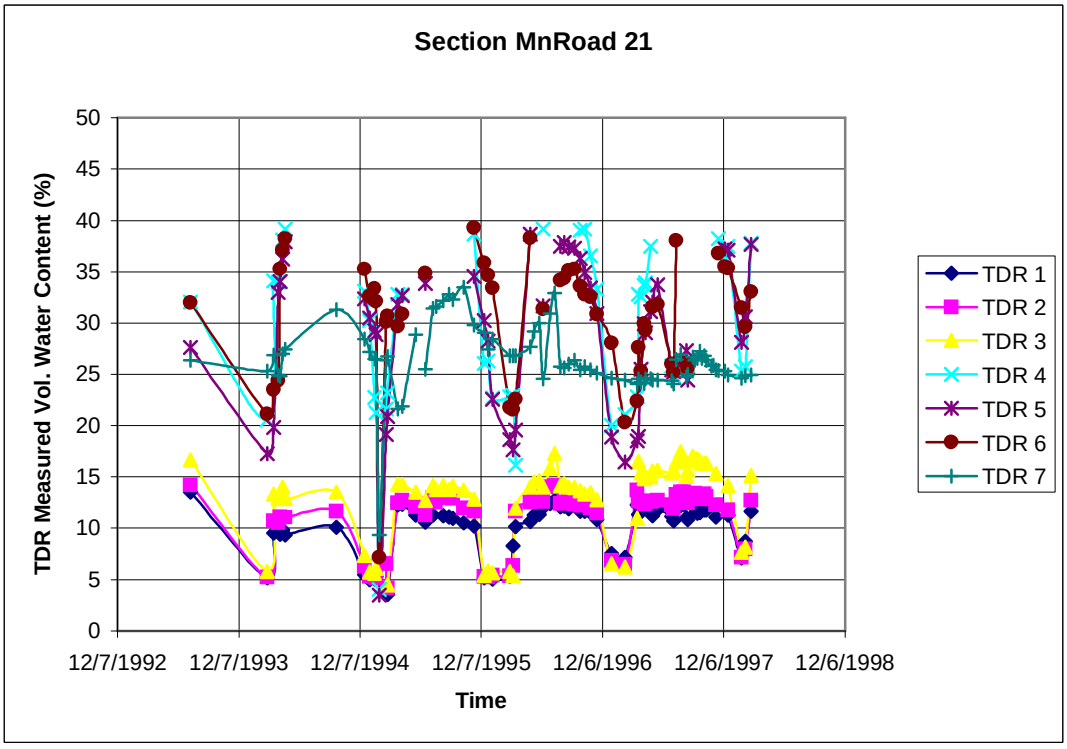

Section 833802B
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10


Section 833802C
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

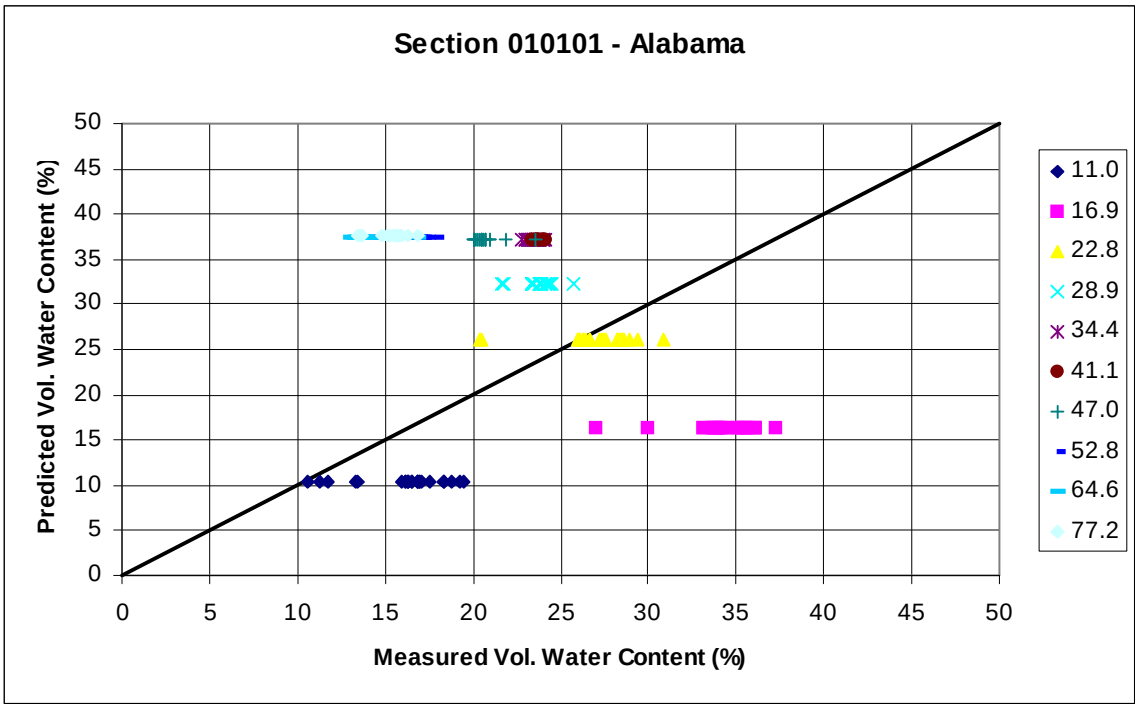

Section 833802D
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

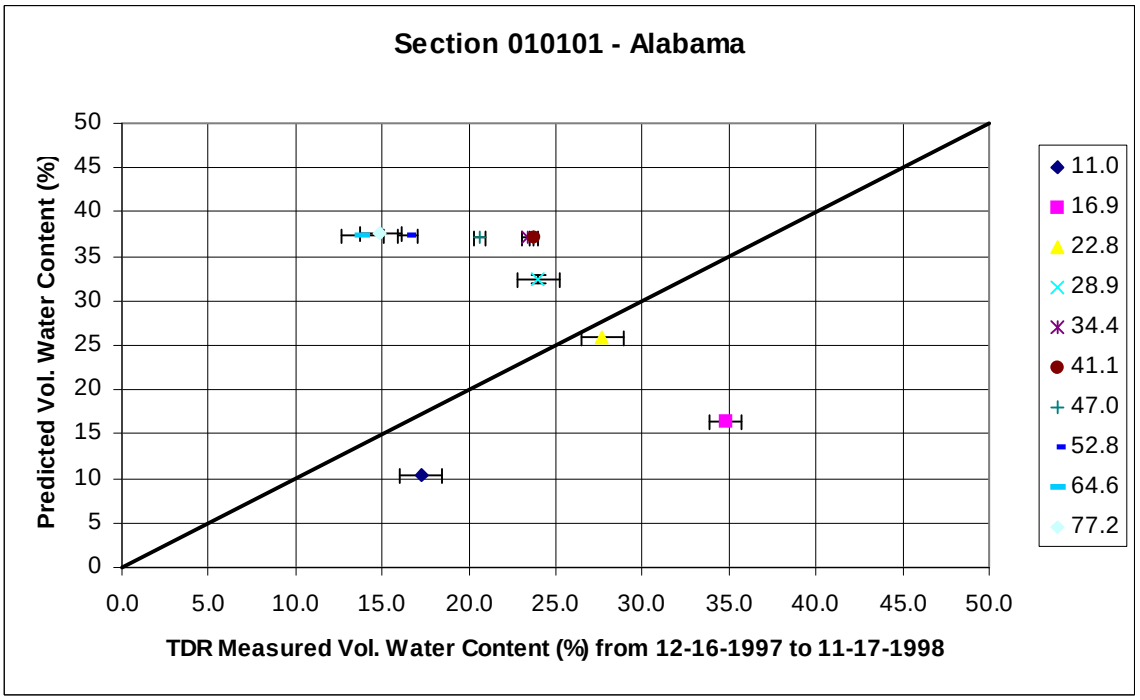

Section 893015
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7
TDR 8
TDR 9
TDR 10

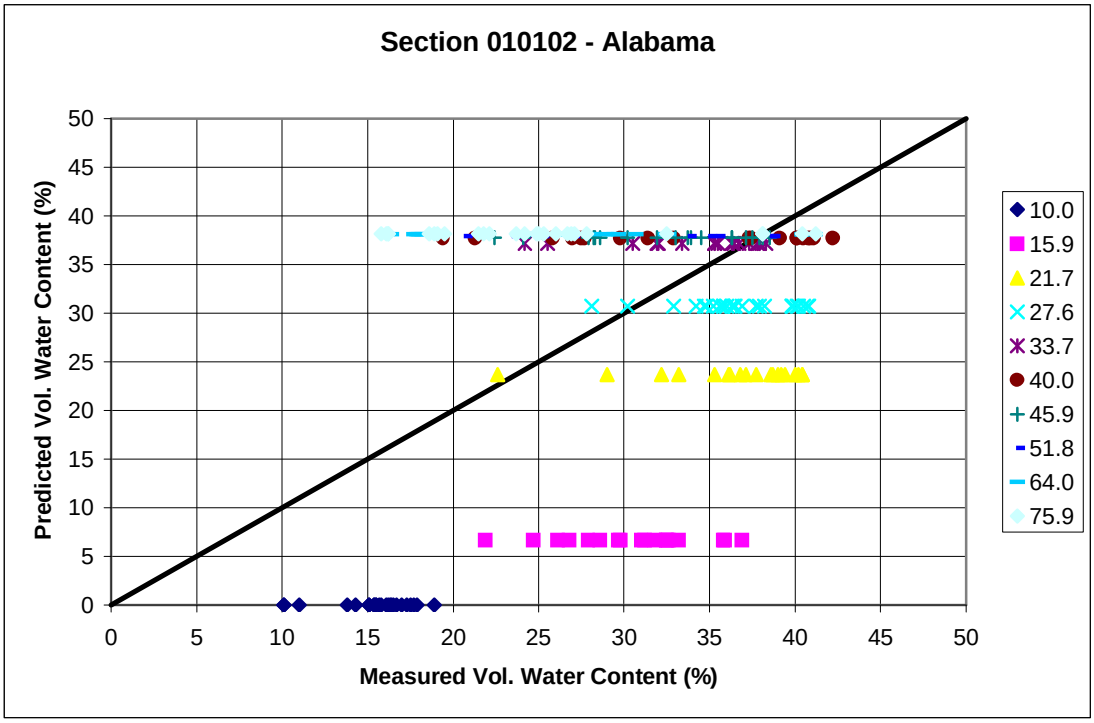

Section MnRoad4
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5

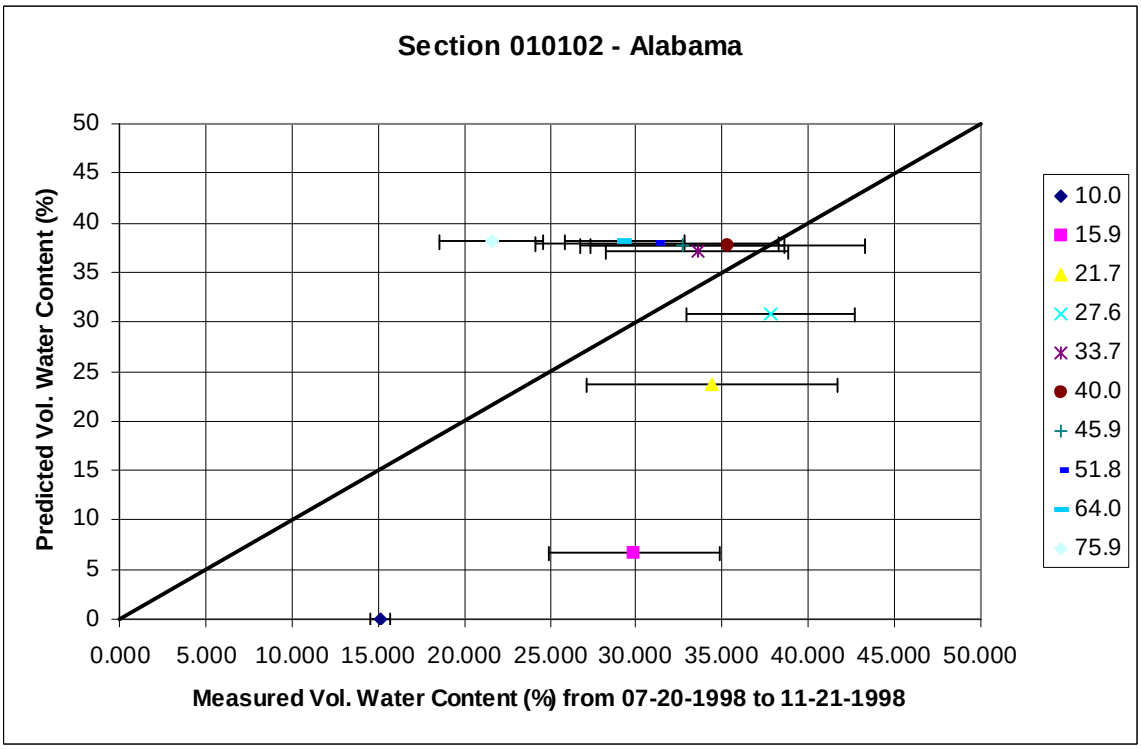

Section MnRoad 21
TDR Measured Vol. Water Content (%)
50
45
40
35
30
25
20
15
10
5
0
12/7/1992
12/7/1993
12/7/1994
12/7/1995
12/6/1996
12/6/1997
12/6/1998
Time
TDR 1
TDR 2
TDR 3
TDR 4
TDR 5
TDR 6
TDR 7

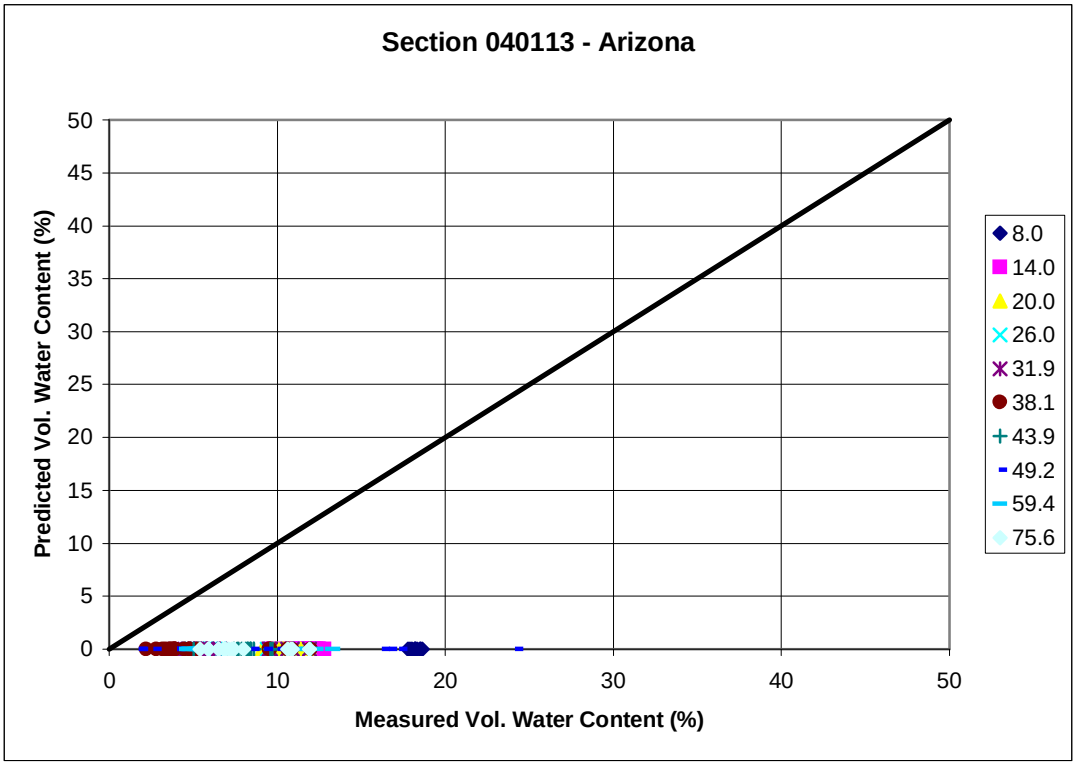
APPENDIX E.
MEASURED VERSUS PREDICTED WATER CONTENT - STAGE IV RUNS

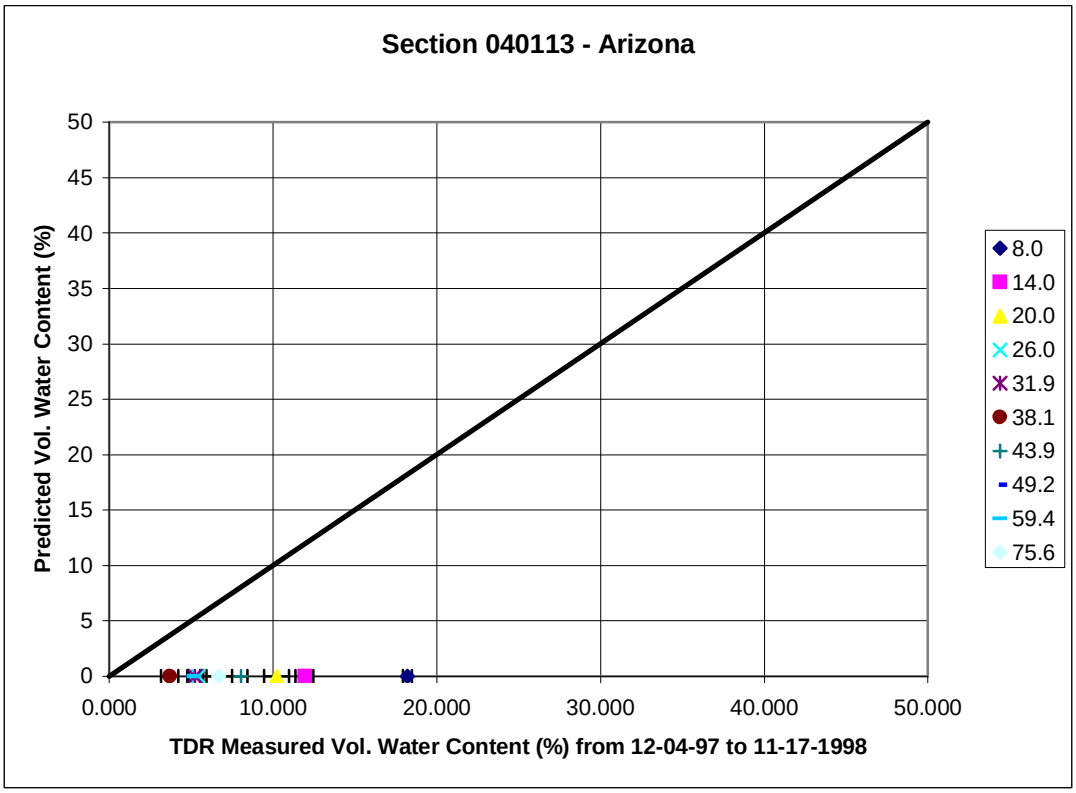

Section 010101 - Alabama
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
11.0
16.9
22.8
28.9
34.4
41.1
47.0
52.8
64.6
77.2

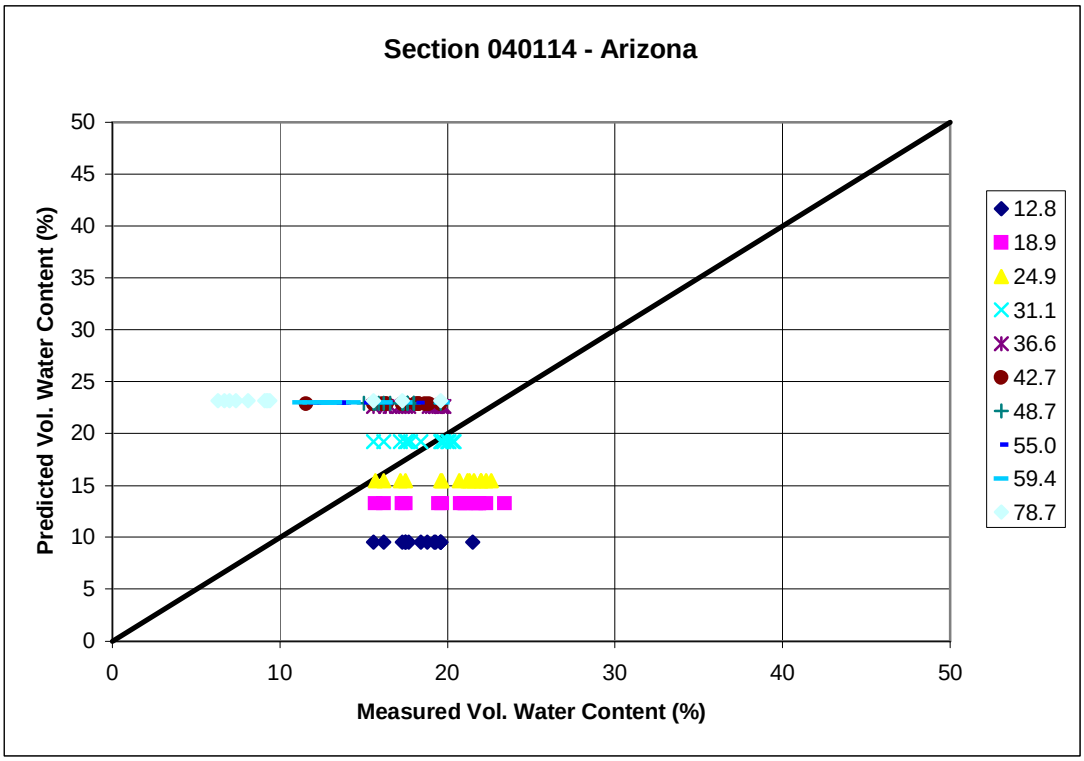

Section 010101 - Alabama
Predicted Vol. Water Content (%)
TDR Measured Vol. Water Content (%) from 12-16-1997 to 11-17-1998
0
5
10
15
20
25
30
35
40
45
50
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
11.0
16.9
22.8
28.9
34.4
41.1
47.0
52.8
64.6
77.2

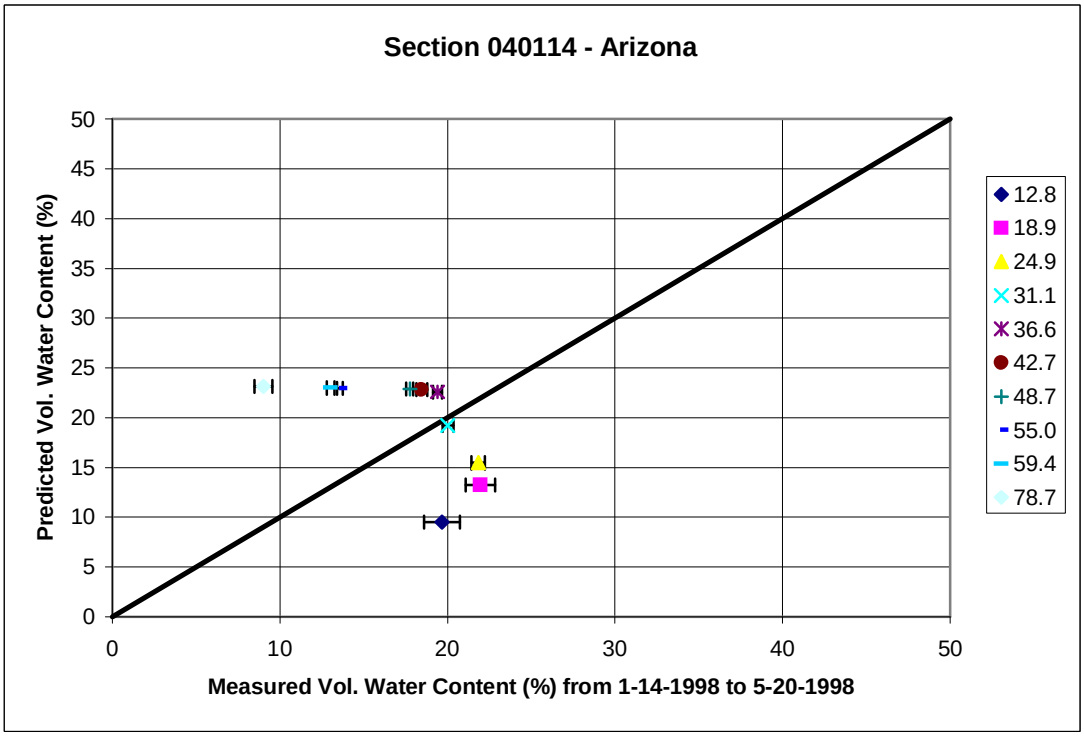

Section 010102 - Alabama
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

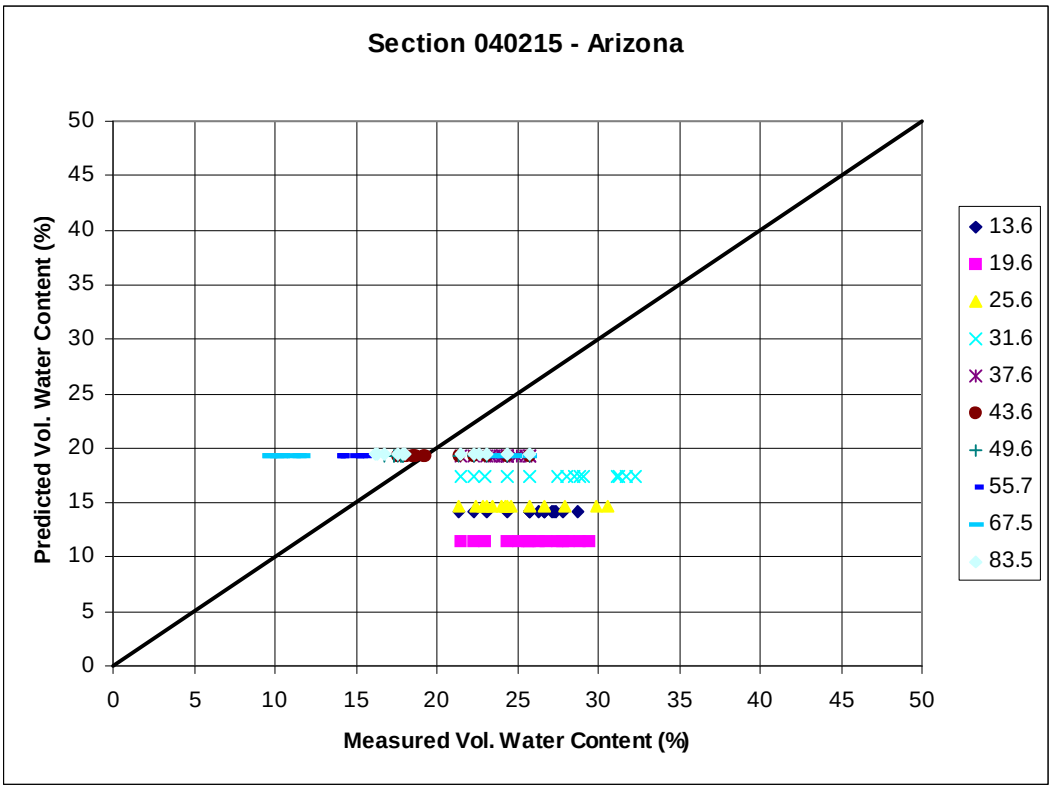

Section 010102 - Alabama
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-20-1998 to 11-21-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

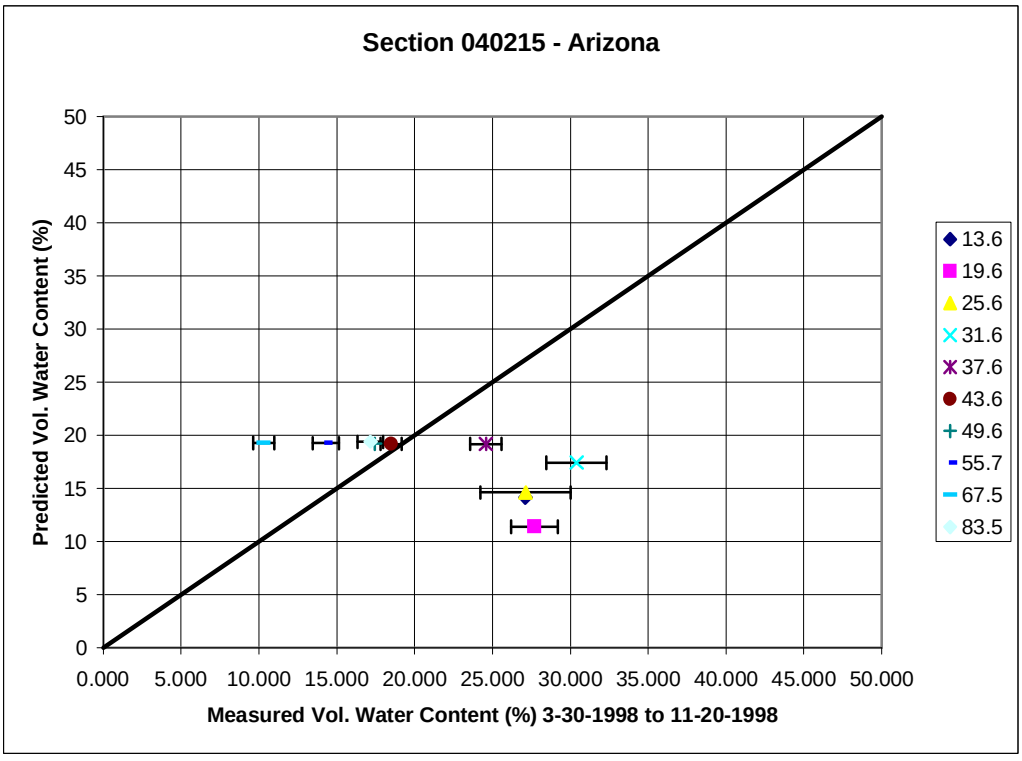

Section 040113 - Arizona
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0
10
20
30
40
50
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6

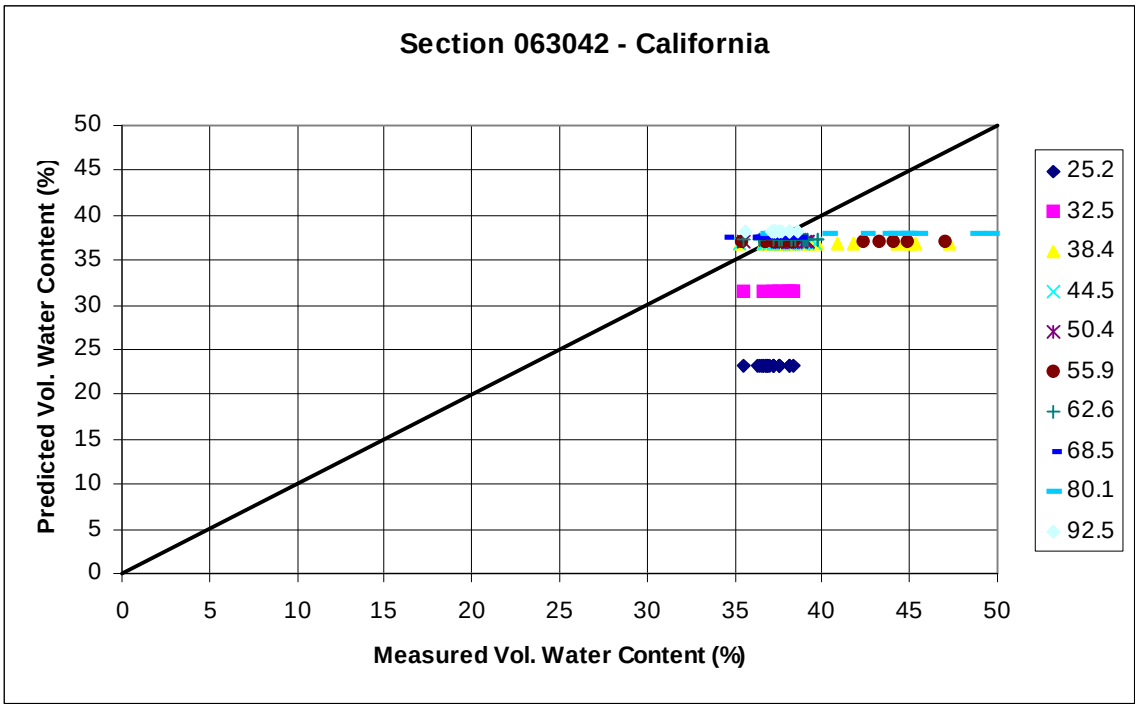

Section 040113 - Arizona
Predicted Vol. Water Content (%)
TDR Measured Vol. Water Content (%) from 12-04-97 to 11-17-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
10.000
20.000
30.000
40.000
50.000
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6

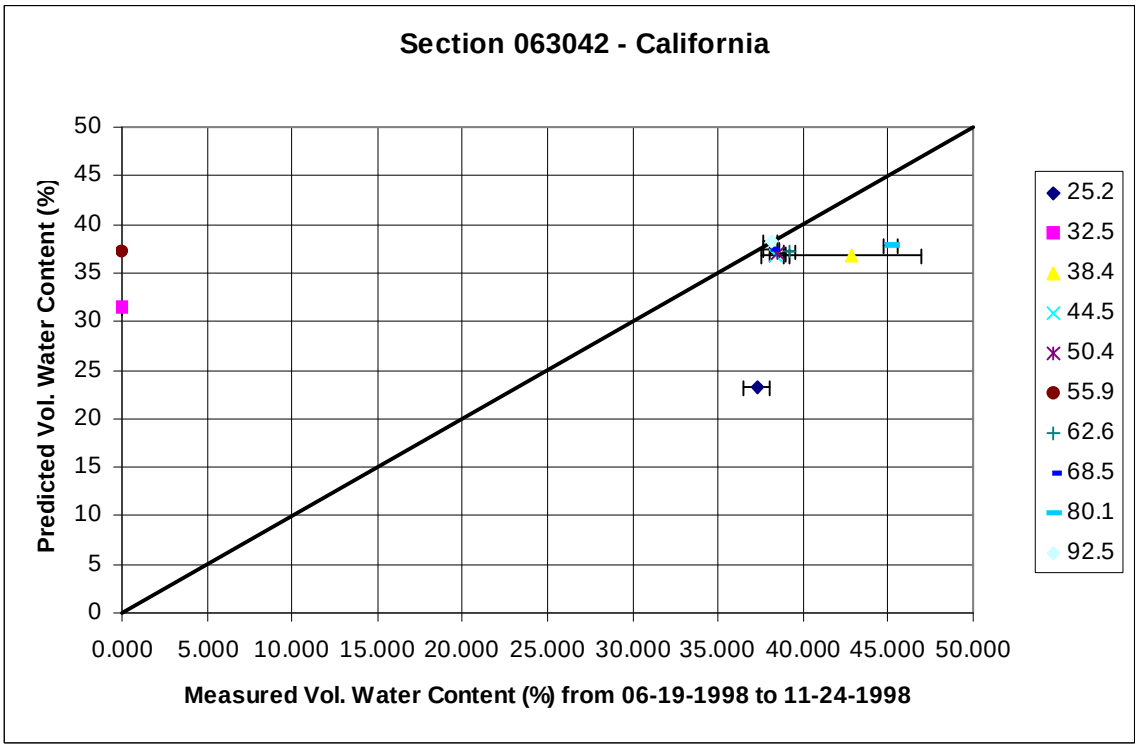

Section 040114 - Arizona
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0
10
20
30
40
50
12.8
18.9
24.9
31.1
36.6
42.7
48.7
55.0
59.4
78.7

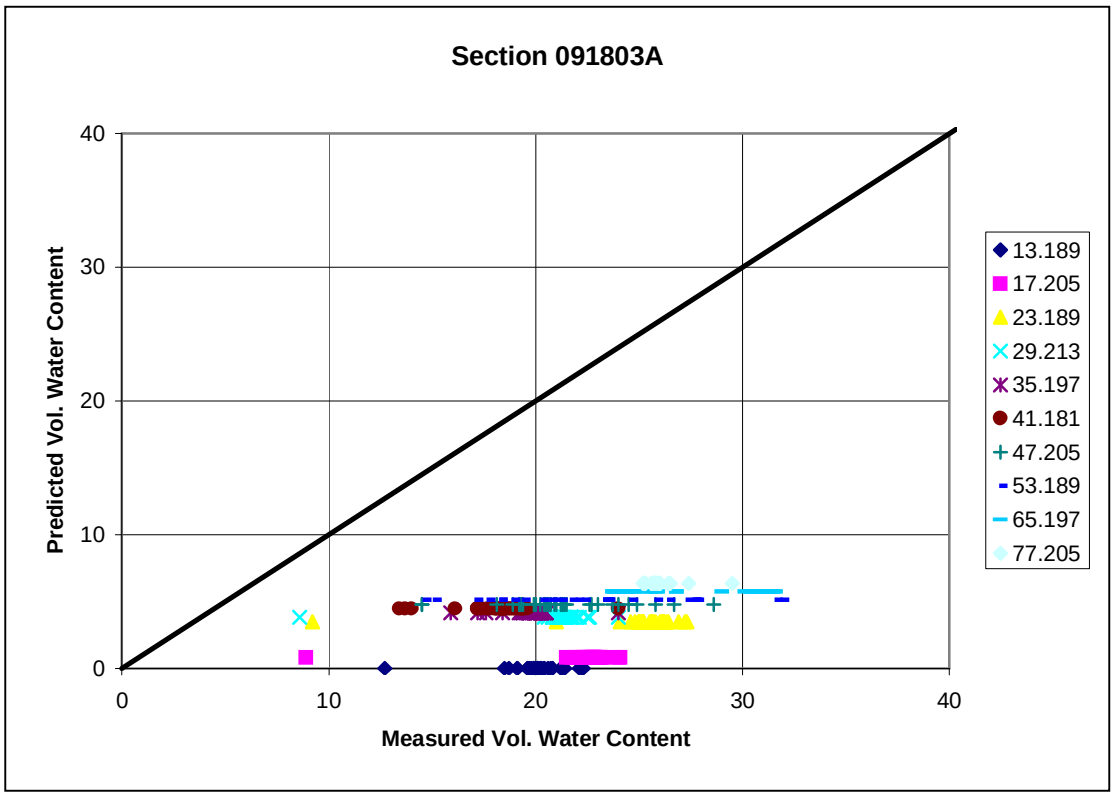

Section 040114 - Arizona
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 1-14-1998 to 5-20-1998
0
5
10
15
20
25
30
35
40
45
50
0
10
20
30
40
50
12.8
18.9
24.9
31.1
36.6
42.7
48.7
55.0
59.4
78.7

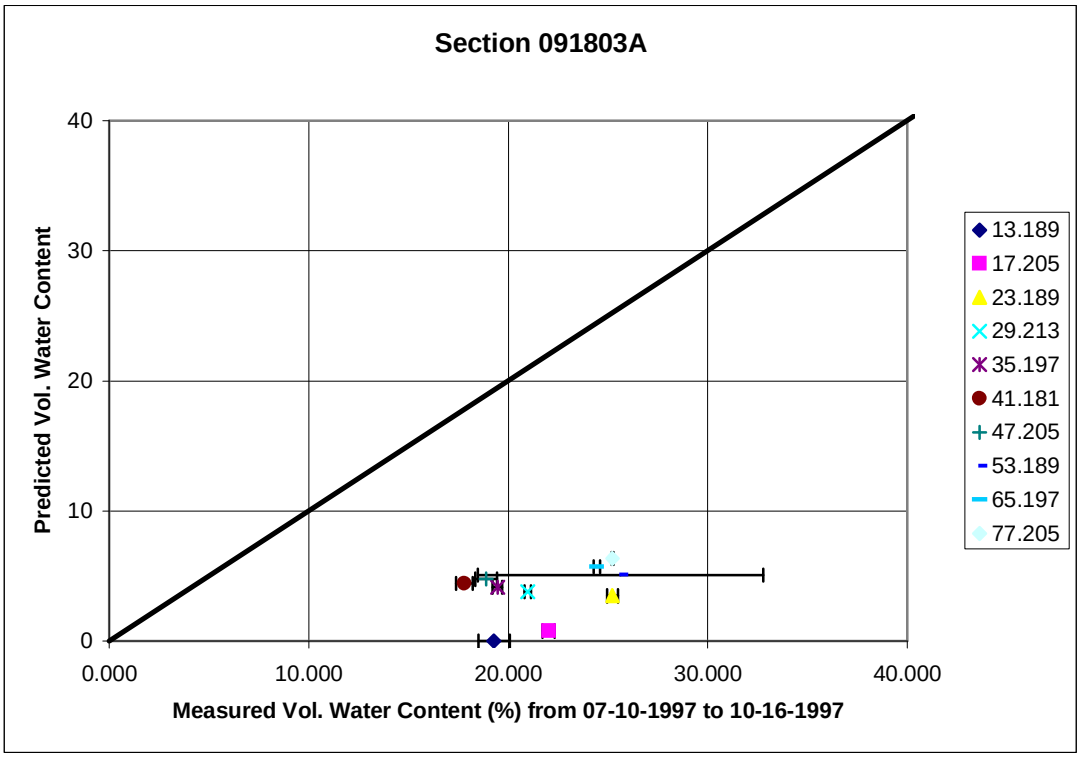

Section 040215 - Arizona
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
13.6
19.6
25.6
31.6
37.6
43.6
49.6
55.7
67.5
83.5

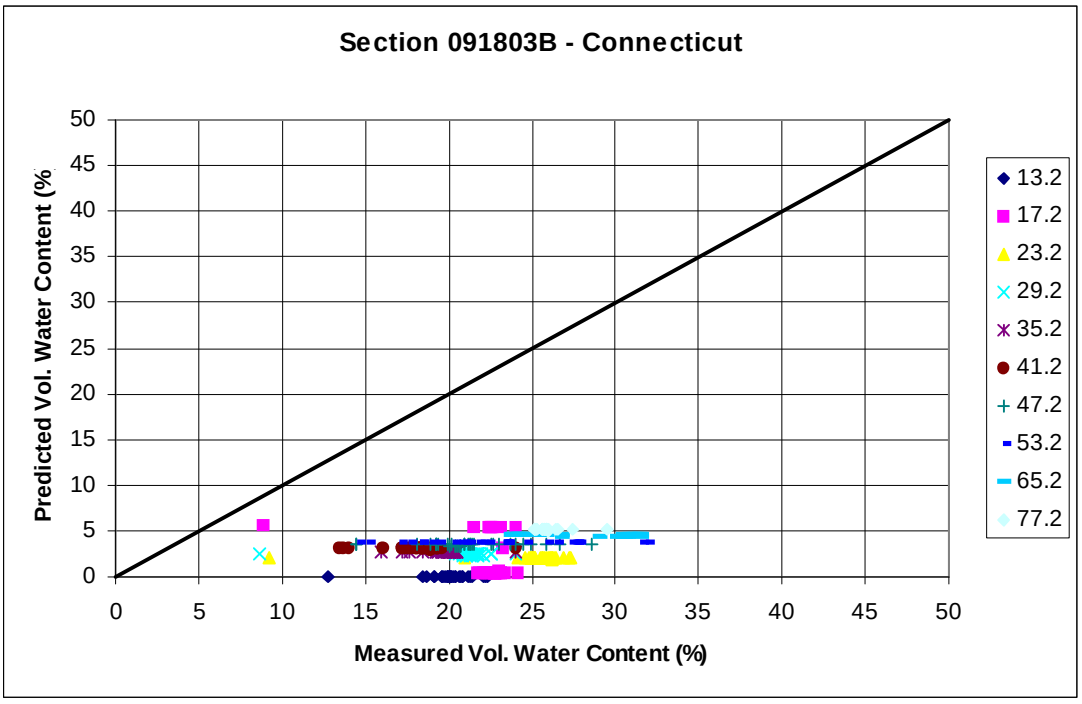

Section 040215 - Arizona
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) 3-30-1998 to 11-20-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
13.6
19.6
25.6
31.6
37.6
43.6
49.6
55.7
67.5
83.5

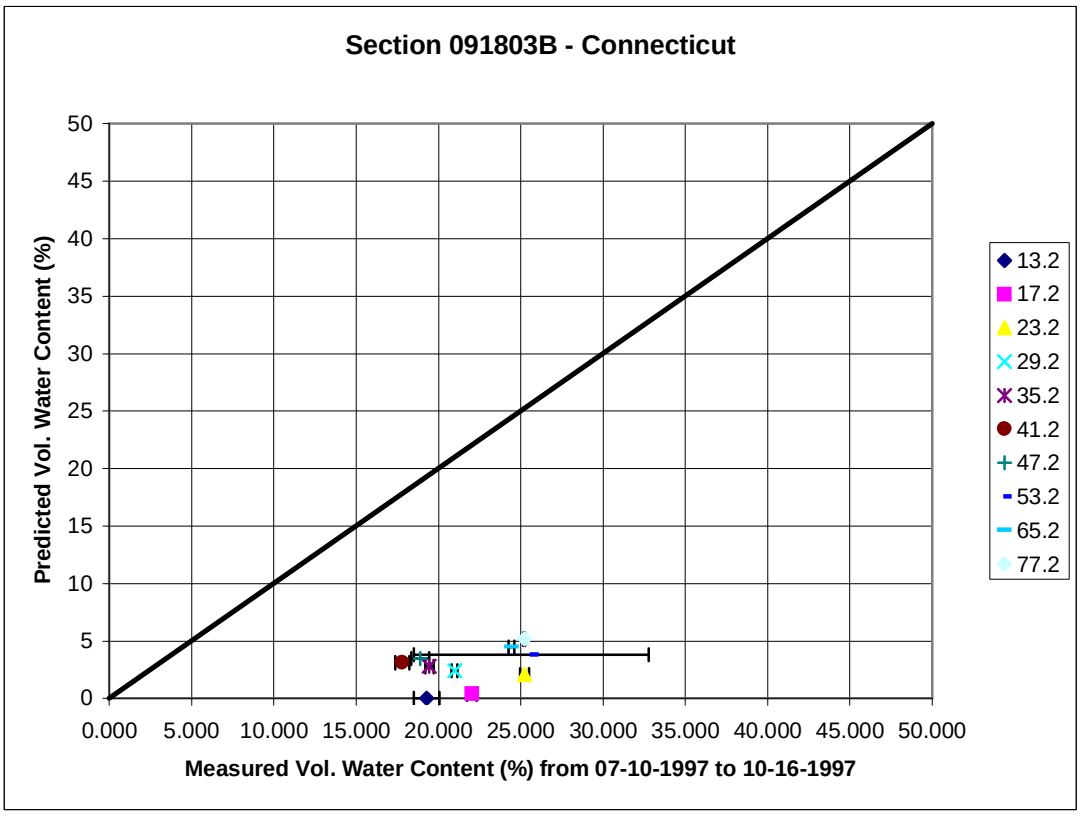

Section 063042 - California
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
25.2
32.5
38.4
44.5
50.4
55.9
62.6
68.5
80.1
92.5


Section 063042 - California
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-19-1998 to 11-24-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
25.2
32.5
38.4
44.5
50.4
55.9
62.6
68.5
80.1
92.5


Section 091803A
Predicted Vol. Water Content
Measured Vol. Water Content
0
10
20
30
40
13.189
17.205
23.189
29.213
35.197
41.181
47.205
53.189
65.197
77.205


Section 091803A
Predicted Vol. Water Content
Measured Vol. Water Content (%) from 07-10-1997 to 10-16-1997
0
10
20
30
40
0.000
10.000
20.000
30.000
40.000
13.189
17.205
23.189
29.213
35.197
41.181
47.205
53.189
65.197
77.205


Section 091803B - Connecticut
Predicted Vol. Water Content (%
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
13.2
17.2
23.2
29.2
35.2
41.2
47.2
53.2
65.2
77.2


Section 091803B - Connecticut
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-10-1997 to 10-16-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
13.2
17.2
23.2
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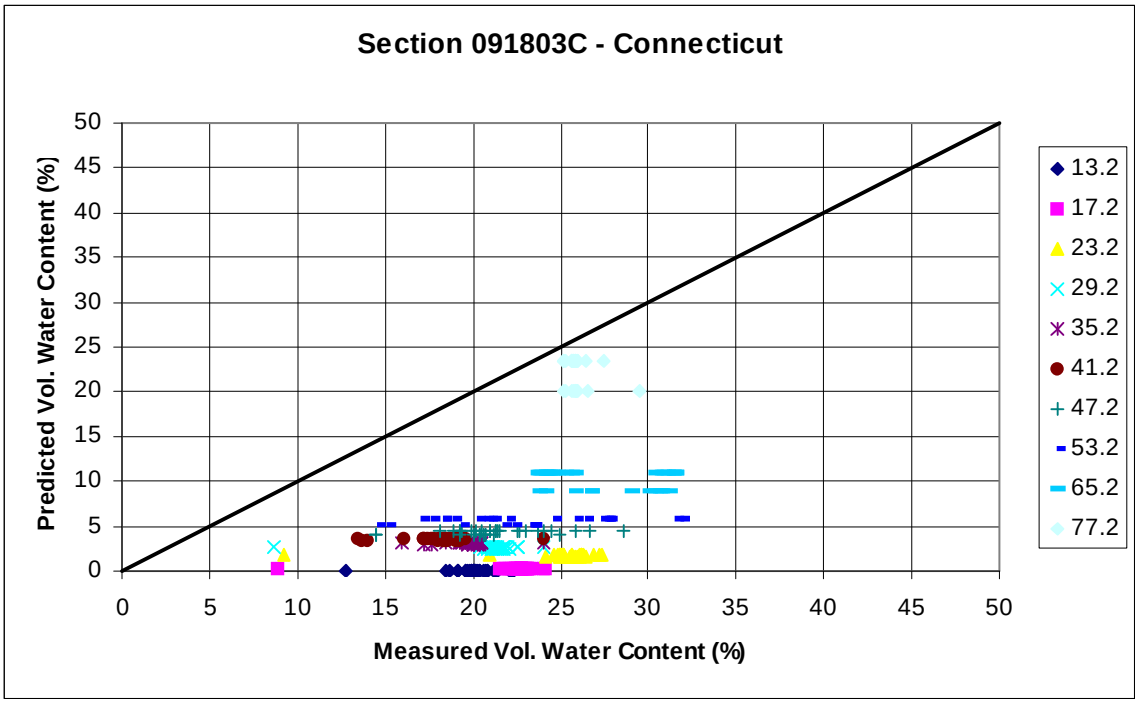
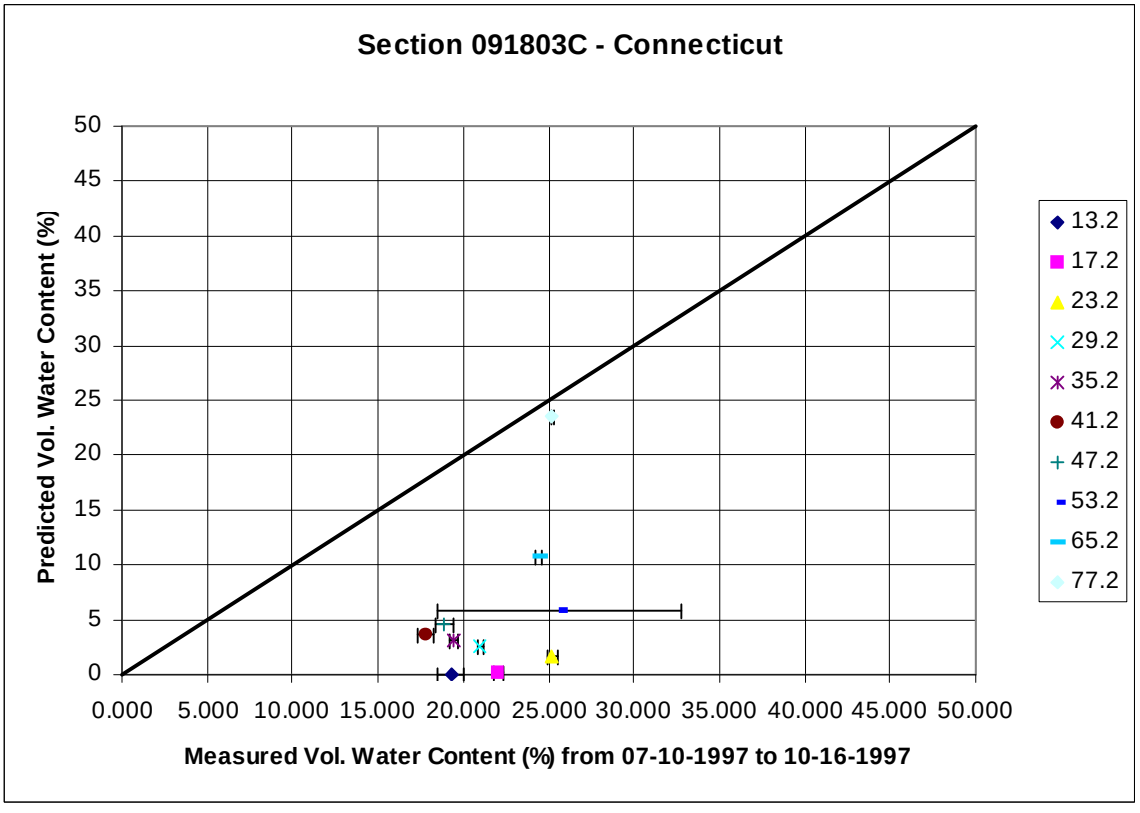
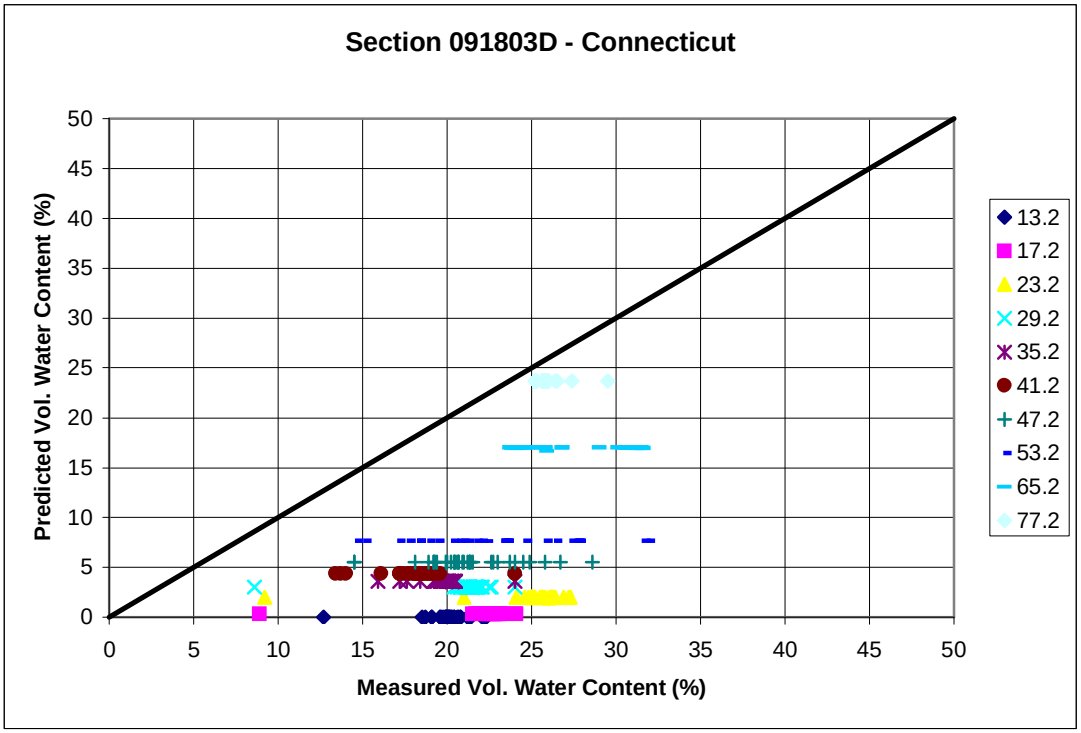
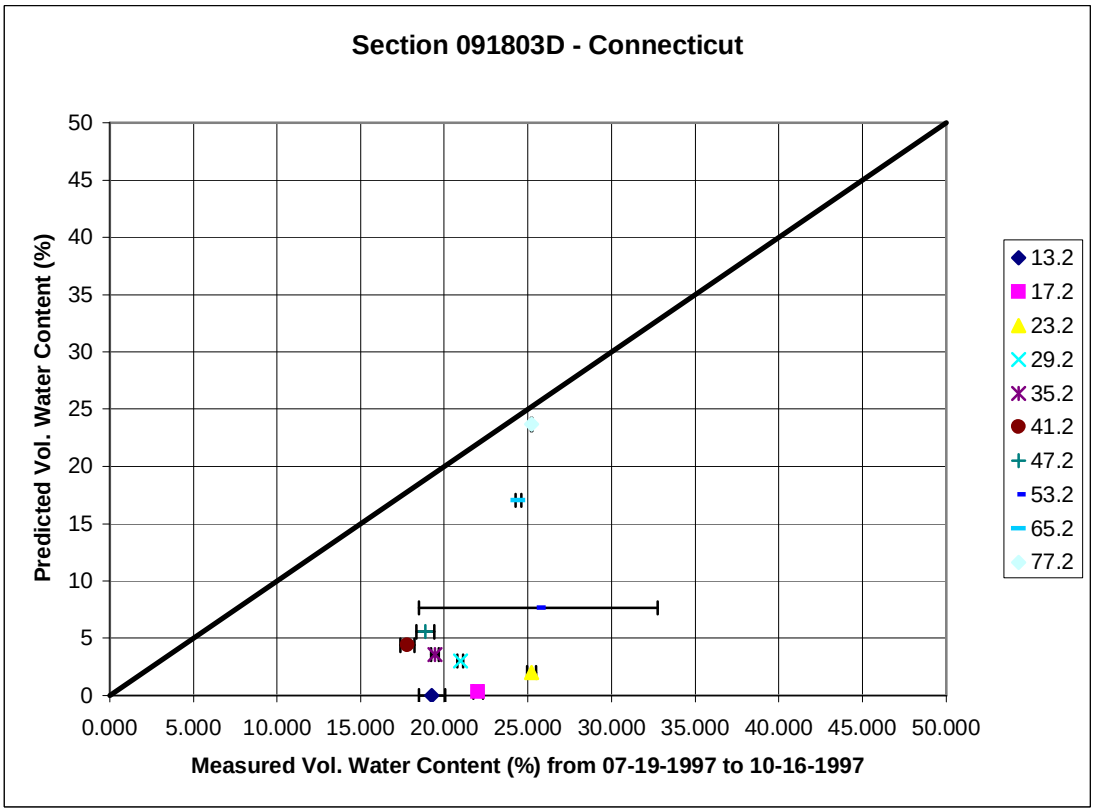
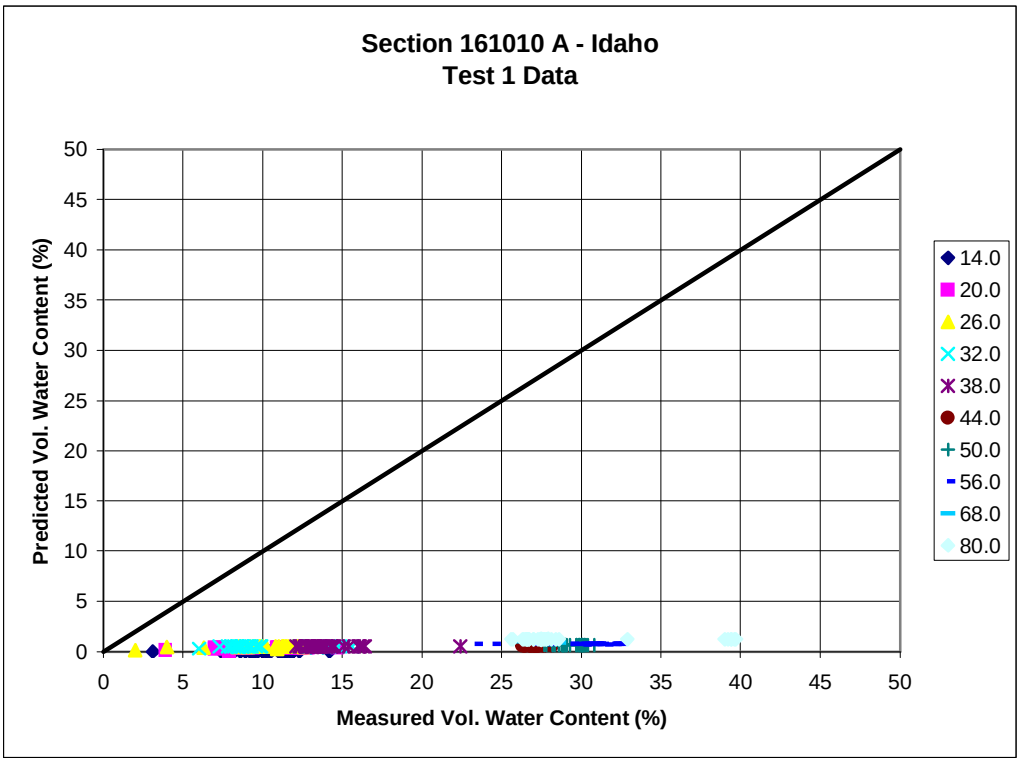
35.2
41.2
47.2
53.2
65.2
77.2

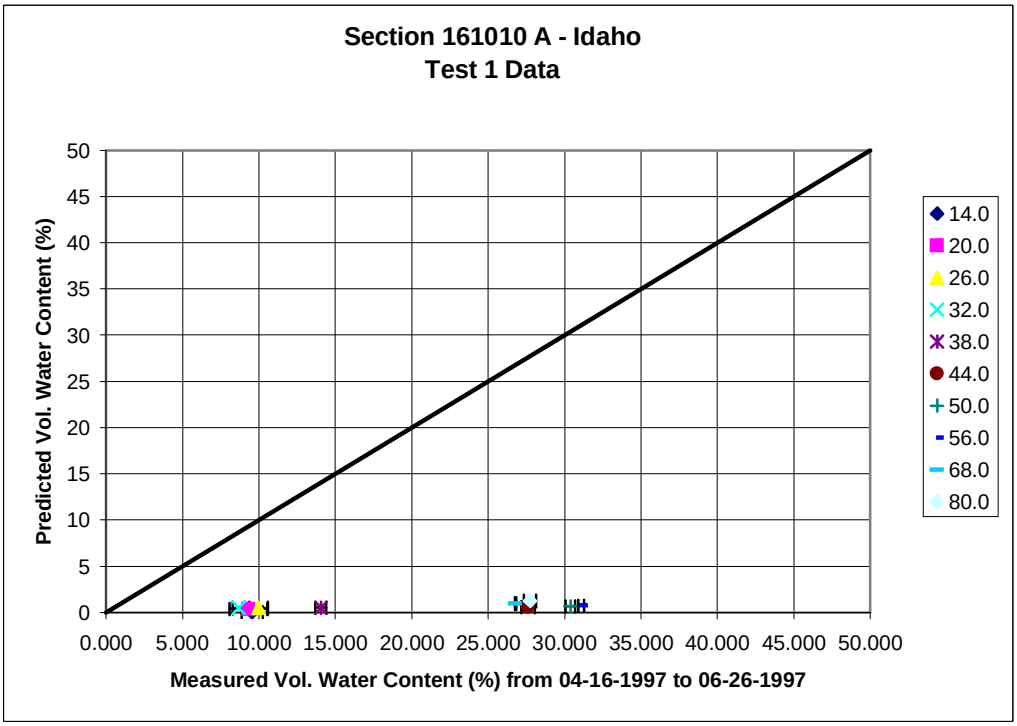

Section 091803C - Connecticut
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
13.2
17.2
23.2
29.2
35.2
41.2
47.2
53.2
65.2
77.2

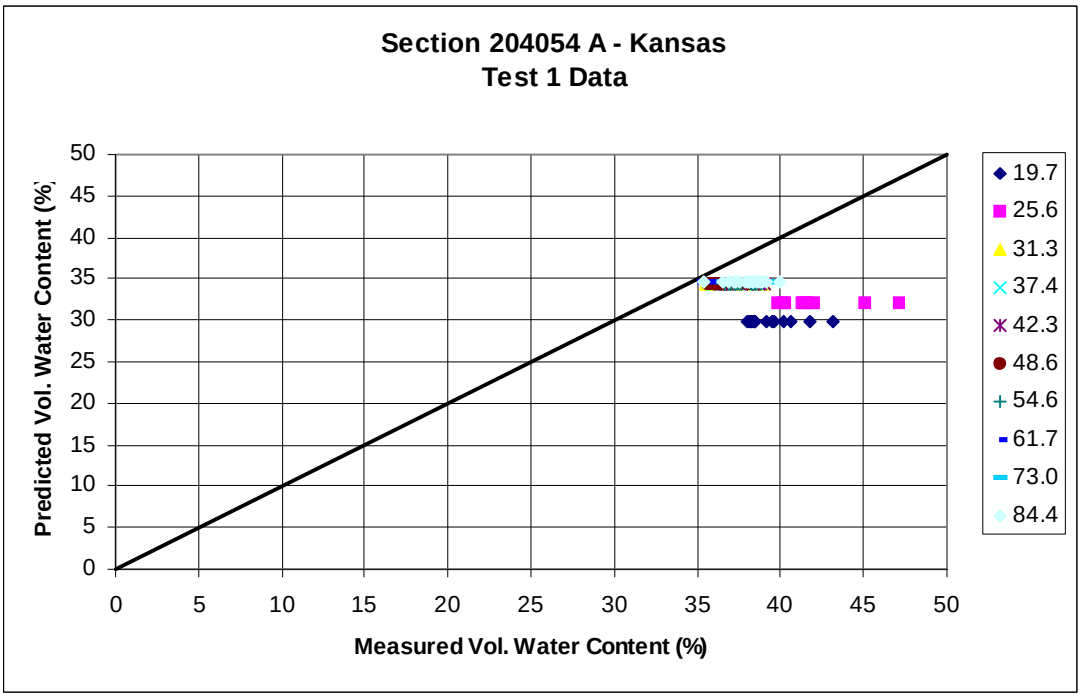

Section 091803C - Connecticut
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-10-1997 to 10-16-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
13.2
17.2
23.2
29.2
35.2
41.2
47.2
53.2
65.2
77.2

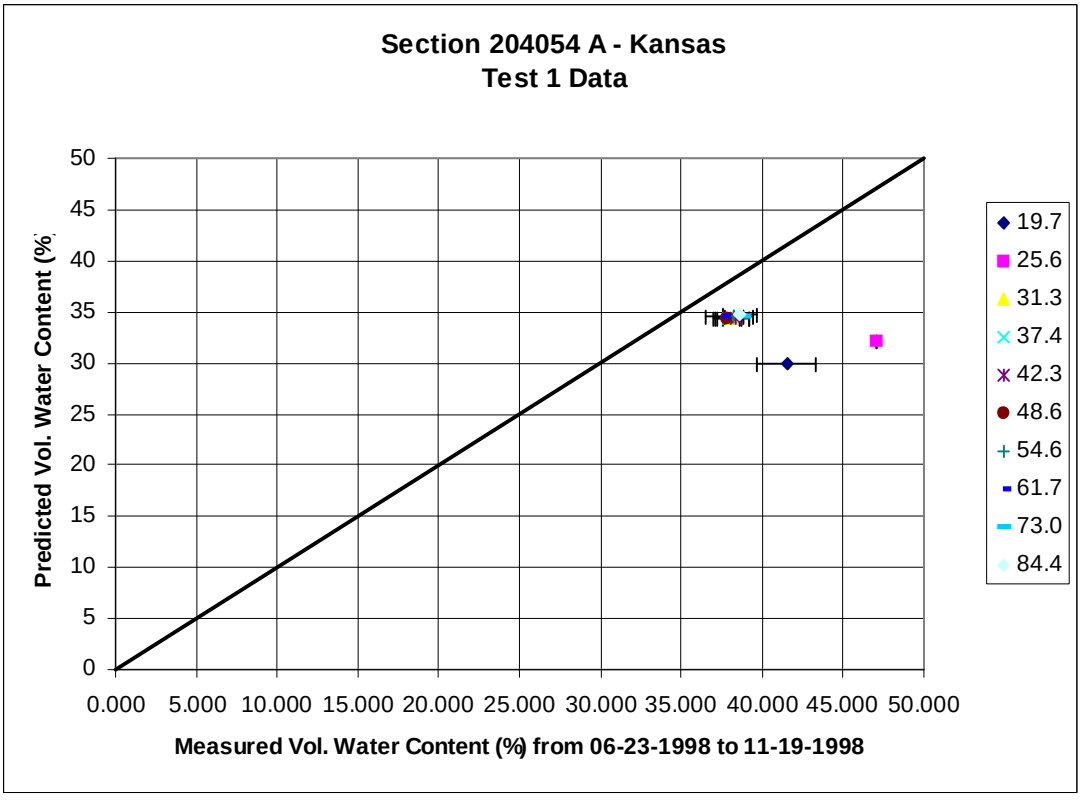

Section 091803D - Connecticut
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
13.2
17.2
23.2
29.2
35.2
41.2
47.2
53.2
65.2
77.2

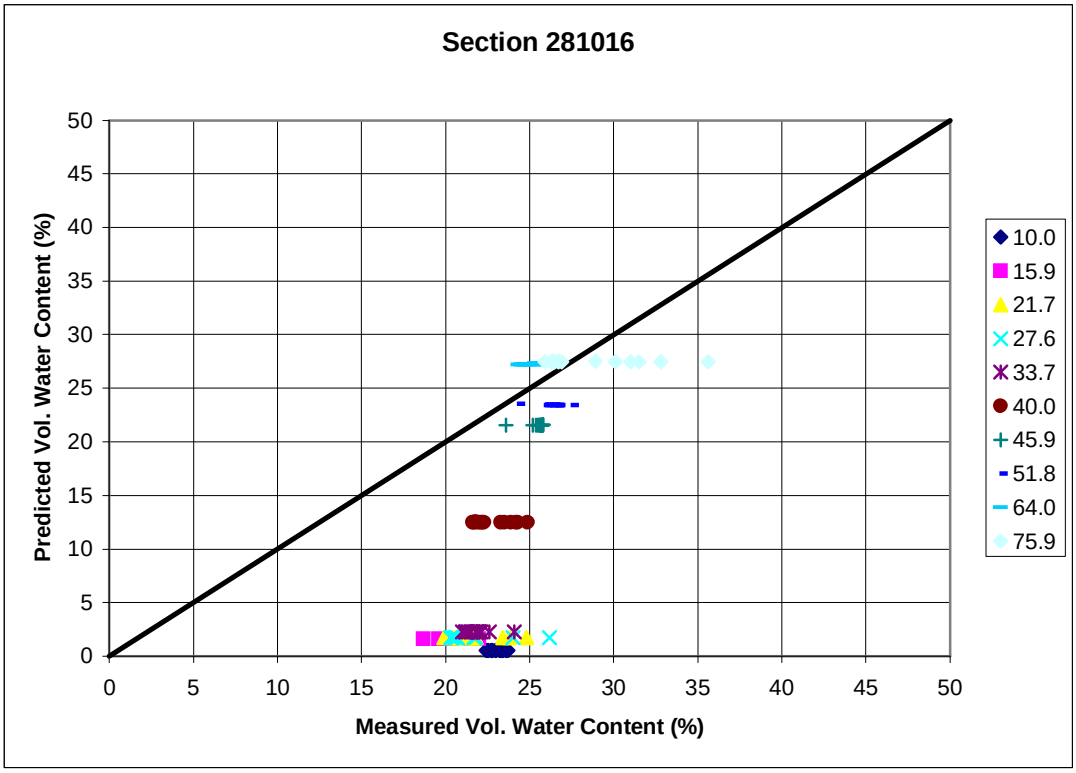

Section 091803D - Connecticut
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-19-1997 to 10-16-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
13.2
17.2
23.2
29.2
35.2
41.2
47.2
53.2
65.2
77.2

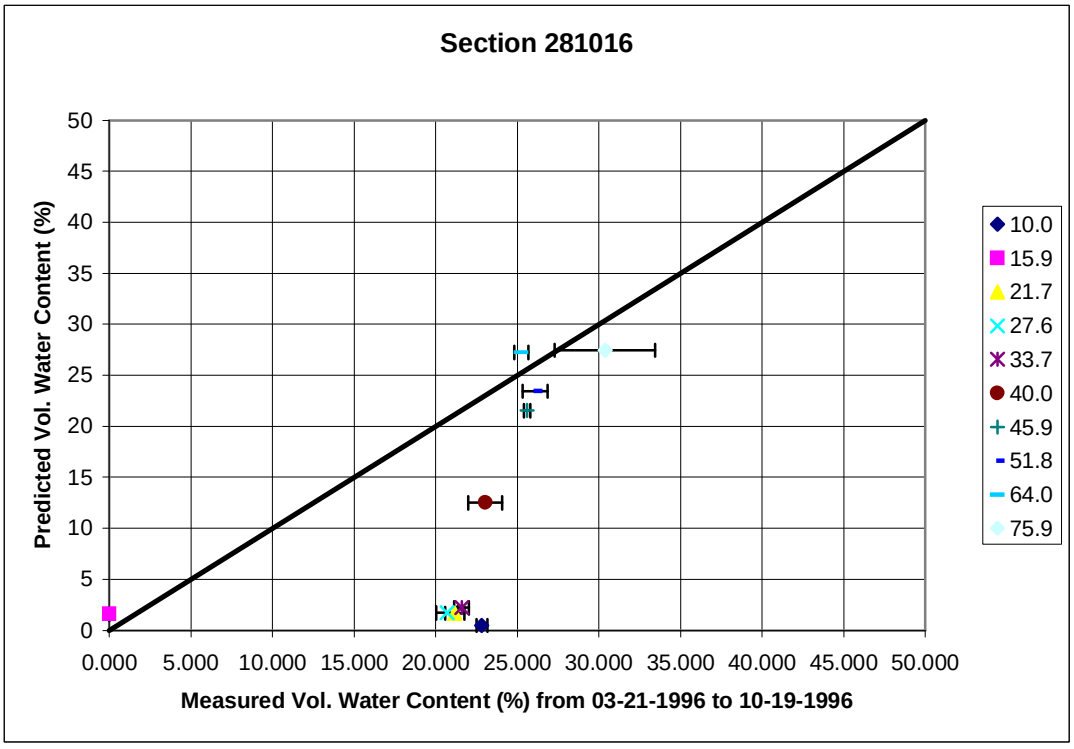

Section 161010 A - Idaho
Test 1 Data
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
14.0
20.0
26.0
32.0
38.0
44.0
50.0
56.0
68.0
80.0

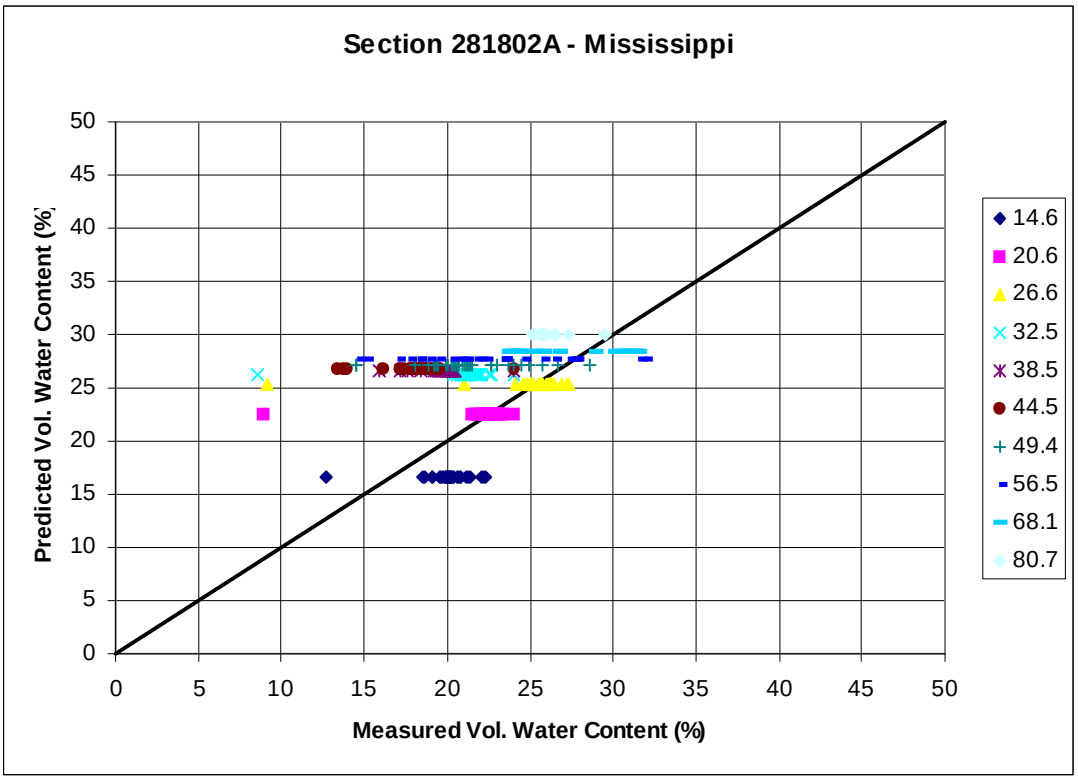

Section 161010 A - Idaho
Test 1 Data
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-16-1997 to 06-26-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
14.0
20.0
26.0
32.0
38.0
44.0
50.0
56.0
68.0
80.0

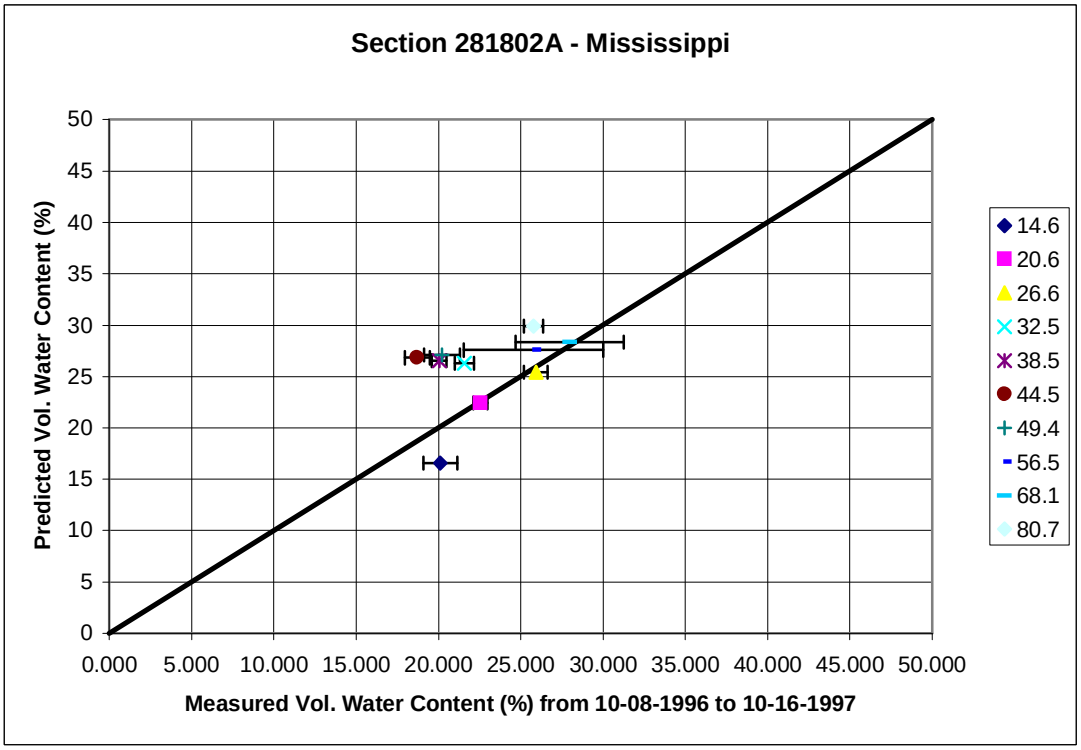

Section 204054 A - Kansas
Test 1 Data
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
19.7
25.6
31.3
37.4
42.3
48.6
54.6
61.7
73.0
84.4

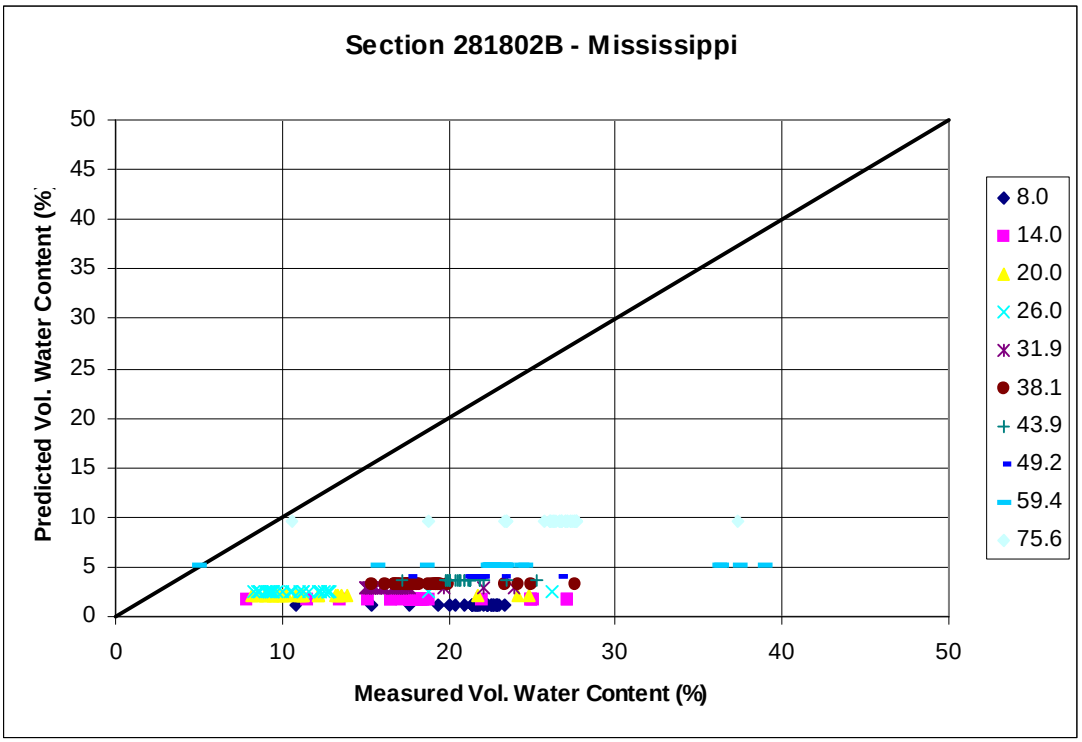

Section 204054 A - Kansas
Test 1 Data
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-23-1998 to 11-19-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
19.7
25.6
31.3
37.4
42.3
48.6
54.6
61.7
73.0
84.4

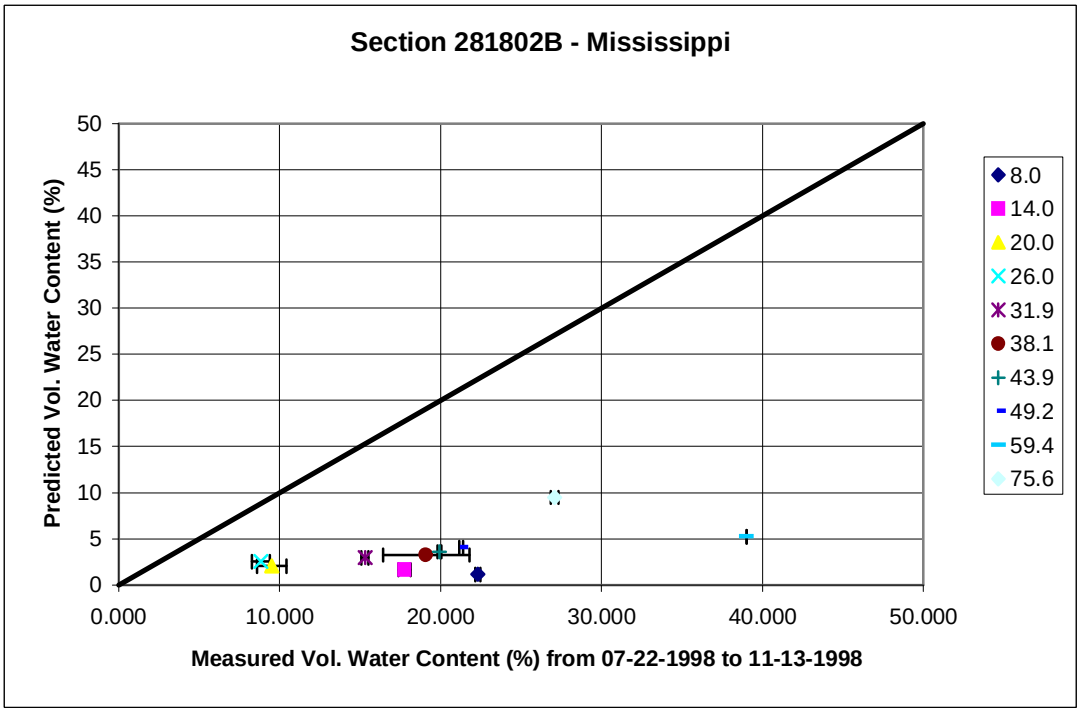

Section 281016
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

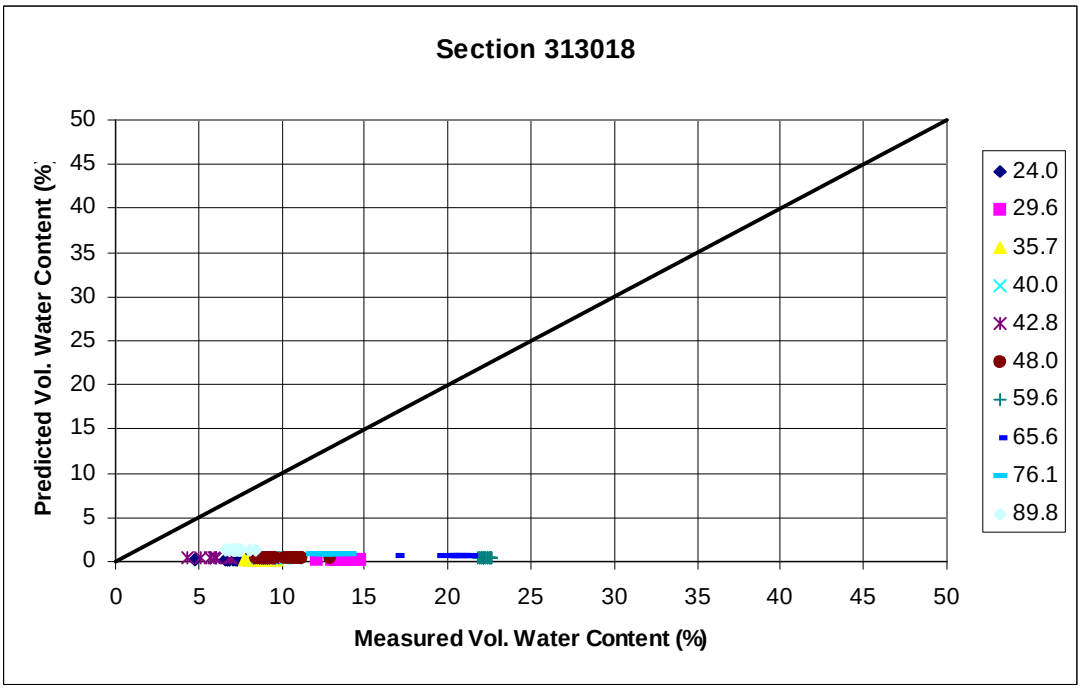

Section 281016
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 03-21-1996 to 10-19-1996
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

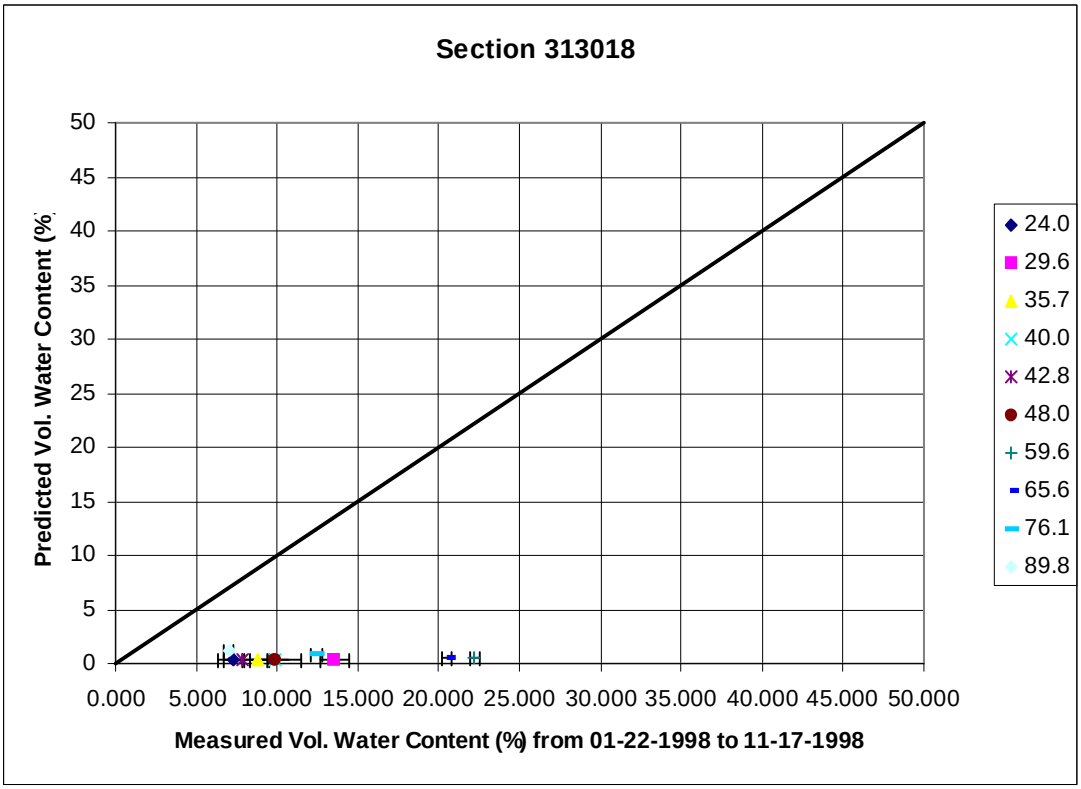

Section 281802A - Mississippi
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
14.6
20.6
26.6
32.5
38.5
44.5
49.4
56.5
68.1
80.7

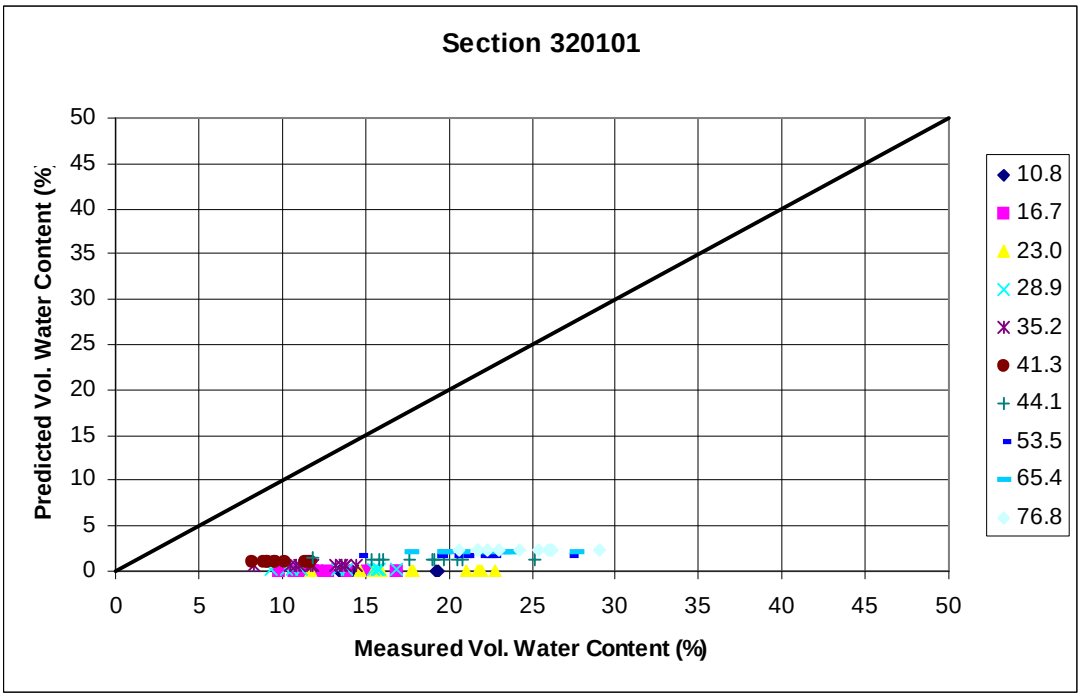

Section 281802A - Mississippi
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 10-08-1996 to 10-16-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
14.6
20.6
26.6
32.5
38.5
44.5
49.4
56.5
68.1
80.7

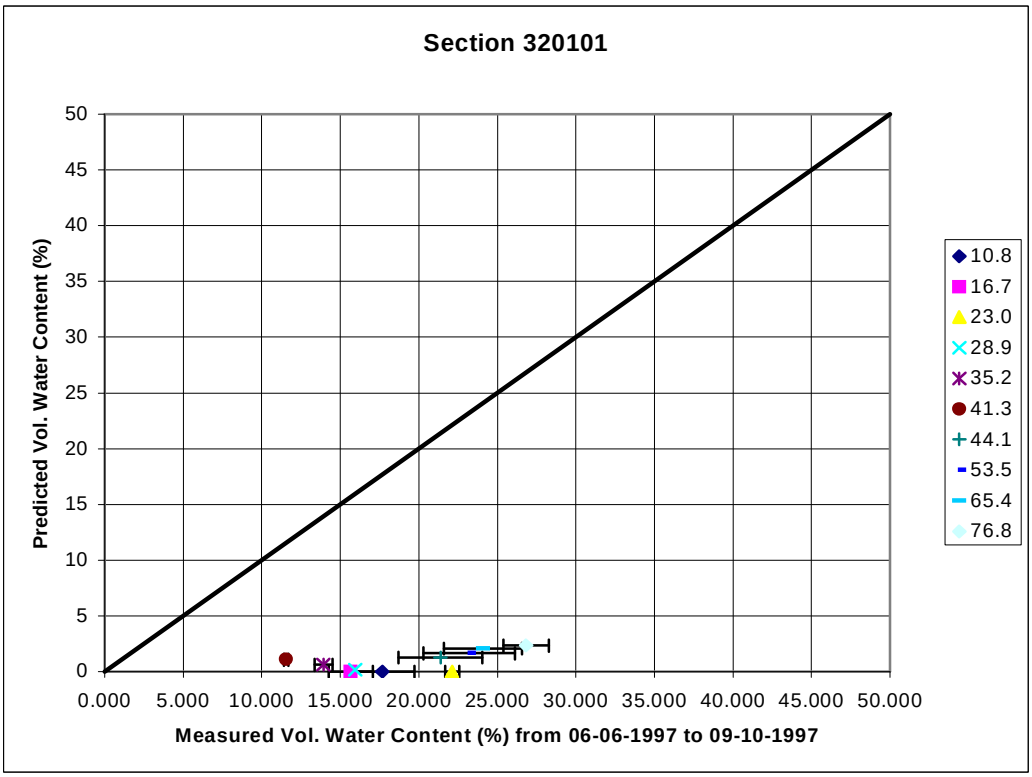

Section 281802B - Mississippi
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0
10
20
30
40
50
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6

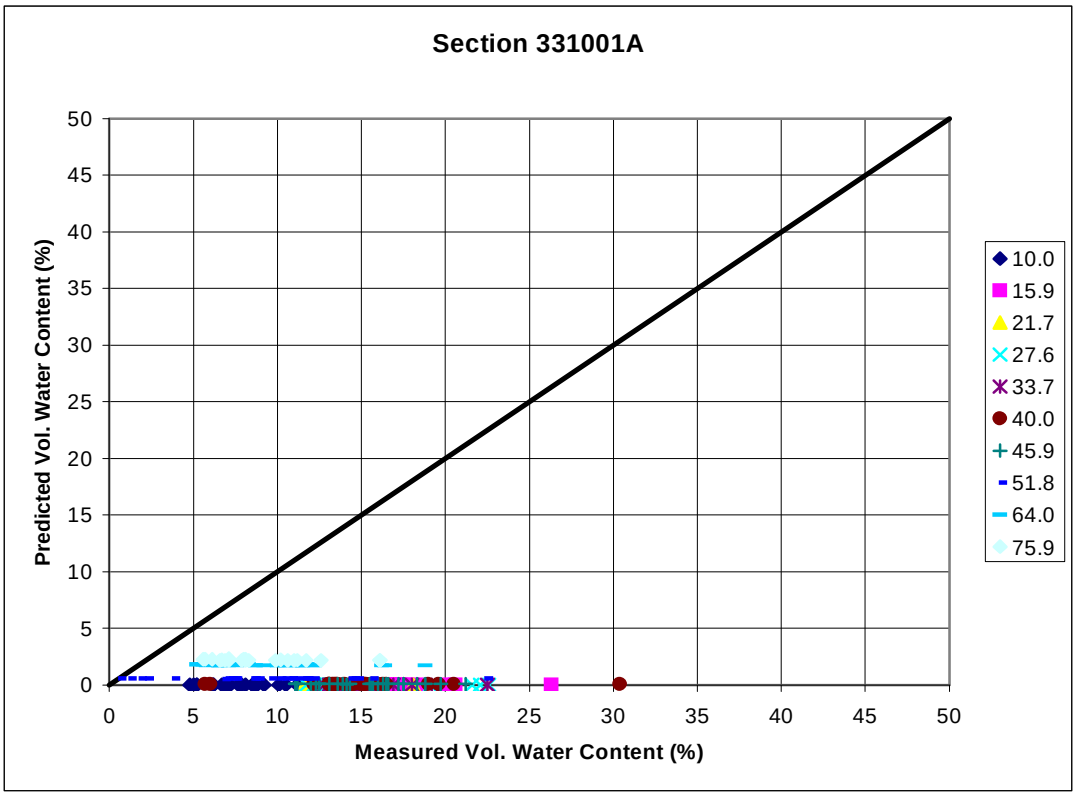

Section 281802B - Mississippi
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-22-1998 to 11-13-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
10.000
20.000
30.000
40.000
50.000
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6

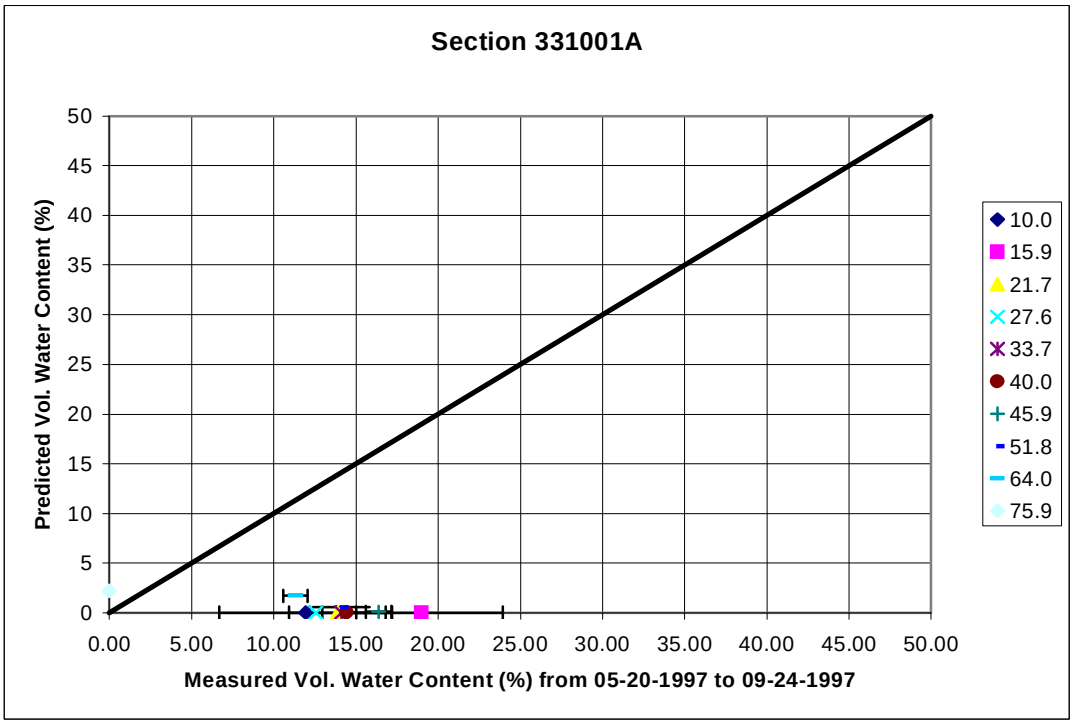

Section 313018
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
24.0
29.6
35.7
40.0
42.8
48.0
59.6
65.6
76.1
89.8

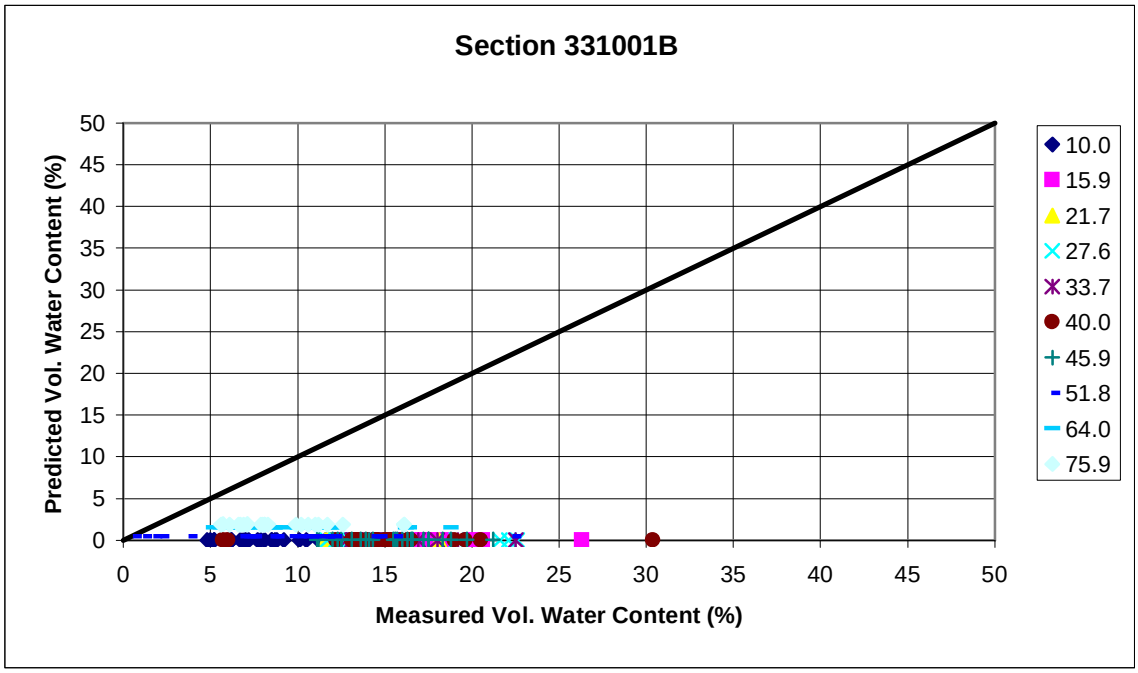

Section 313018
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 01-22-1998 to 11-17-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
24.0
29.6
35.7
40.0
42.8
48.0
59.6
65.6
76.1
89.8

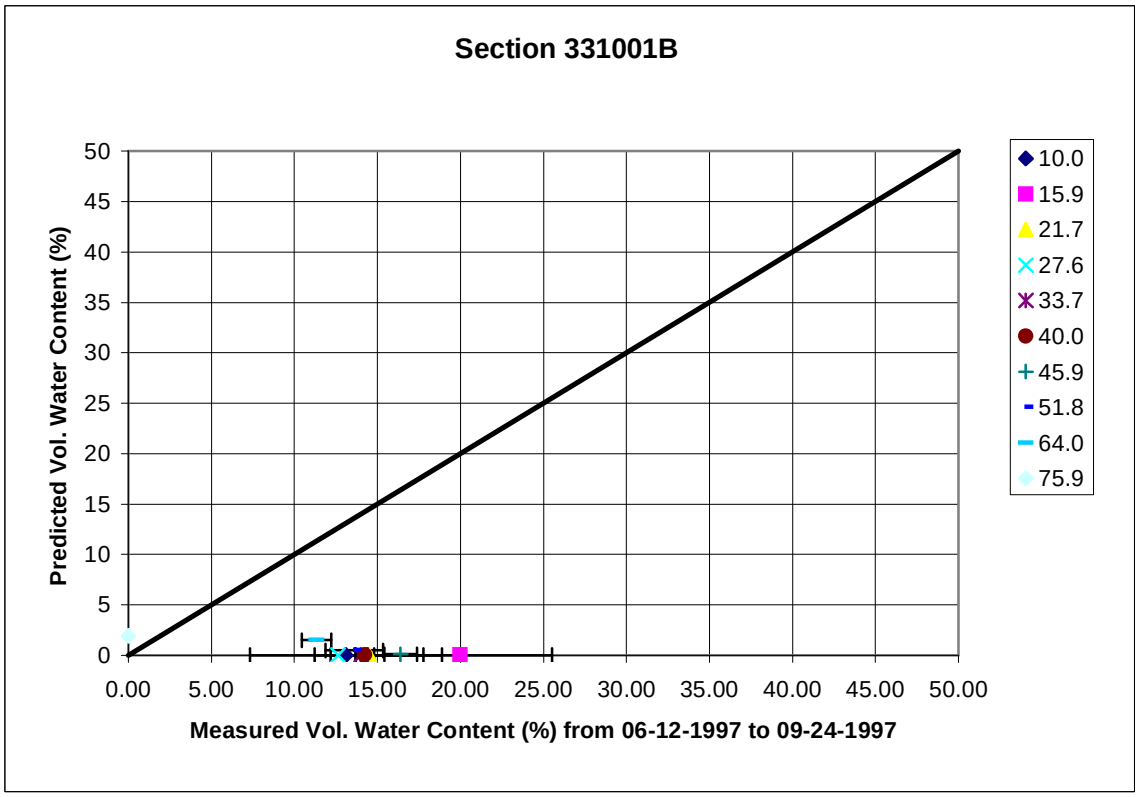

Section 320101
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.8
16.7
23.0
28.9
35.2
41.3
44.1
53.5
65.4
76.8

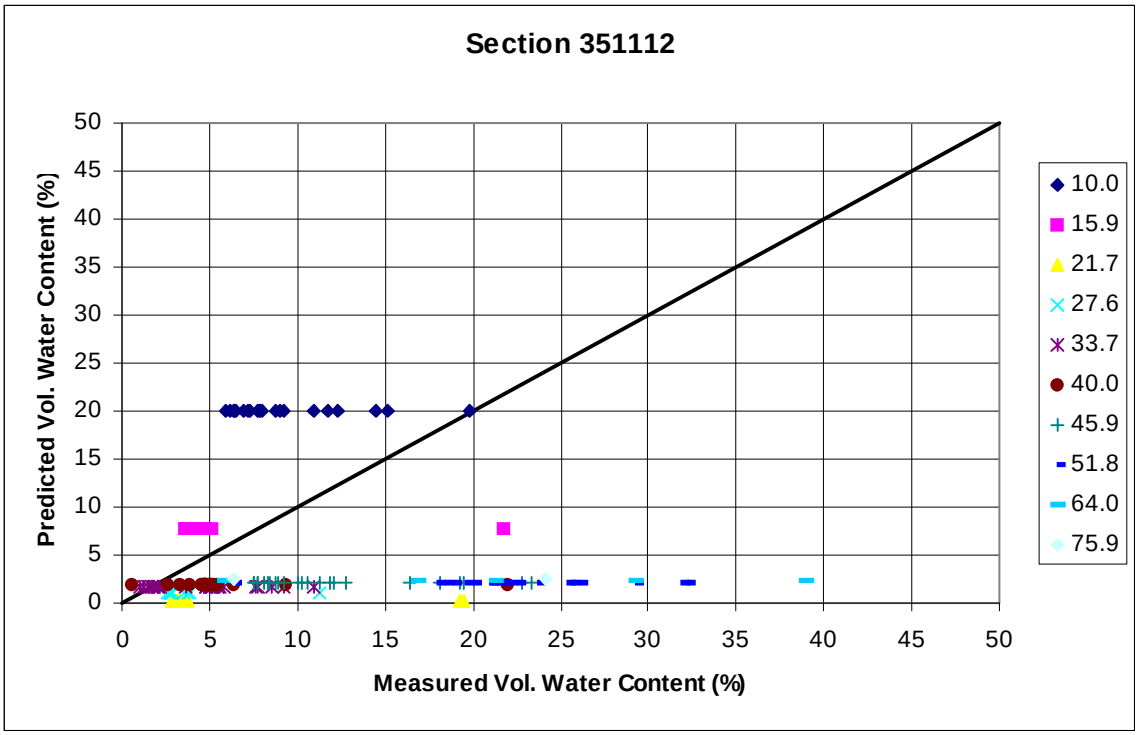

Section 320101
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-06-1997 to 09-10-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
10.8
16.7
23.0
28.9
35.2
41.3
44.1
53.5
65.4
76.8

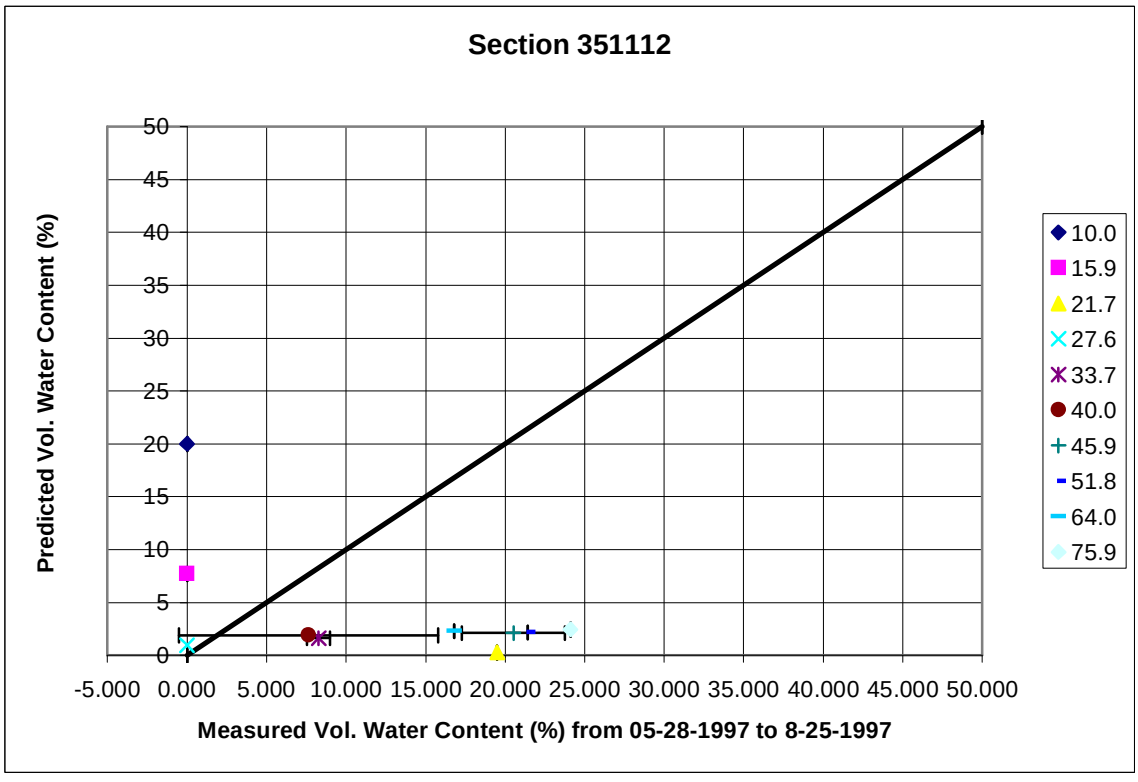

Section 331001A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

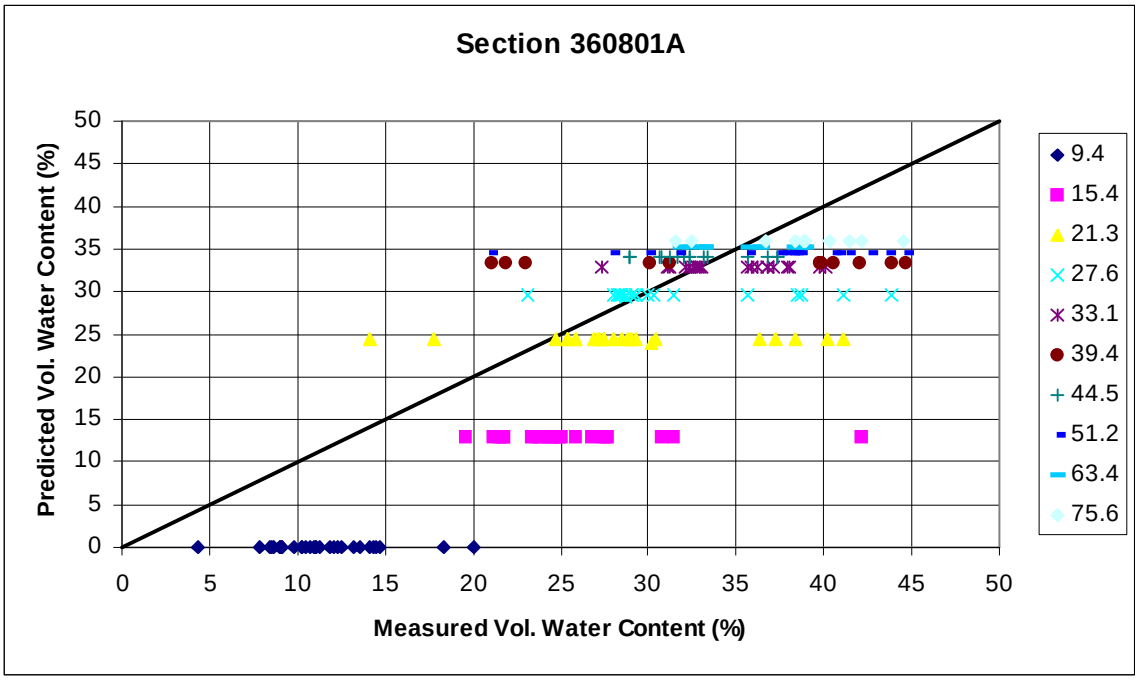

Section 331001A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 05-20-1997 to 09-24-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

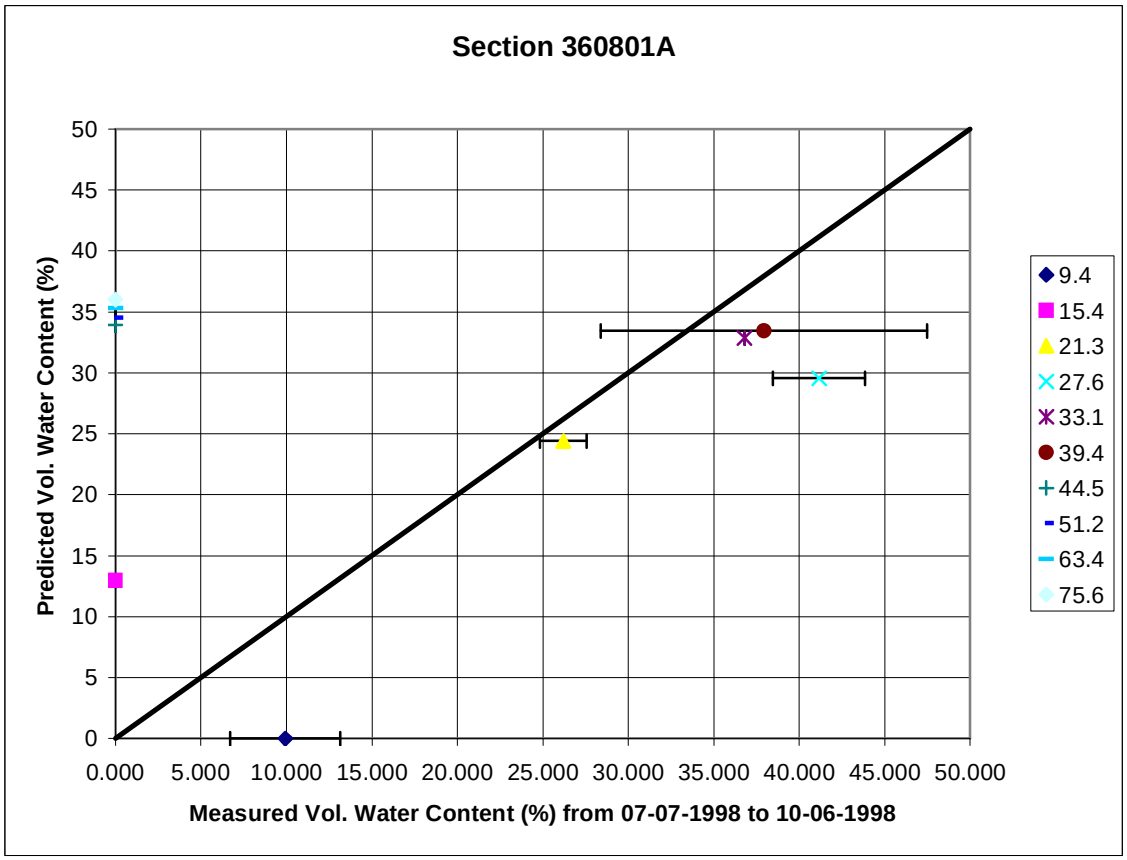

Section 331001B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

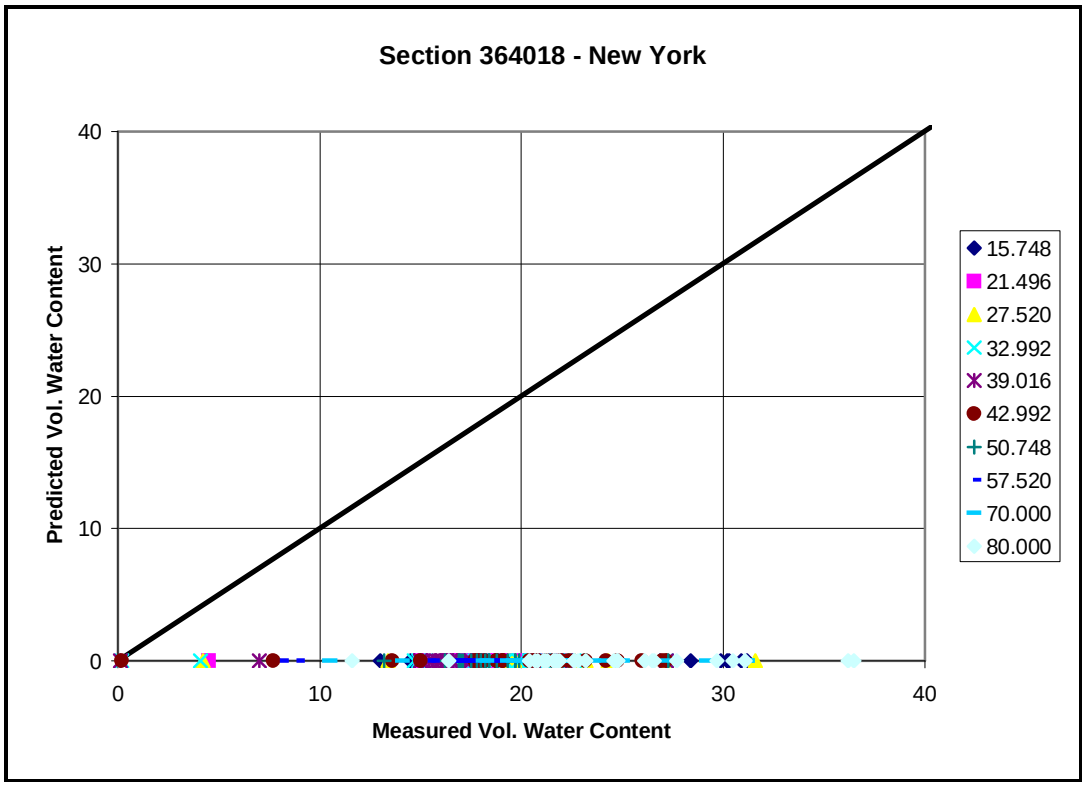

Section 331001B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-12-1997 to 09-24-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

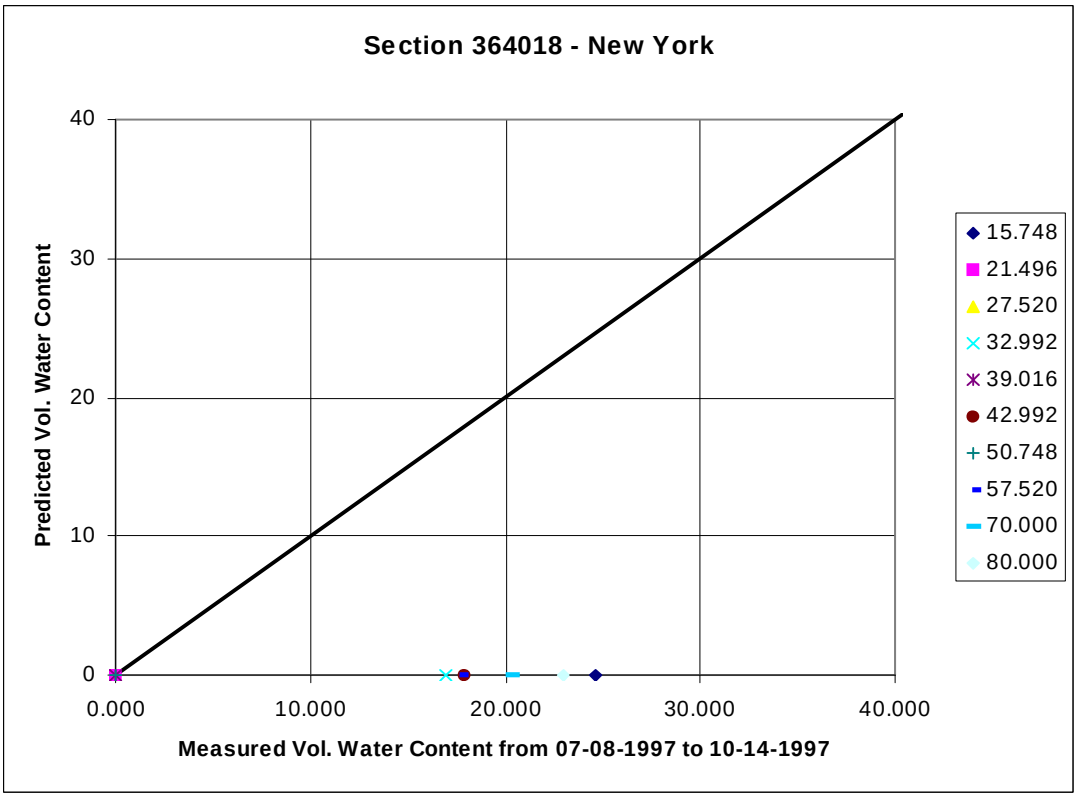

Section 351112
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

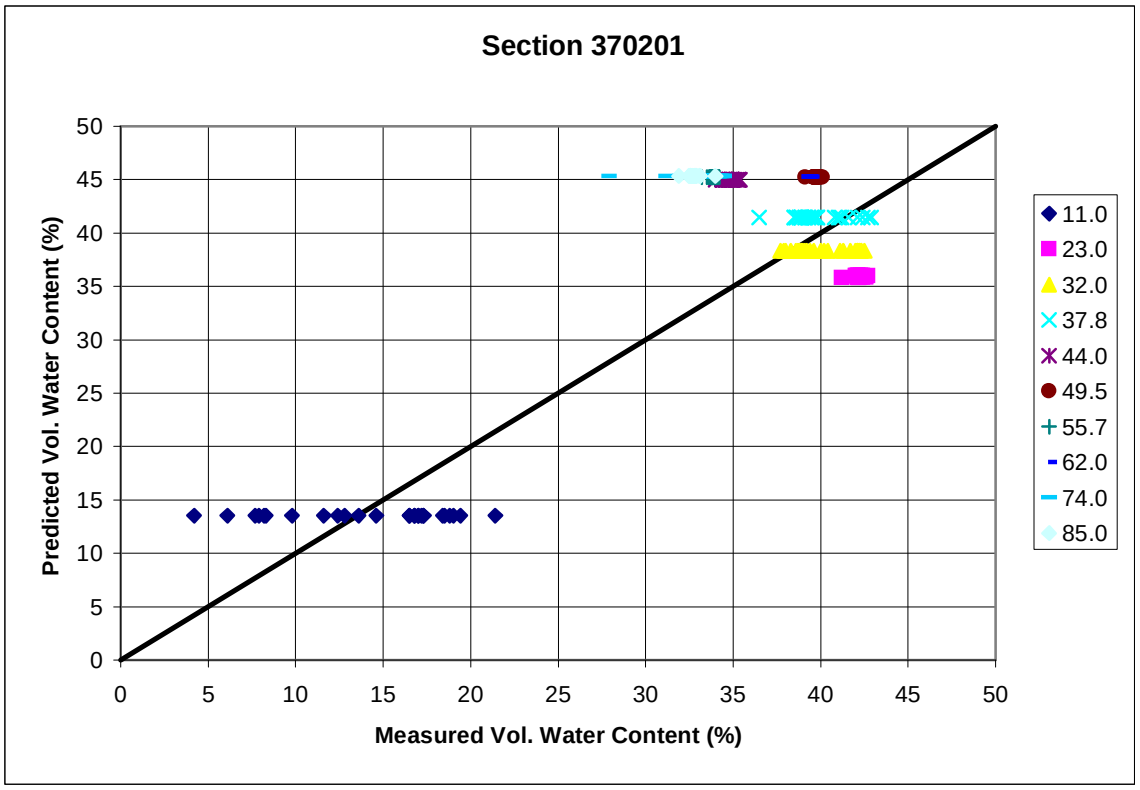

Section 351112
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 05-28-1997 to 8-25-1997
-5.000
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

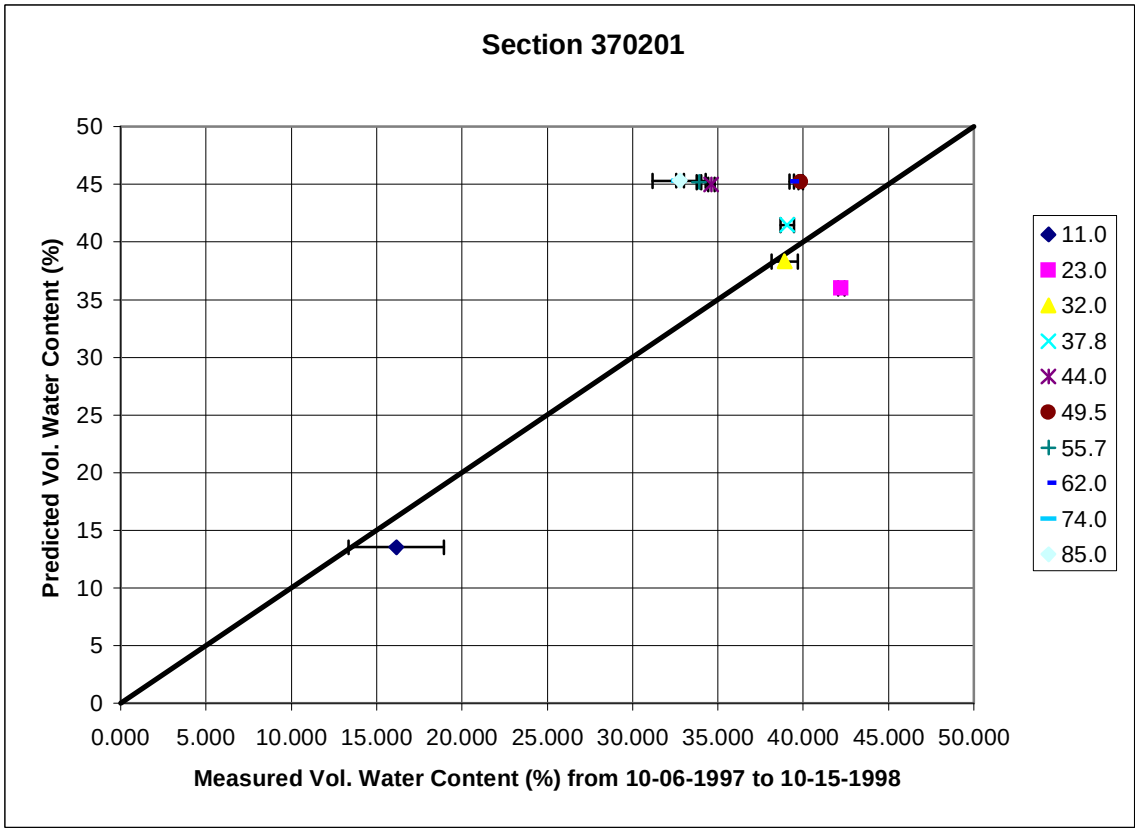

Section 360801A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
9.4
15.4
21.3
27.6
33.1
39.4
44.5
51.2
63.4
75.6

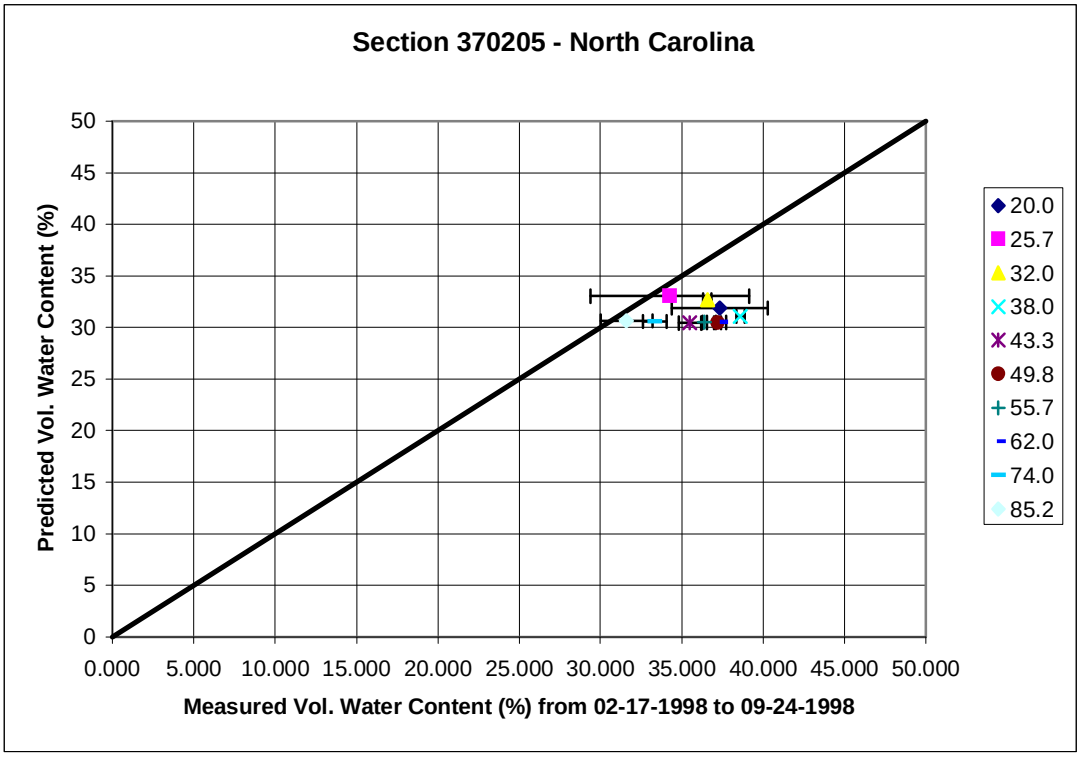

Section 360801A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-07-1998 to 10-06-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
9.4
15.4
21.3
27.6
33.1
39.4
44.5
51.2
63.4
75.6

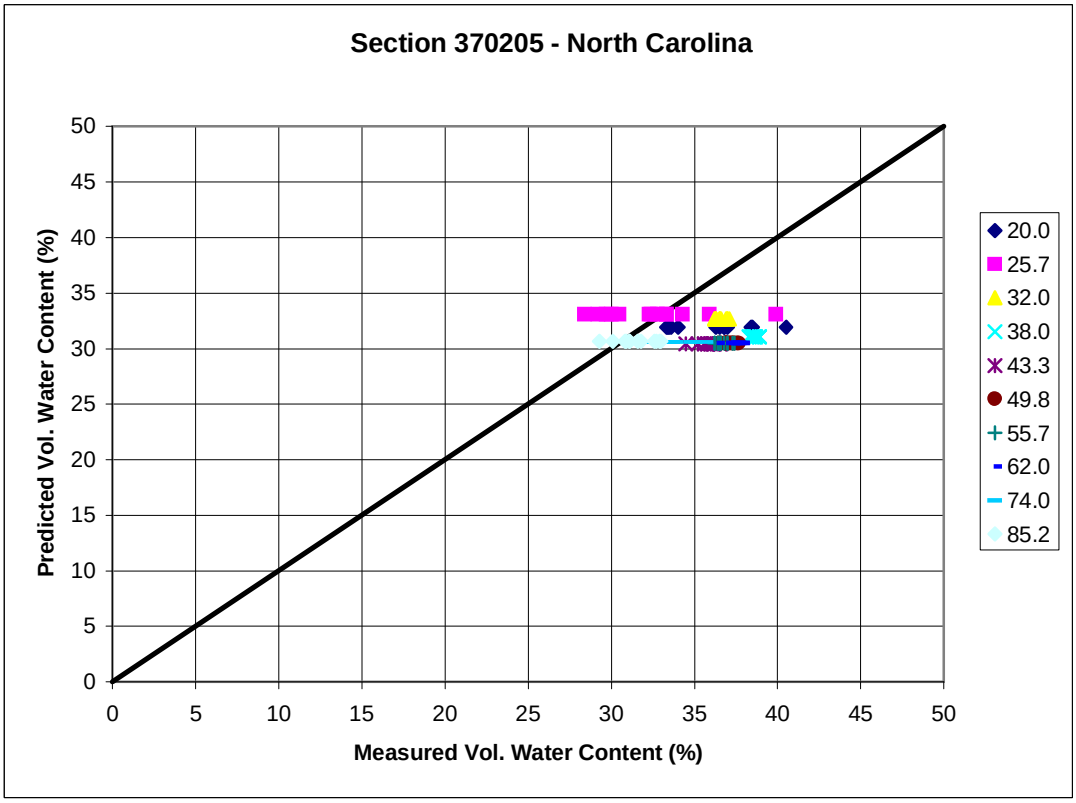

Section 364018 - New York
Predicted Vol. Water Content
Measured Vol. Water Content
0
10
20
30
40
15.748
21.496
27.520
32.992
39.016
42.992
50.748
57.520
70.000
80.000

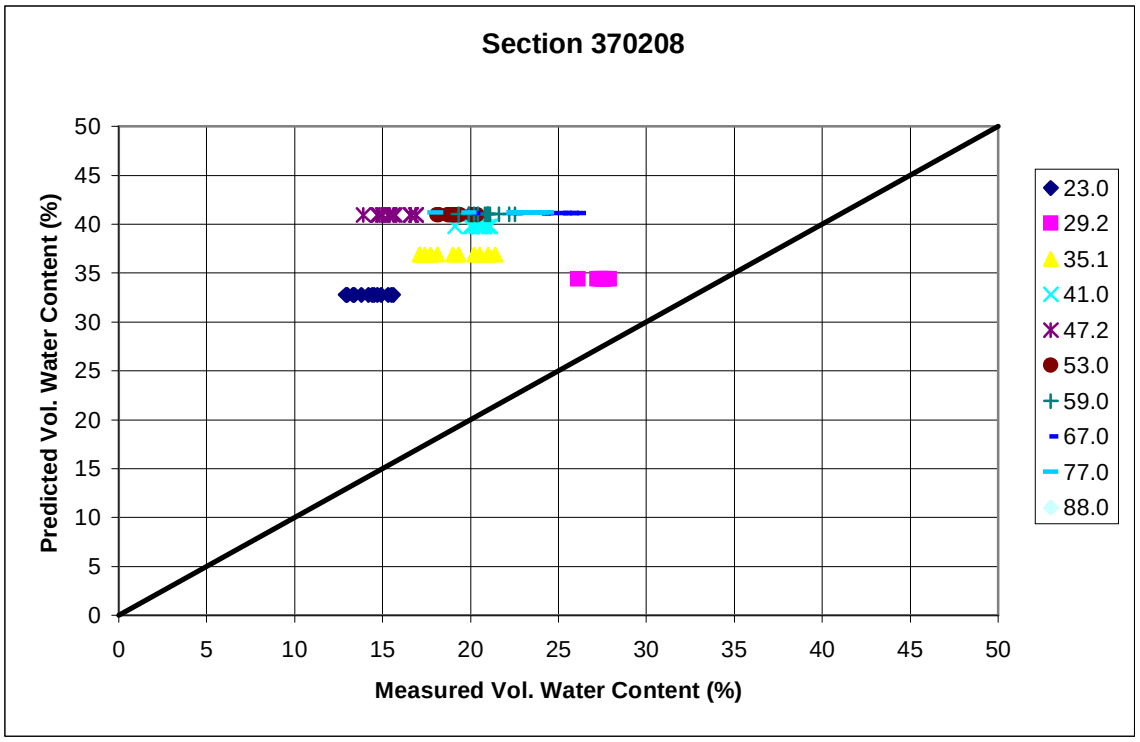

Section 364018 - New York
Predicted Vol. Water Content
Measured Vol. Water Content from 07-08-1997 to 10-14-1997
0
10
20
30
40
0.000
10.000
20.000
30.000
40.000
15.748
21.496
27.520
32.992
39.016
42.992
50.748
57.520
70.000
80.000

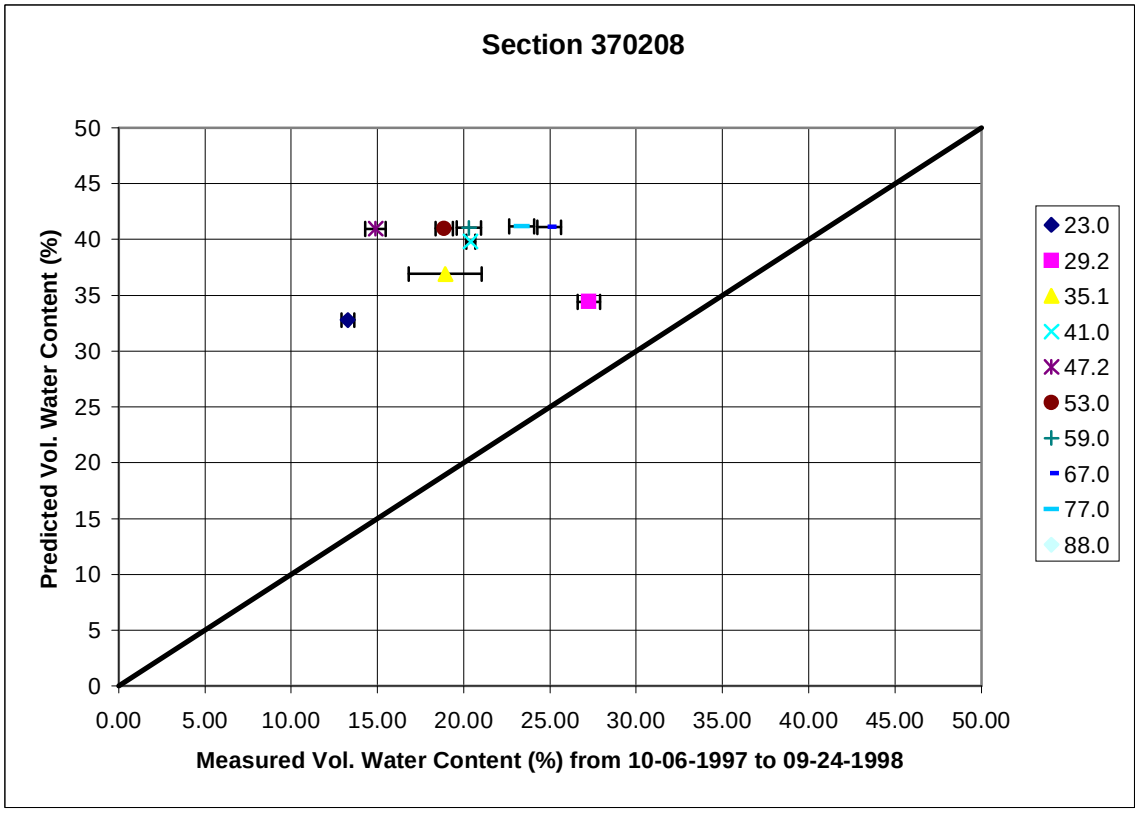

Section 370201
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
11.0
23.0
32.0
37.8
44.0
49.5
55.7
62.0
74.0
85.0

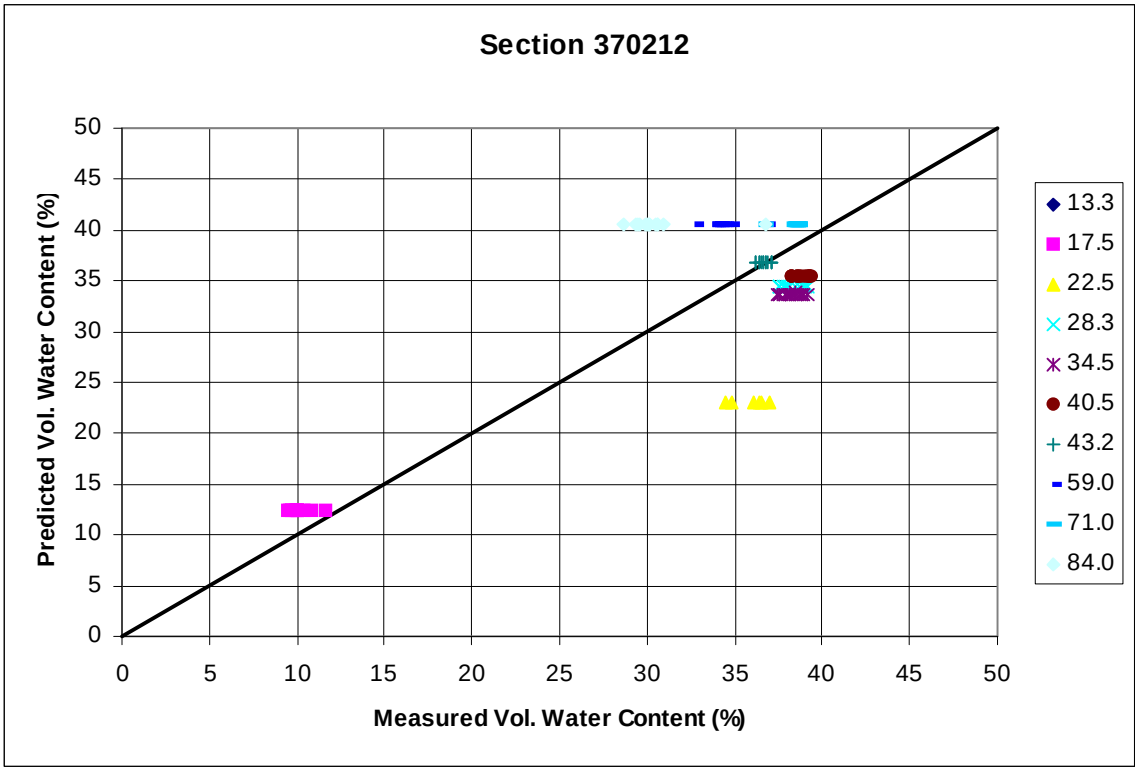

Section 370201
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 10-06-1997 to 10-15-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
11.0
23.0
32.0
37.8
44.0
49.5
55.7
62.0
74.0
85.0

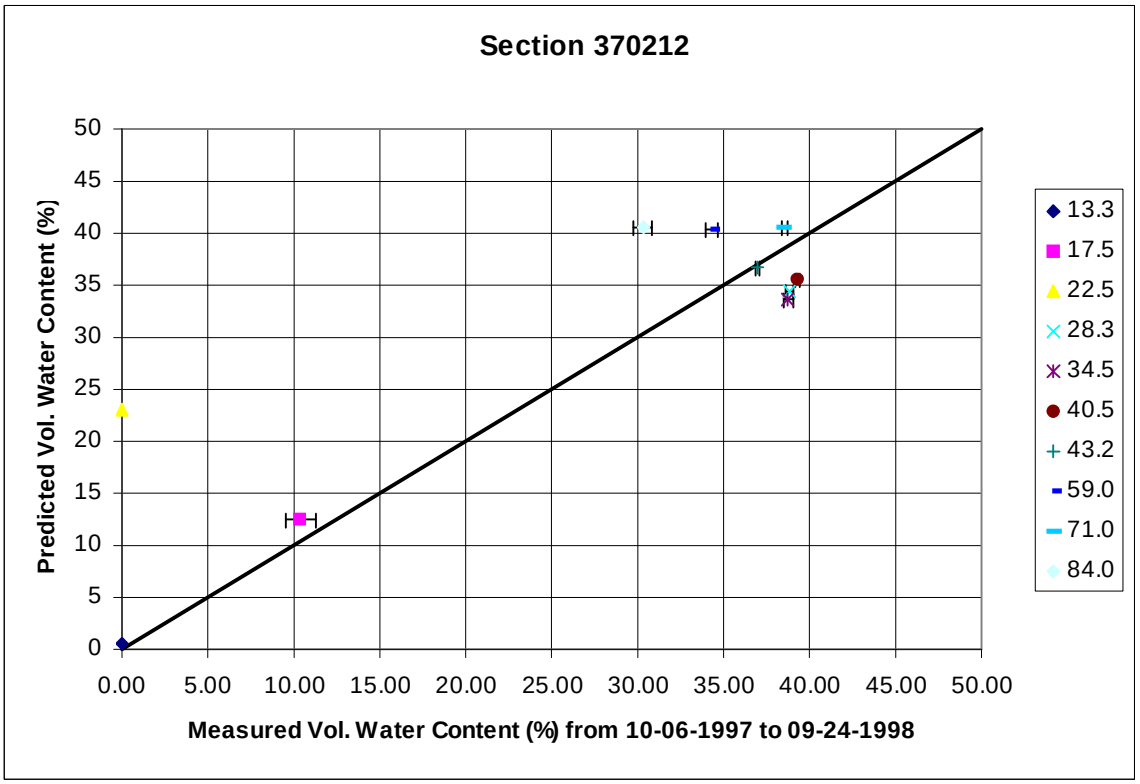

Section 370205 - North Carolina
Predicted Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
Measured Vol. Water Content (%) from 02-17-1998 to 09-24-1998
20.0
25.7
32.0
38.0
43.3
49.8
55.7
62.0
74.0
85.2


Section 370205 - North Carolina
Predicted Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0
5
10
15
20
25
30
35
40
45
50
Measured Vol. Water Content (%)
20.0
25.7
32.0
38.0
43.3
49.8
55.7
62.0
74.0
85.2


Section 370208
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
23.0
29.2
35.1
41.0
47.2
53.0
59.0
67.0
77.0
88.0


Section 370208
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 10-06-1997 to 09-24-1998
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
23.0
29.2
35.1
41.0
47.2
53.0
59.0
67.0
77.0
88.0


Section 370212
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
13.3
17.5
22.5
28.3
34.5
40.5
43.2
59.0
71.0
84.0


Section 370212
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 10-06-1997 to 09-24-1998
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
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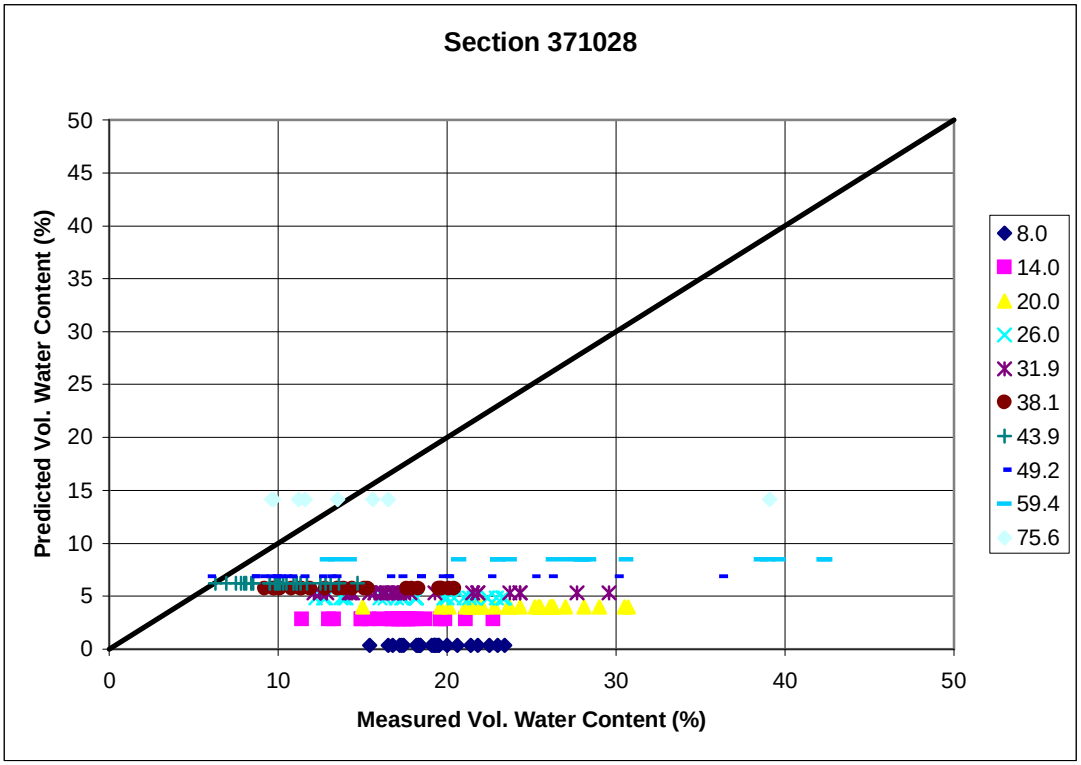
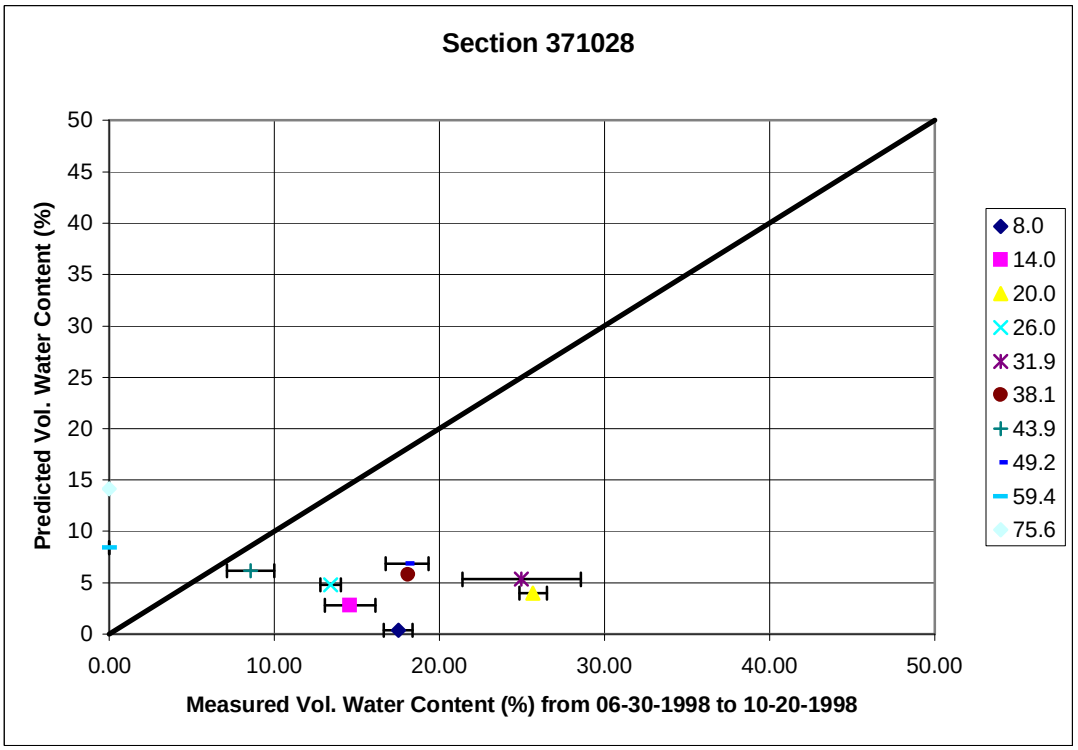
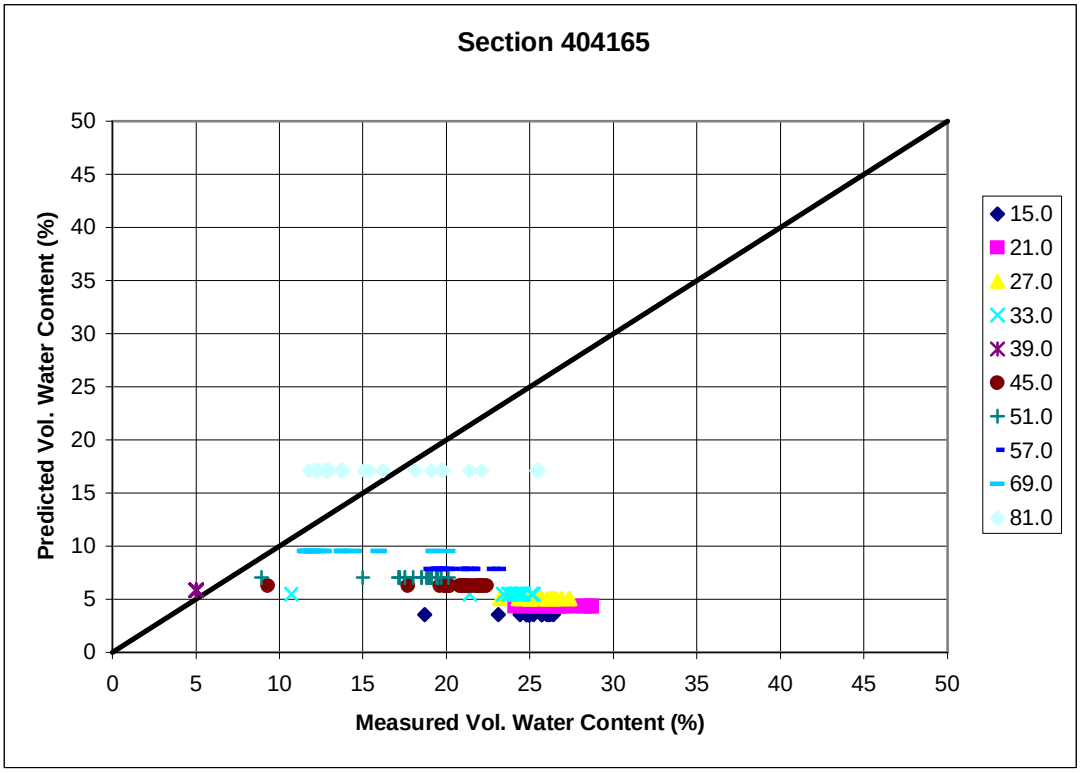
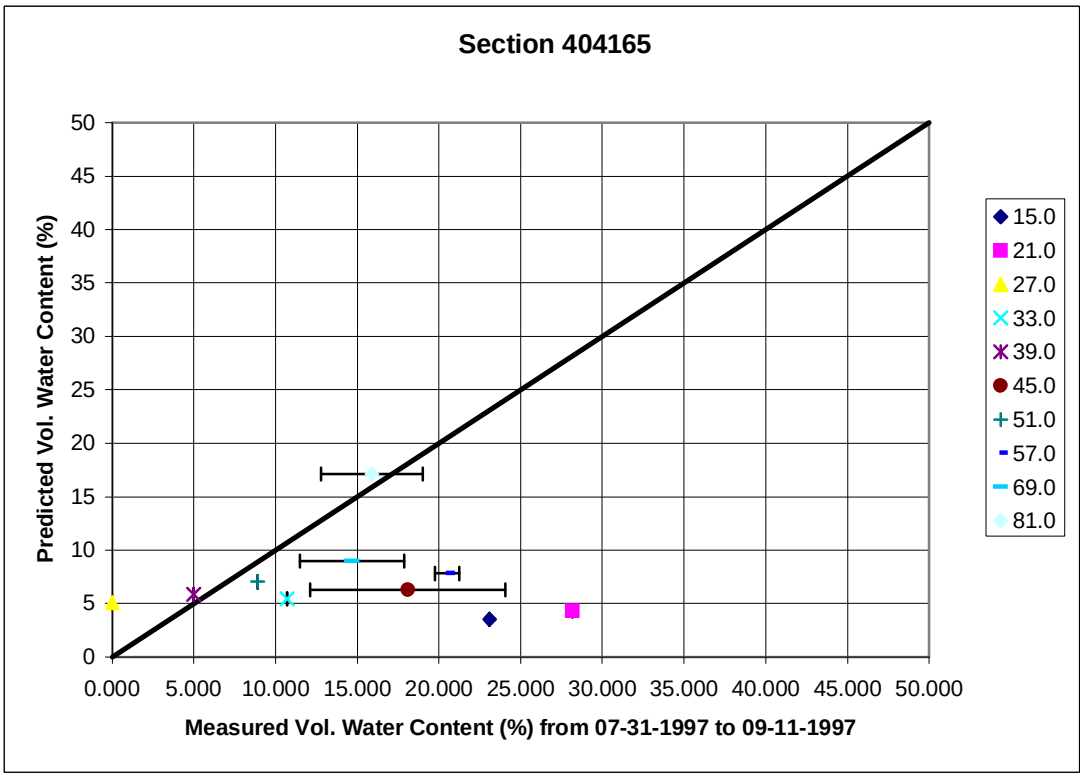
28.3
34.5
40.5
43.2
59.0
71.0
84.0


Section 371028
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0
10
20
30
40
50
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6


Section 371028
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-30-1998 to 10-20-1998
0
5
10
15
20
25
30
35
40
45
50
0.00
10.00
20.00
30.00
40.00
50.00
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6


Section 404165
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
15.0
21.0
27.0
33.0
39.0
45.0
51.0
57.0
69.0
81.0


Section 404165
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-31-1997 to 09-11-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
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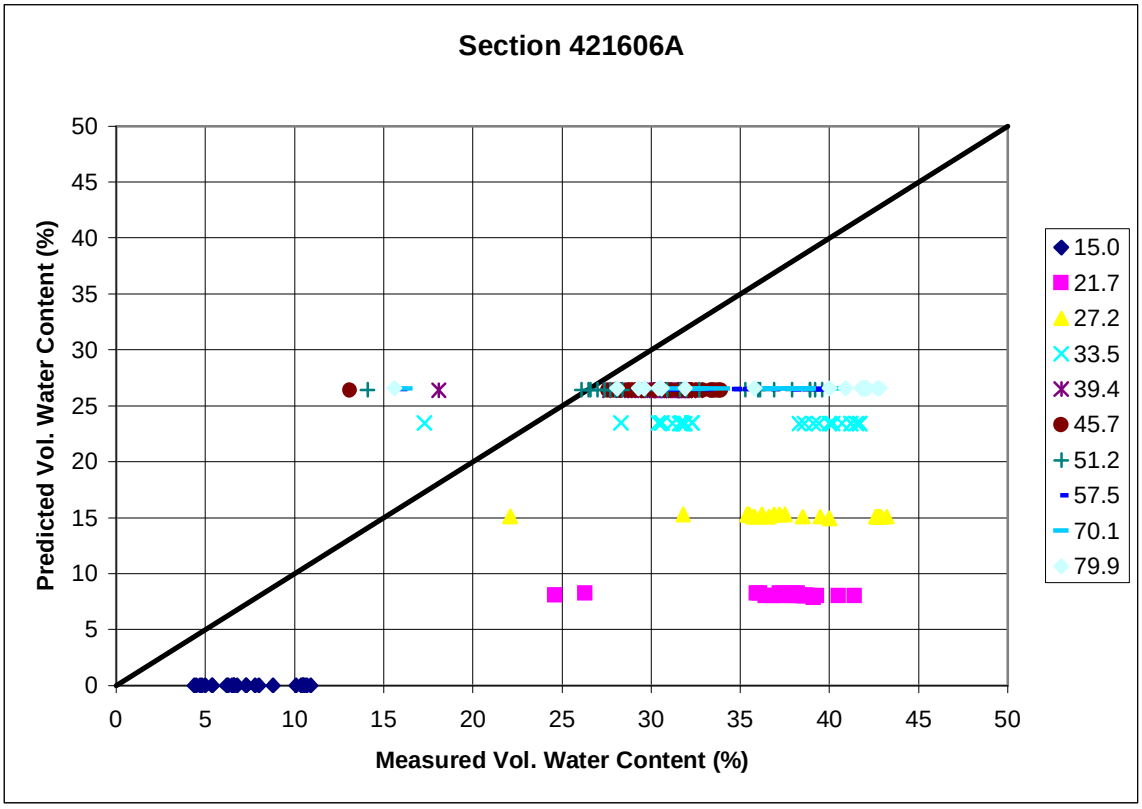
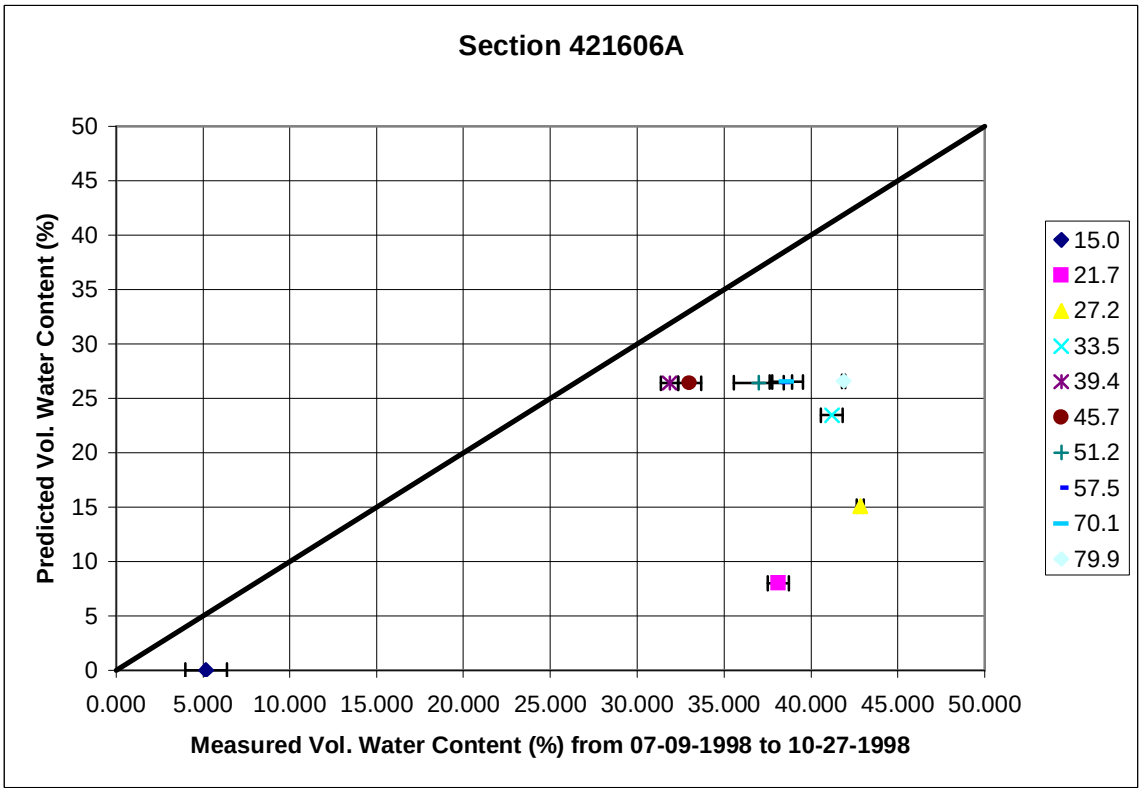
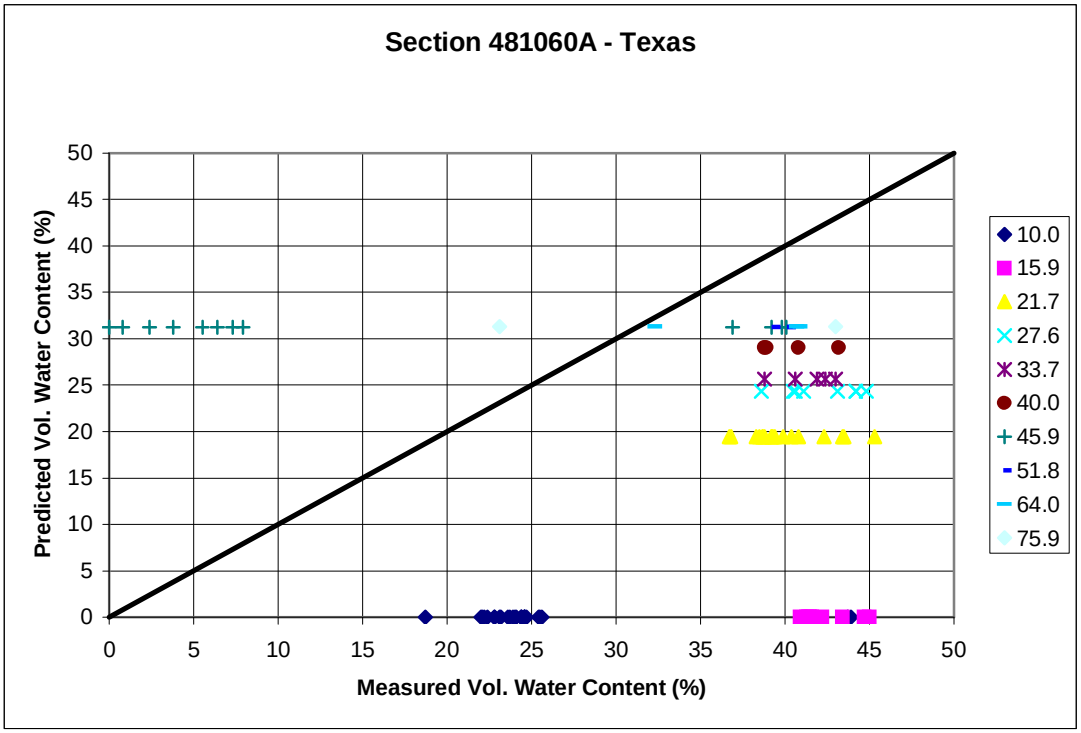
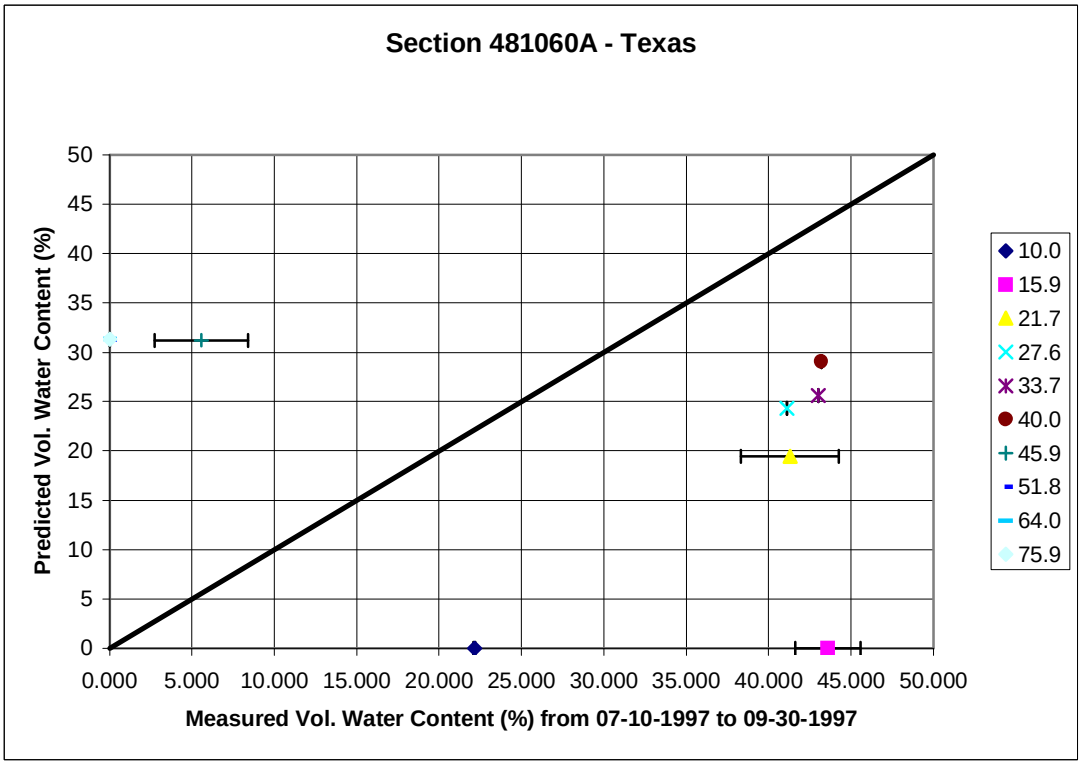
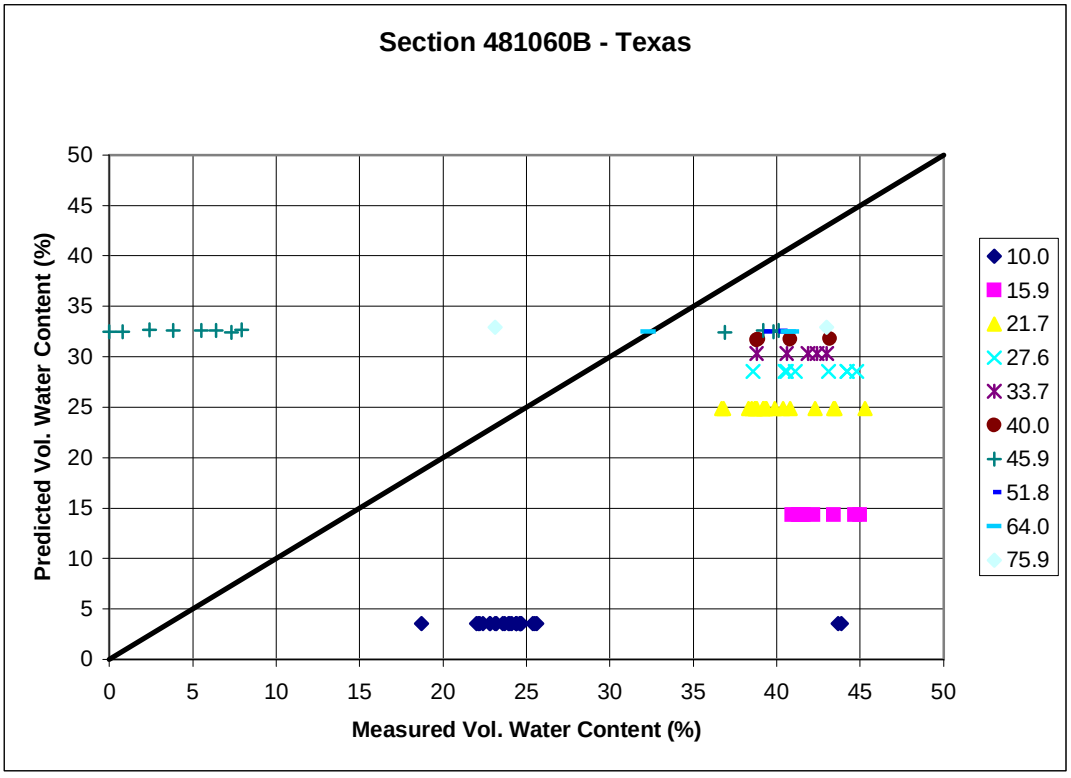
39.0
45.0
51.0
57.0
69.0
81.0

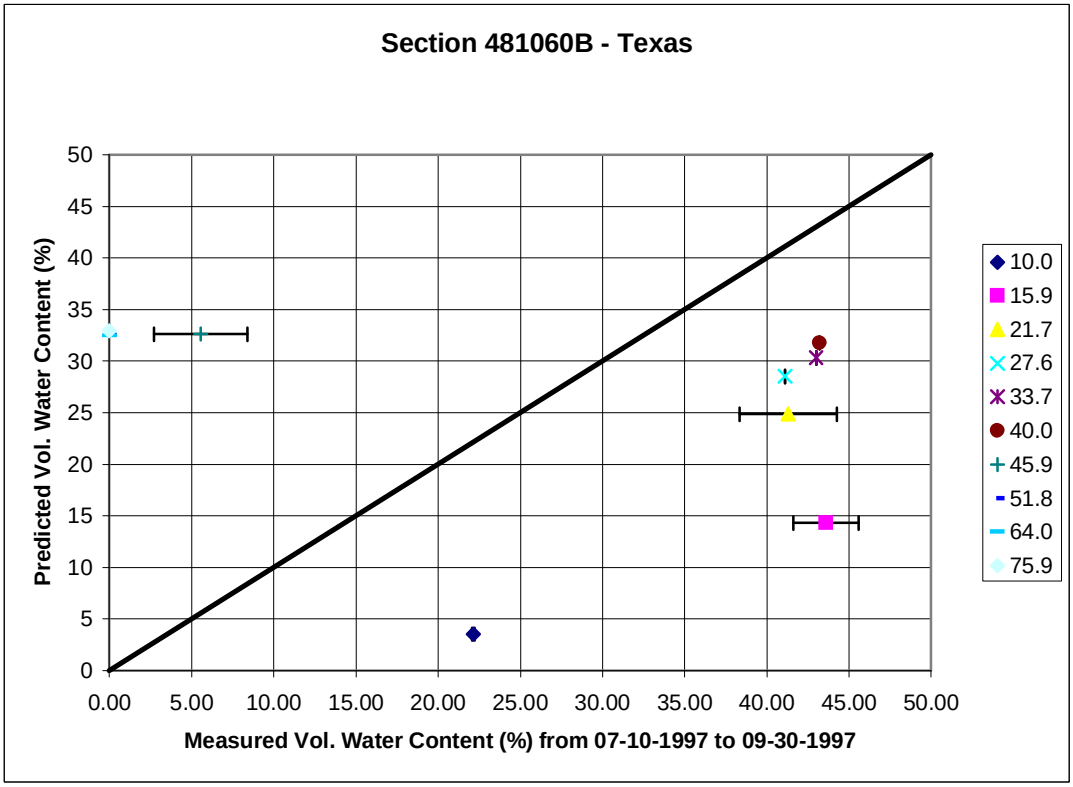

Section 421606A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
15.0
21.7
27.2
33.5
39.4
45.7
51.2
57.5
70.1
79.9

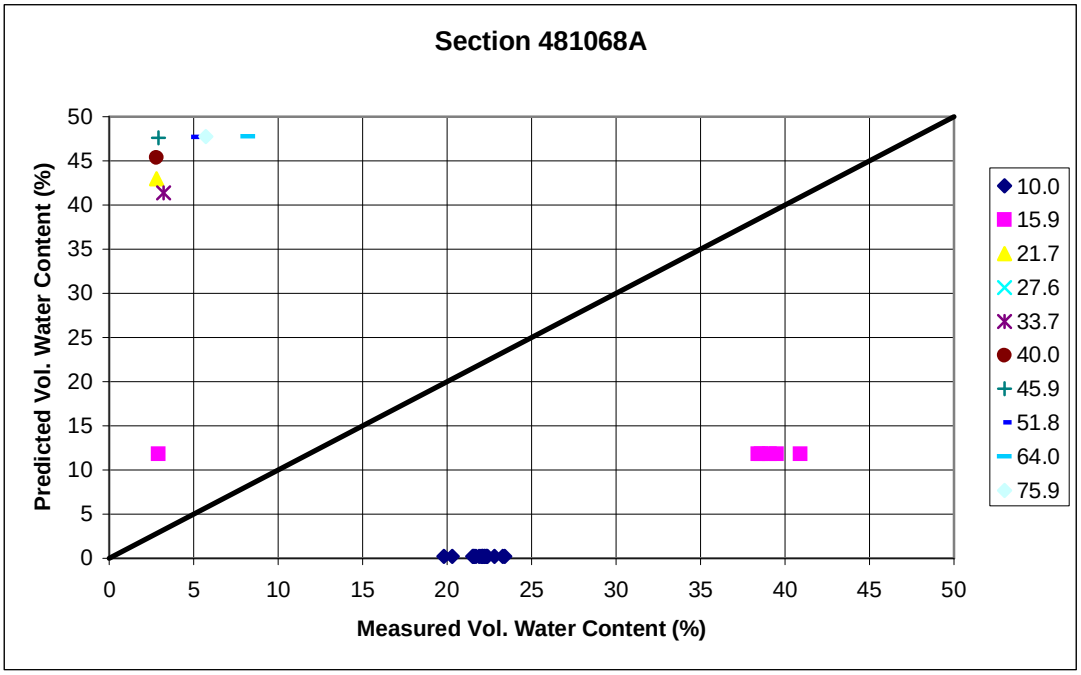

Section 421606A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-09-1998 to 10-27-1998
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
15.0
21.7
27.2
33.5
39.4
45.7
51.2
57.5
70.1
79.9

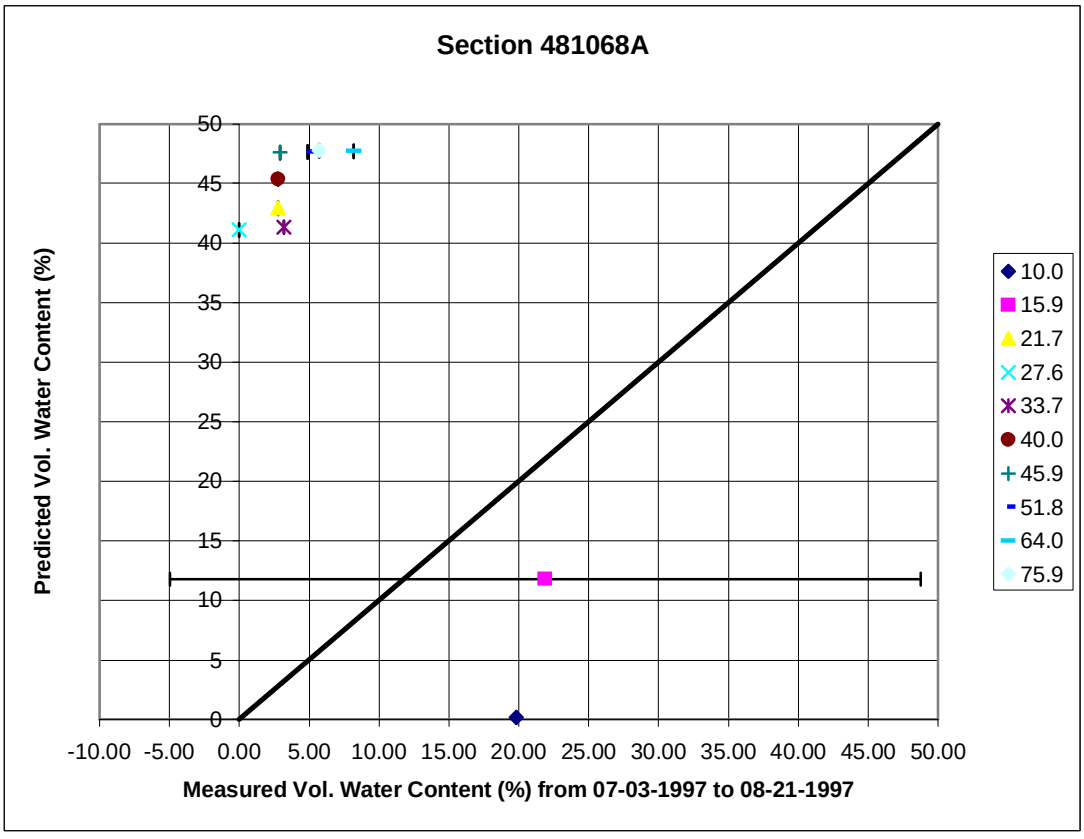

Section 481060A - Texas
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

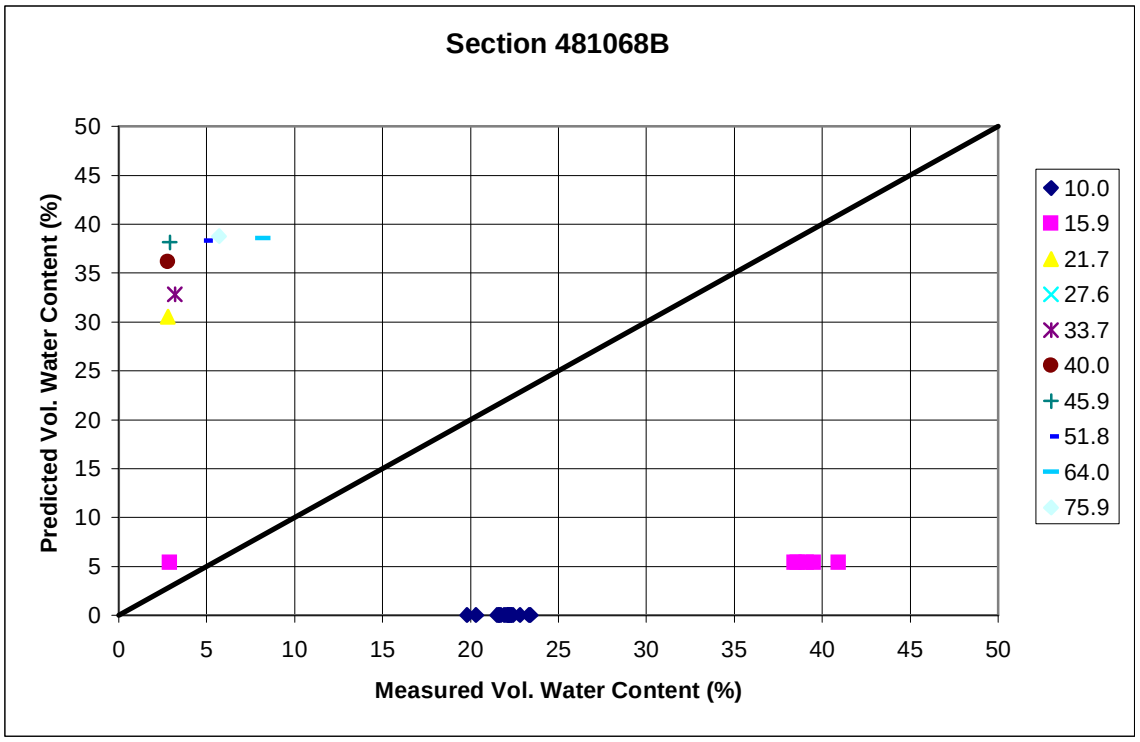

Section 481060A - Texas
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-10-1997 to 09-30-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

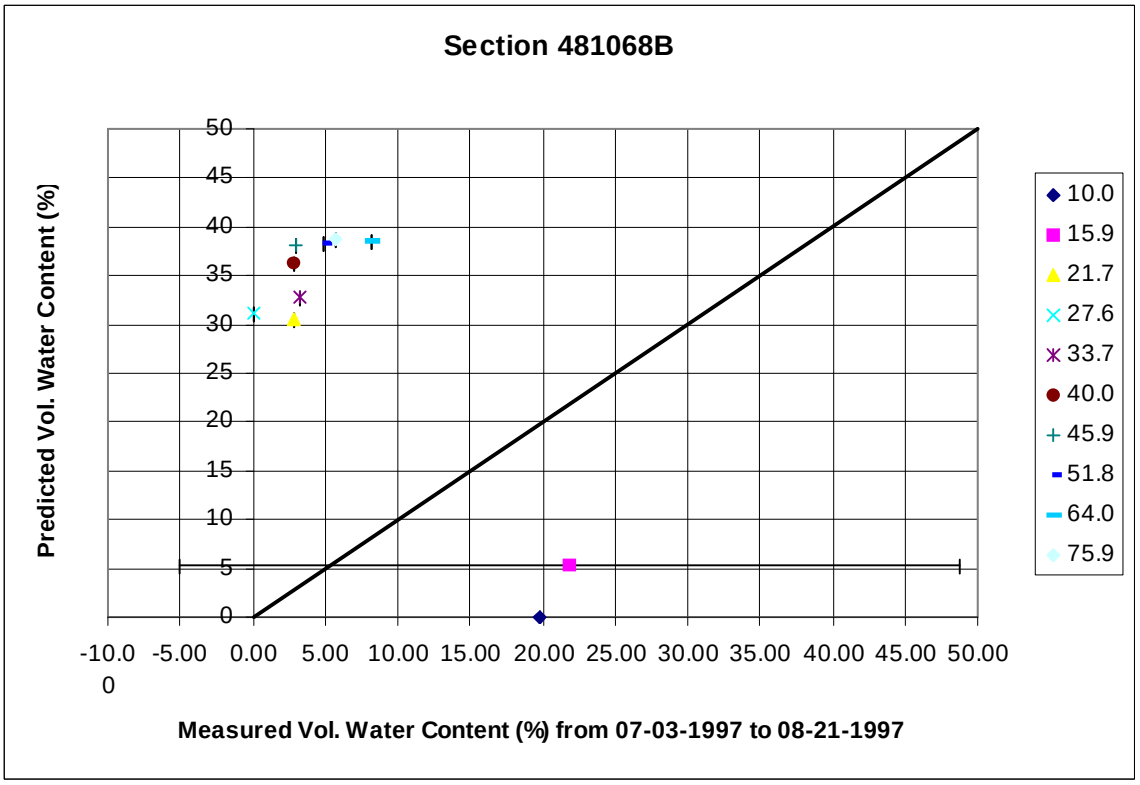

Section 481060B - Texas
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

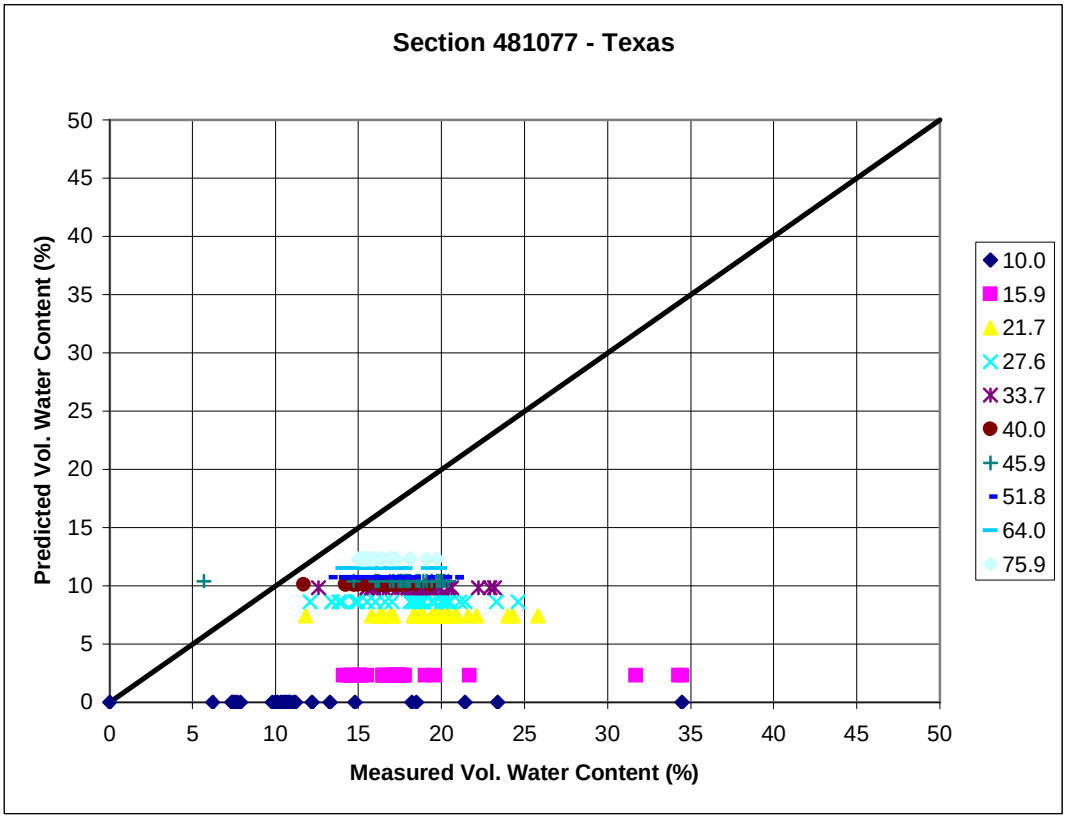

Section 481060B - Texas
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-10-1997 to 09-30-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

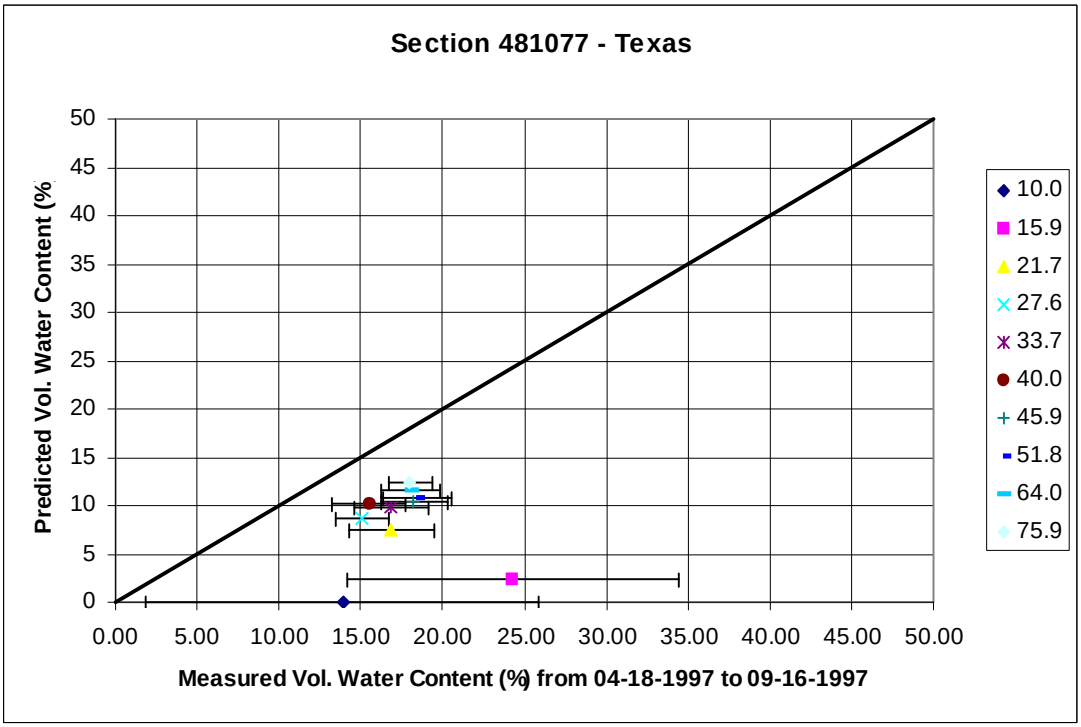

Section 481068A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

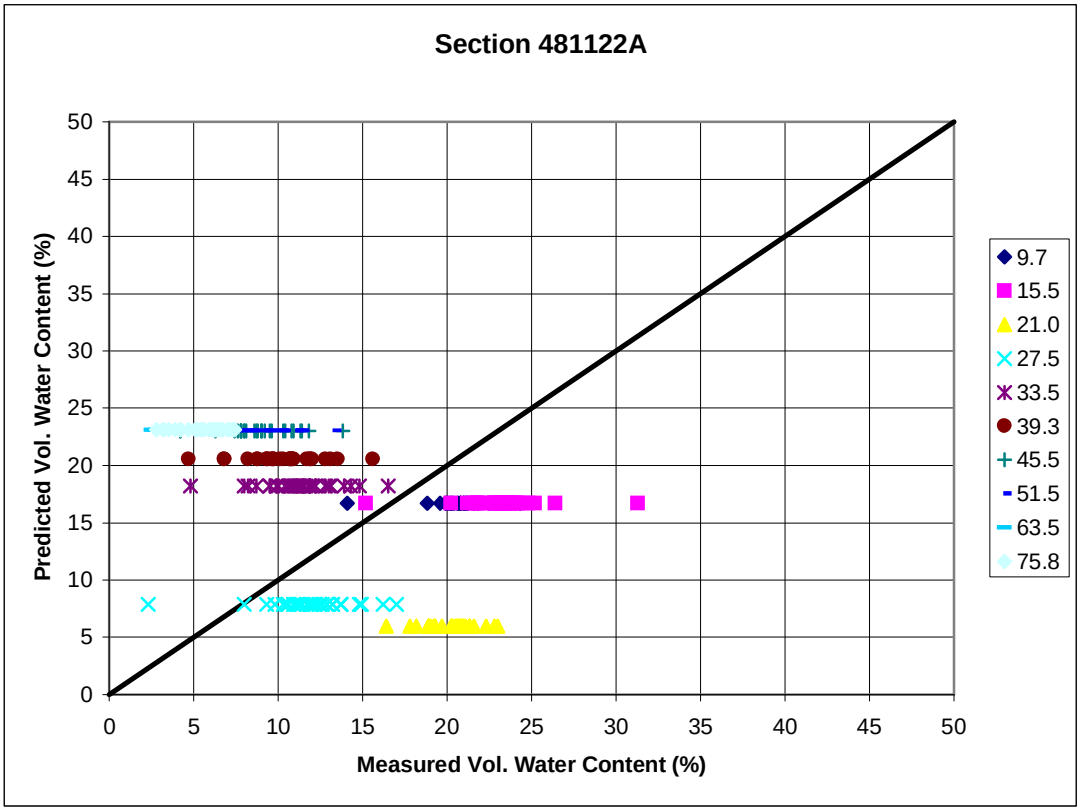

Section 481068A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-03-1997 to 08-21-1997
0
5
10
15
20
25
30
35
40
45
50
-10.00
-5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

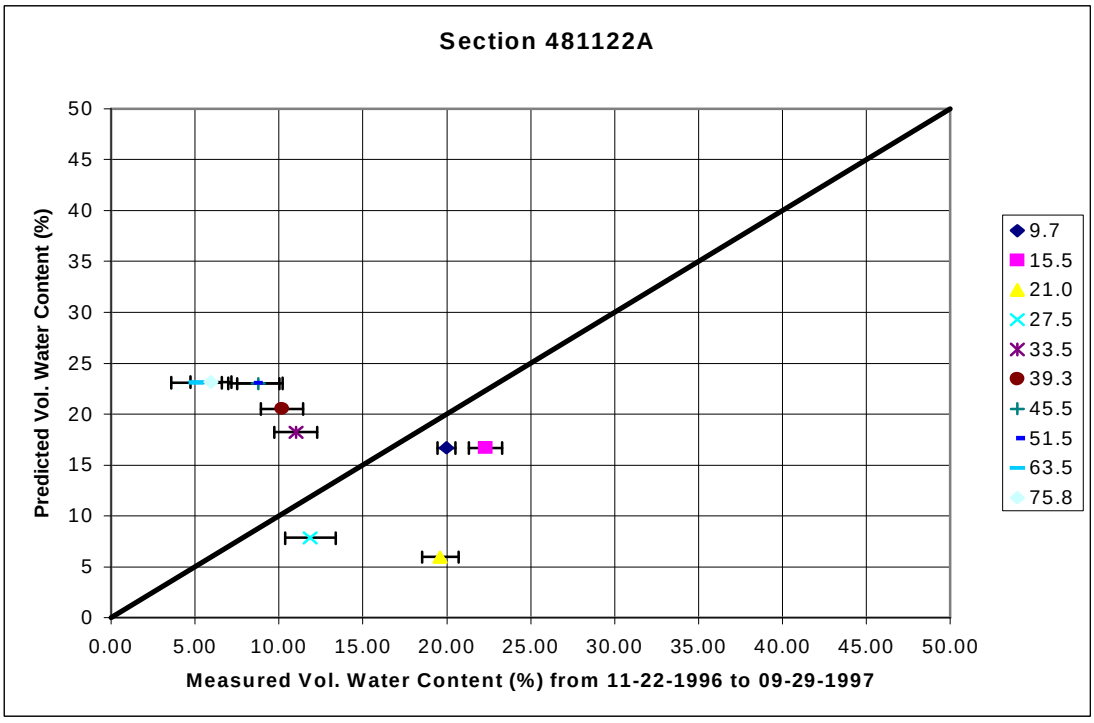

Section 481068B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

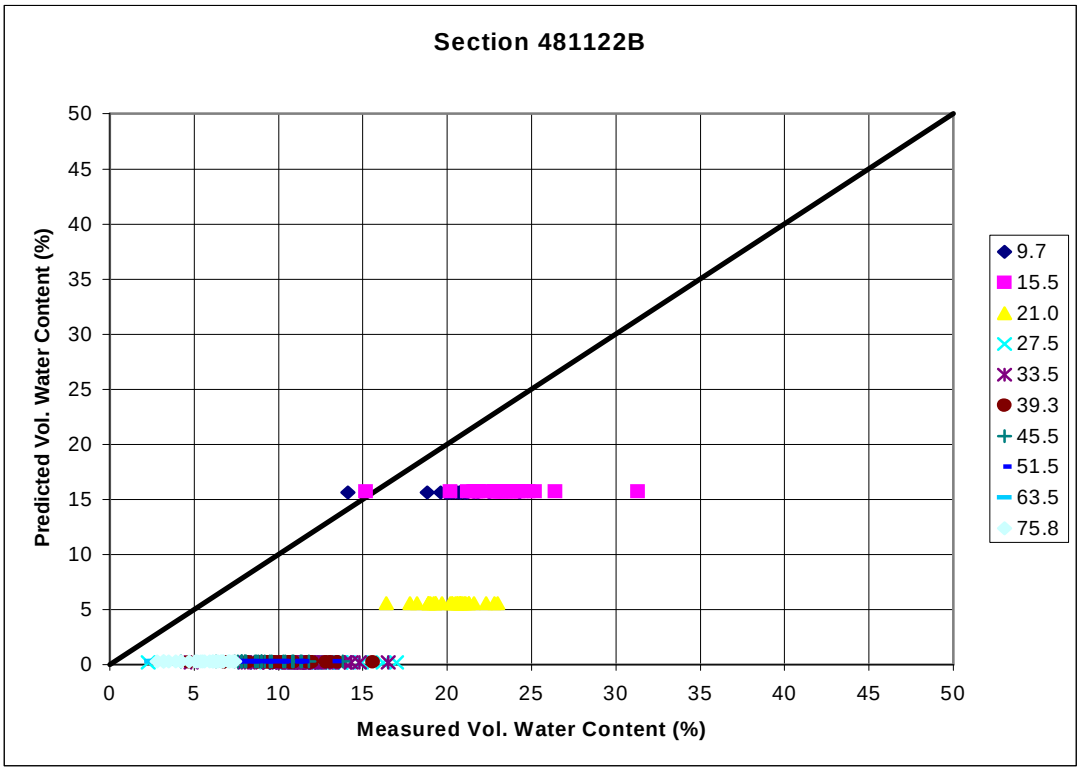

Section 481068B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-03-1997 to 08-21-1997
0
5
10
15
20
25
30
35
40
45
50
-10.0
-5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

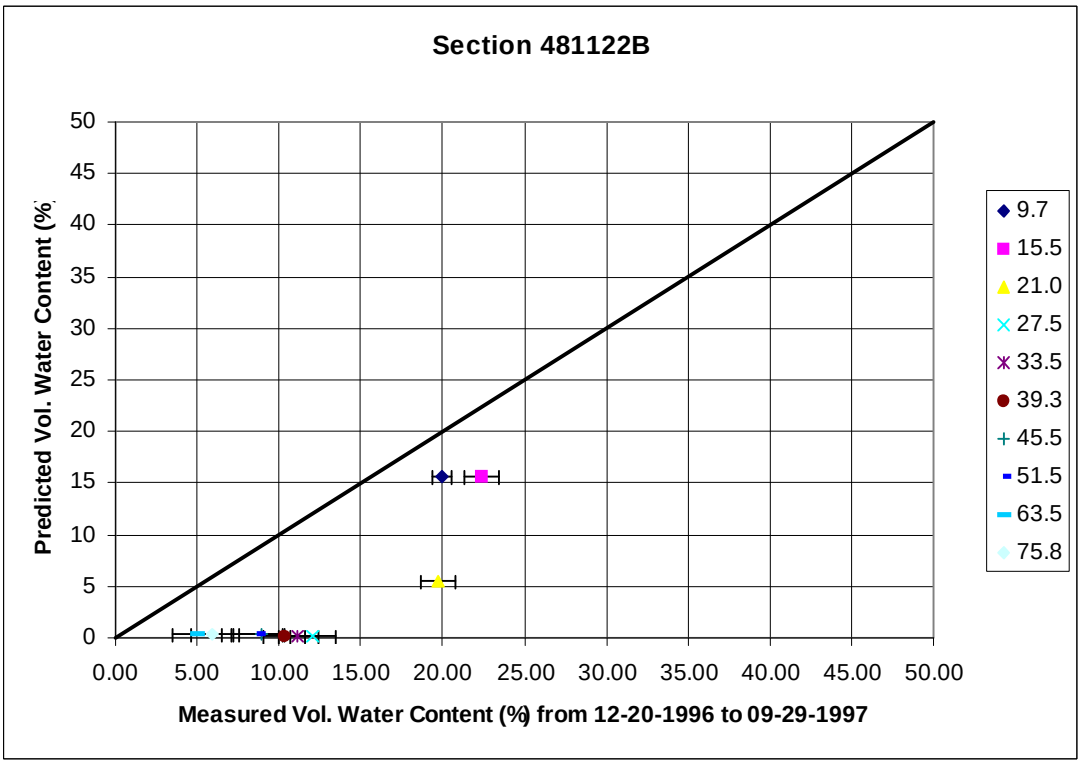

Section 481077 - Texas
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

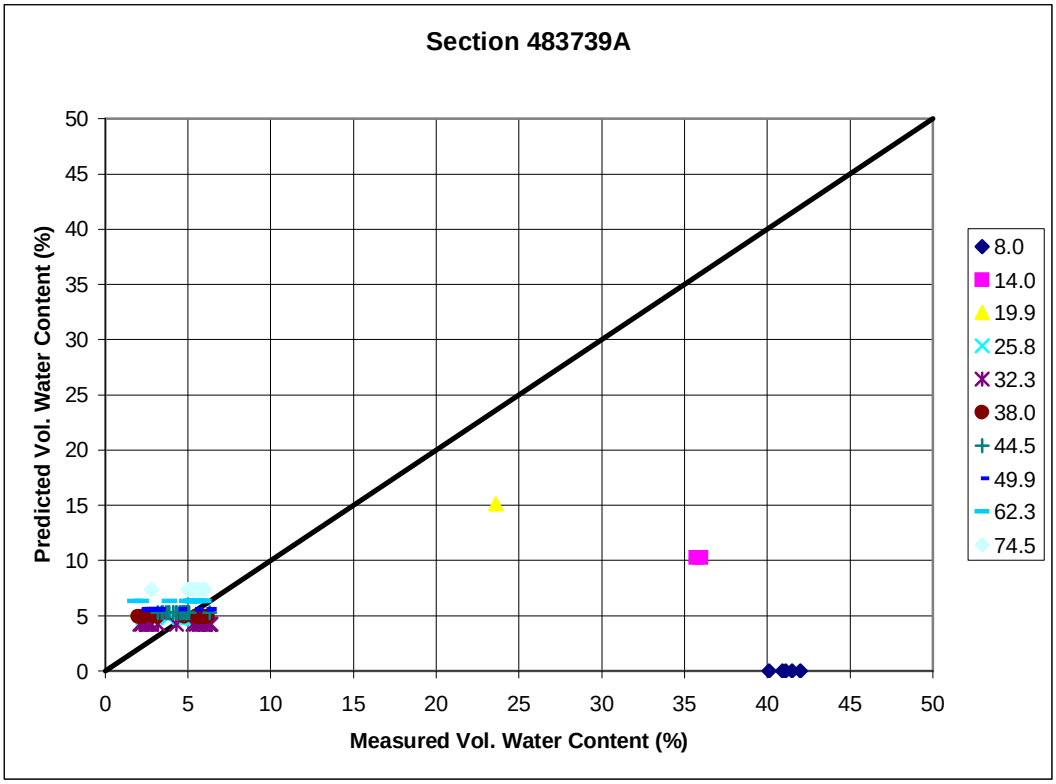

Section 481077 - Texas
Predicted Vol. Water Content (%
Measured Vol. Water Content (%) from 04-18-1997 to 09-16-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

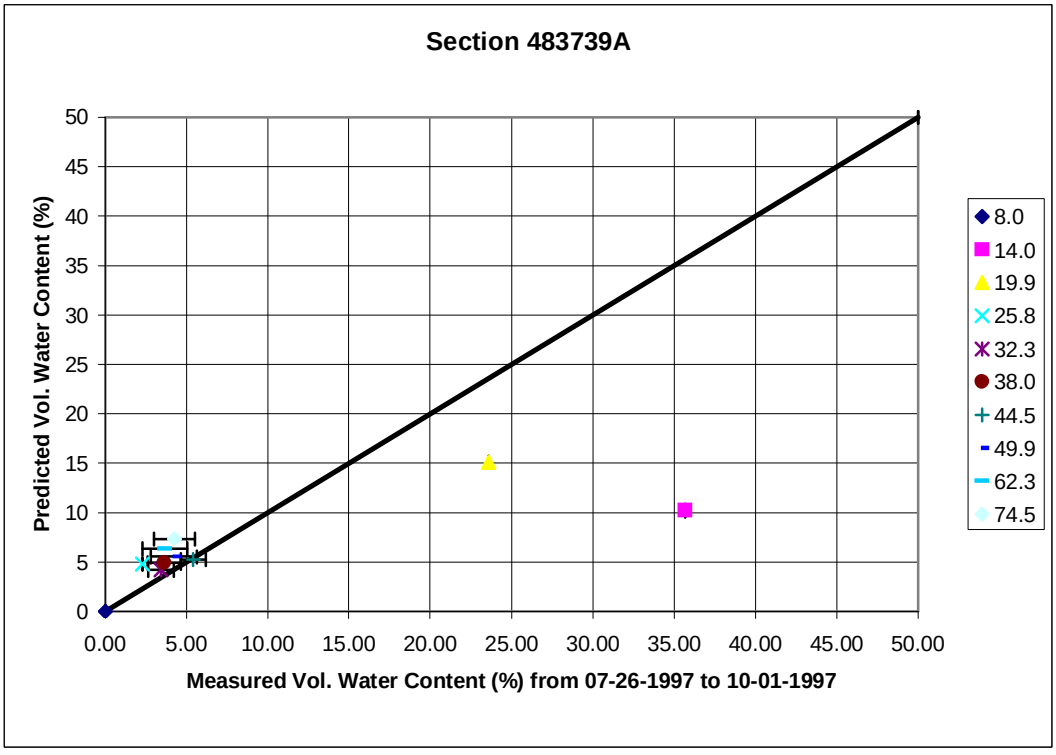

Section 481122A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
9.7
15.5
21.0
27.5
33.5
39.3
45.5
51.5
63.5
75.8

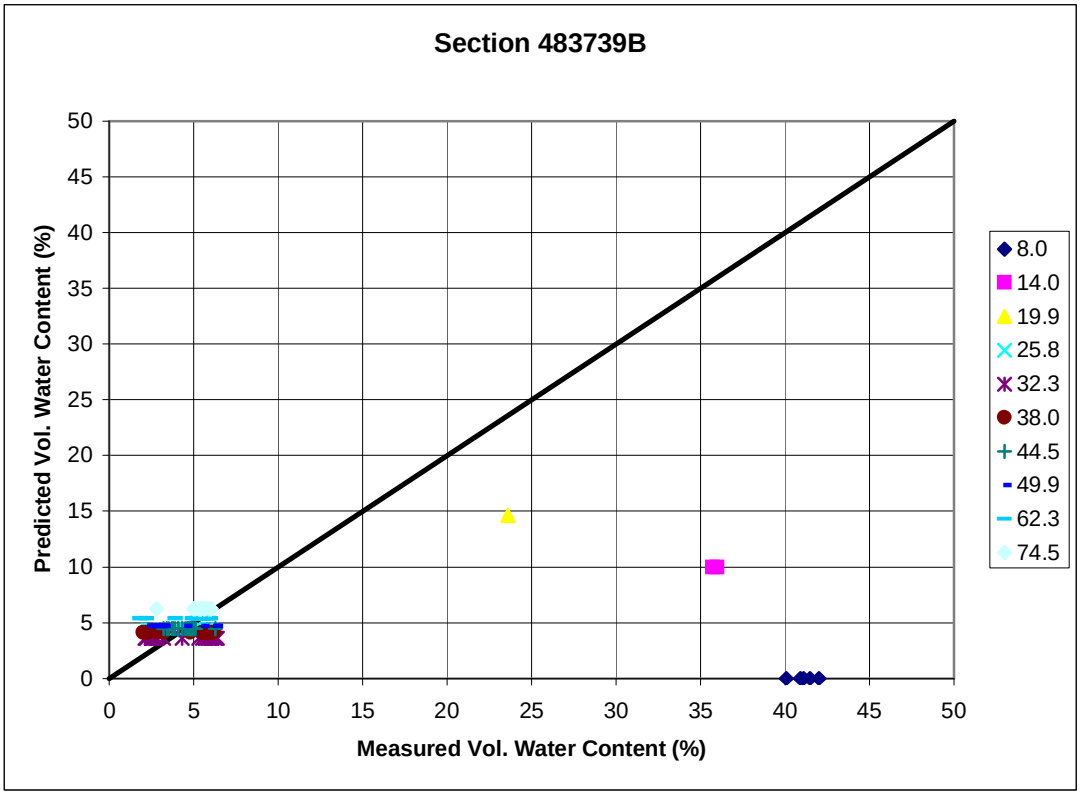

Section 481122A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 11-22-1996 to 09-29-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
9.7
15.5
21.0
27.5
33.5
39.3
45.5
51.5
63.5
75.8

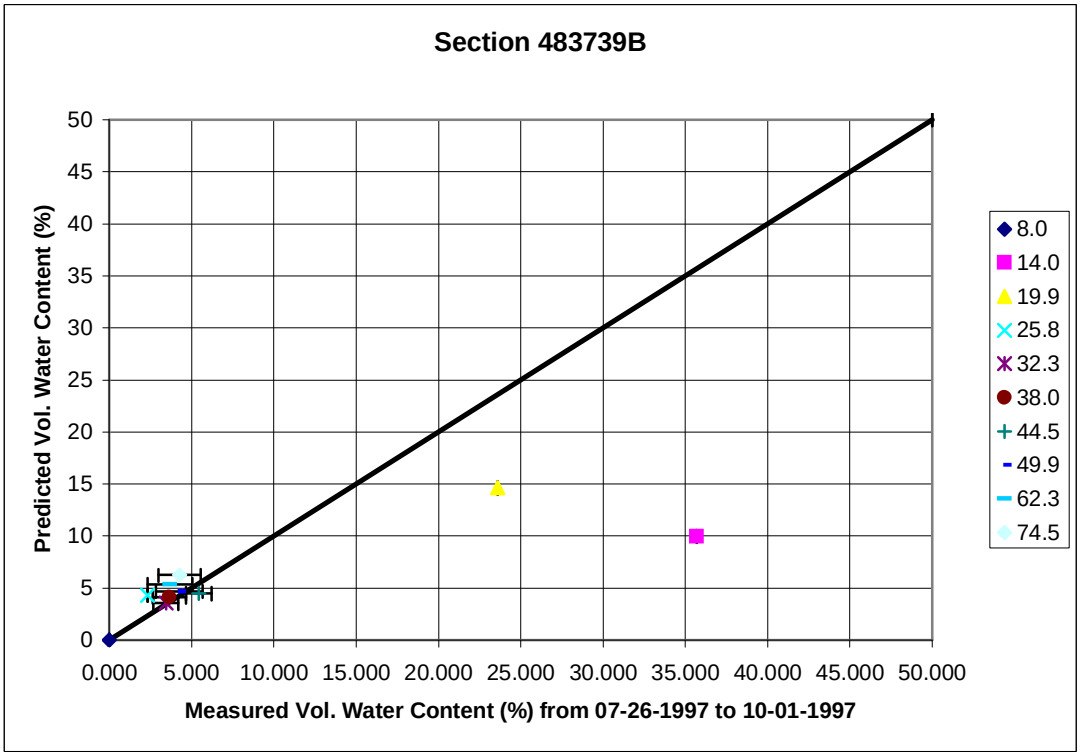

Section 481122B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
9.7
15.5
21.0
27.5
33.5
39.3
45.5
51.5
63.5
75.8

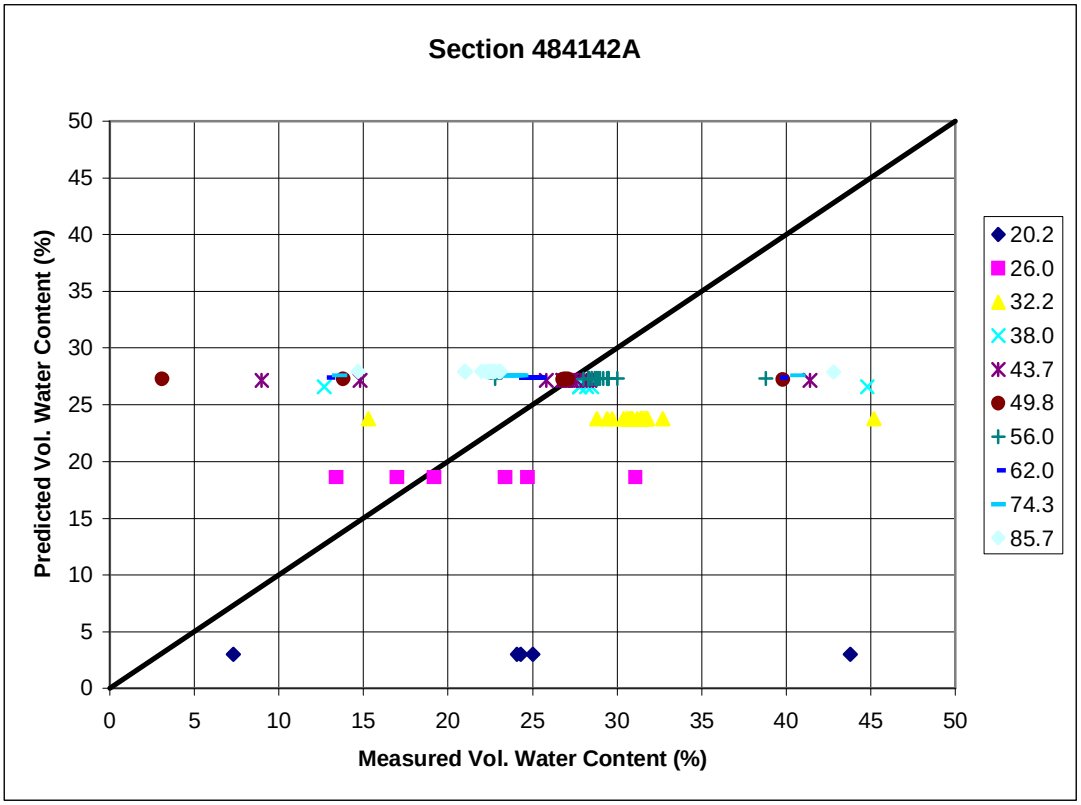

Section 481122B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-20-1996 to 09-29-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
9.7
15.5
21.0
27.5
33.5
39.3
45.5
51.5
63.5
75.8

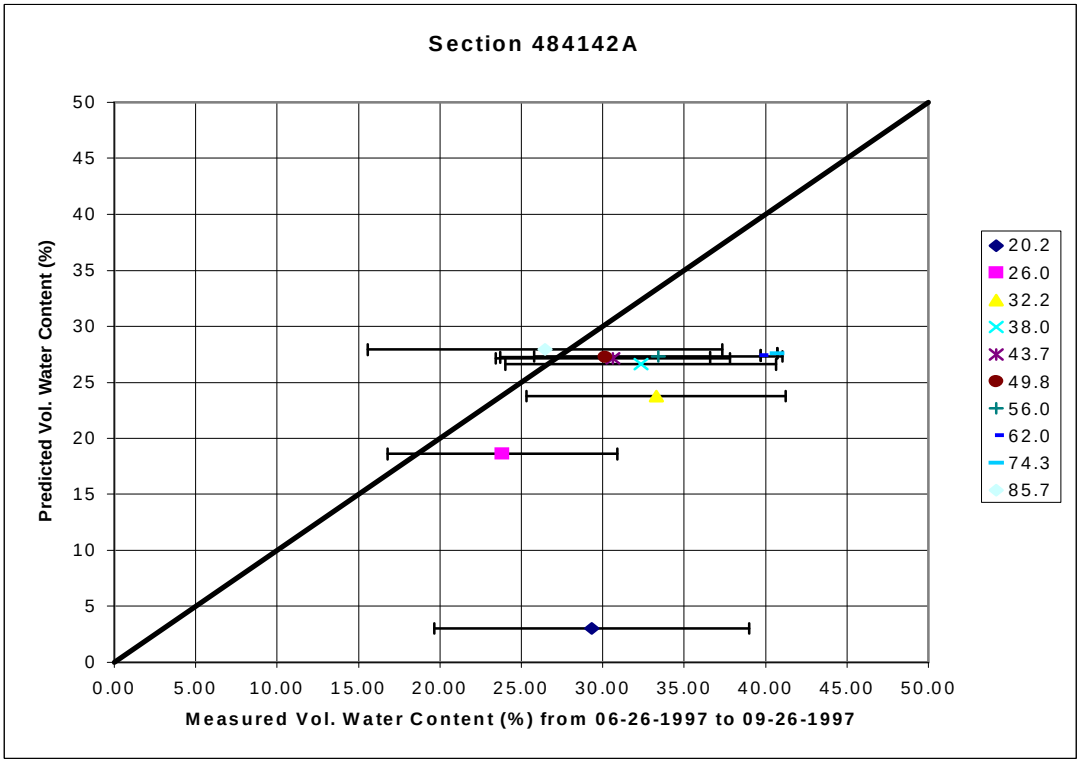

Section 483739A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
8.0
14.0
19.9
25.8
32.3
38.0
44.5
49.9
62.3
74.5

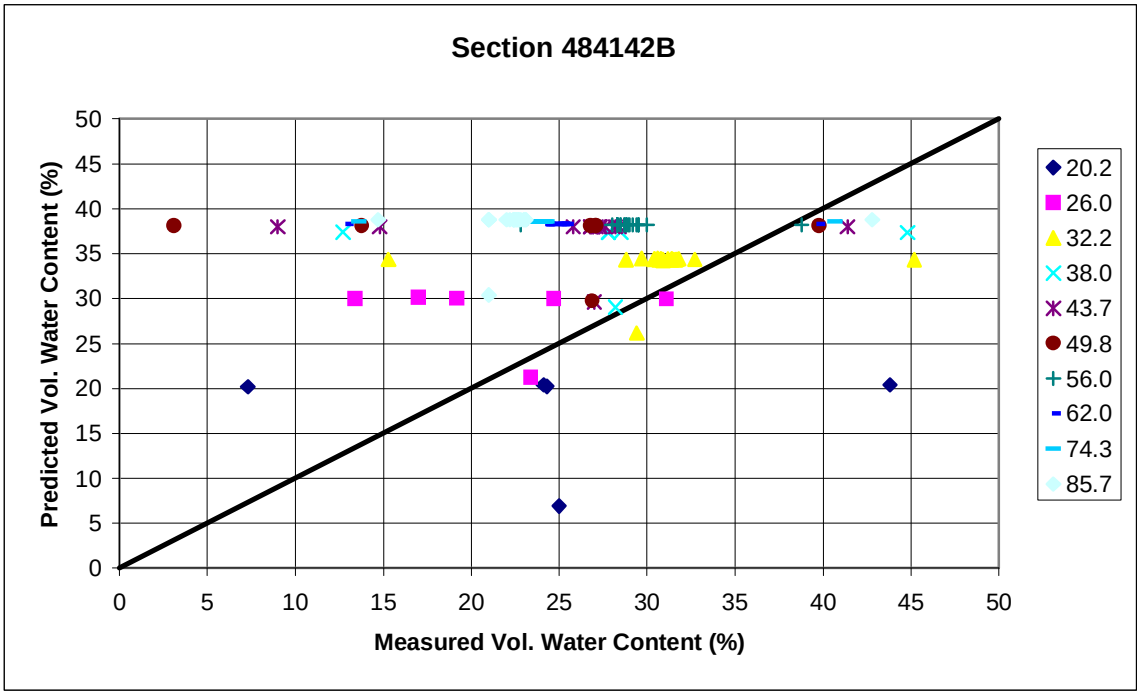

Section 483739A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-26-1997 to 10-01-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
8.0
14.0
19.9
25.8
32.3
38.0
44.5
49.9
62.3
74.5

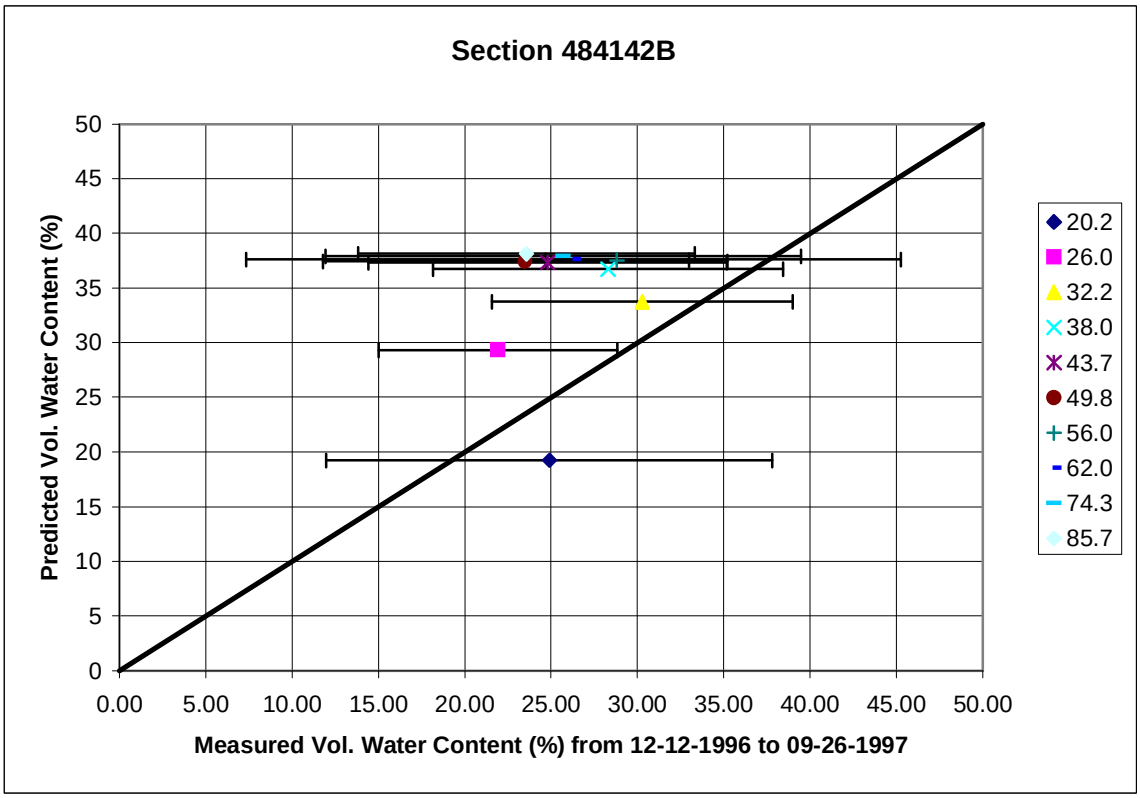

Section 483739B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
8.0
14.0
19.9
25.8
32.3
38.0
44.5
49.9
62.3
74.5

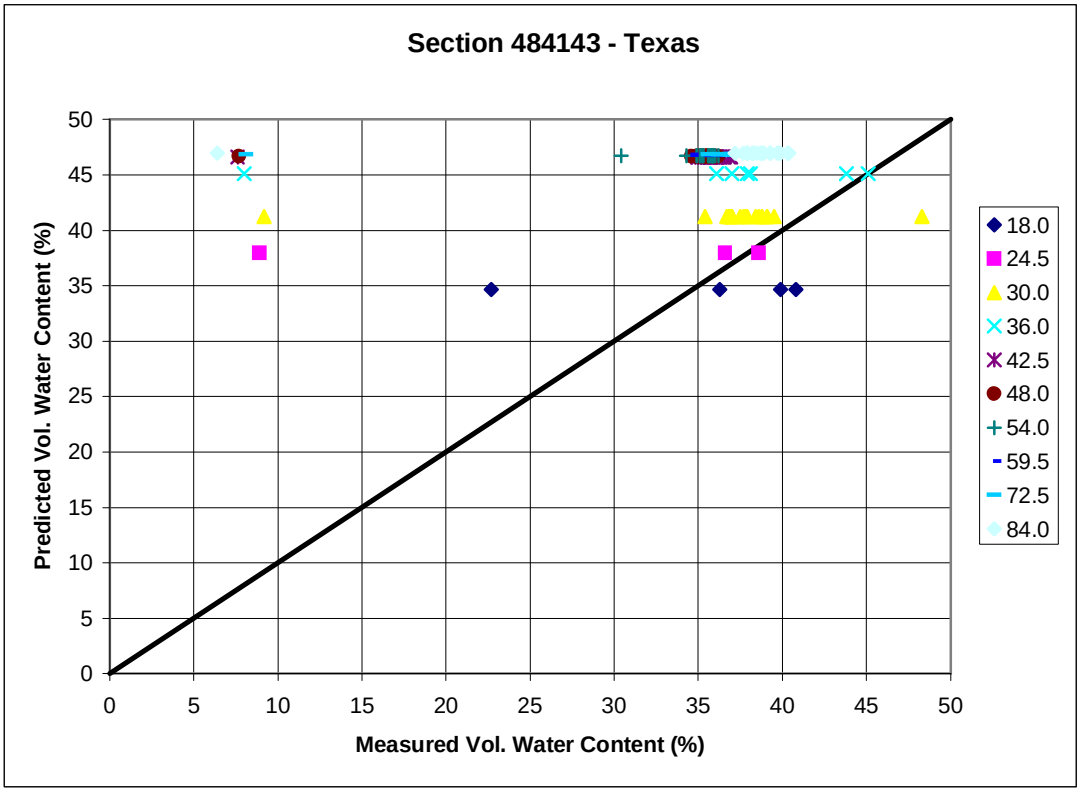

Section 483739B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-26-1997 to 10-01-1997
0
5
10
15
20
25
30
35
40
45
50
0.000
5.000
10.000
15.000
20.000
25.000
30.000
35.000
40.000
45.000
50.000
8.0
14.0
19.9
25.8
32.3
38.0
44.5
49.9
62.3
74.5

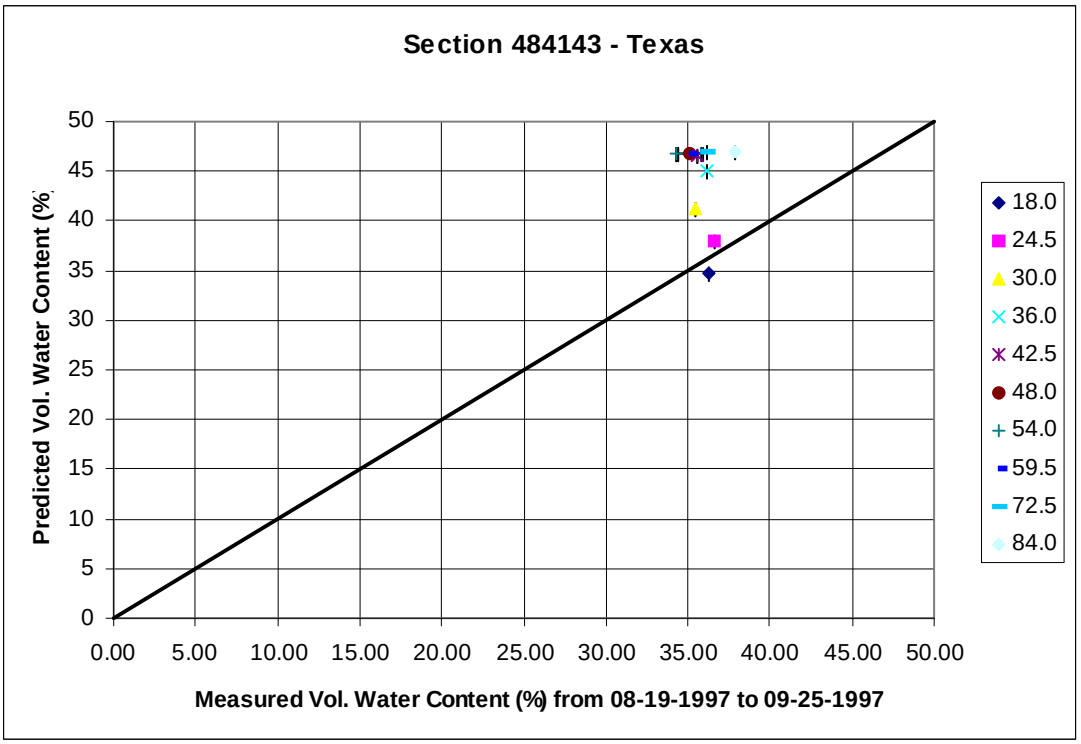

Section 484142A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
20.2
26.0
32.2
38.0
43.7
49.8
56.0
62.0
74.3
85.7

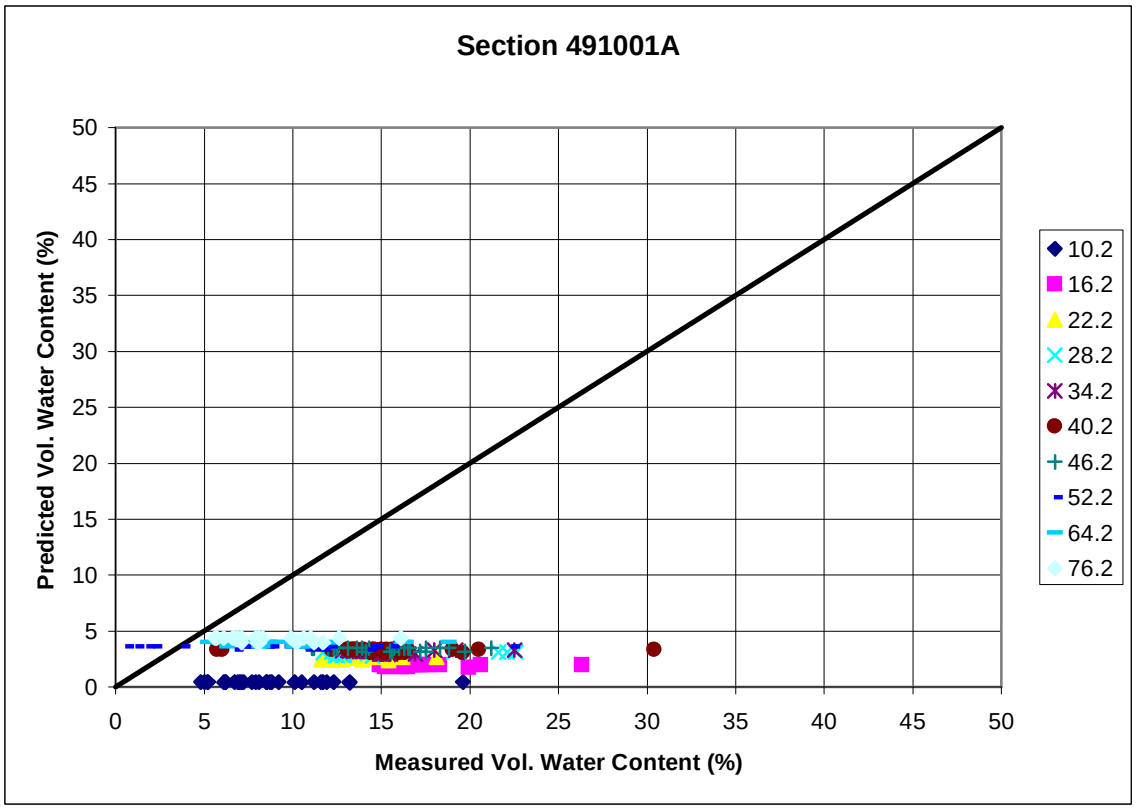

Section 484142A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-26-1997 to 09-26-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
20.2
26.0
32.2
38.0
43.7
49.8
56.0
62.0
74.3
85.7

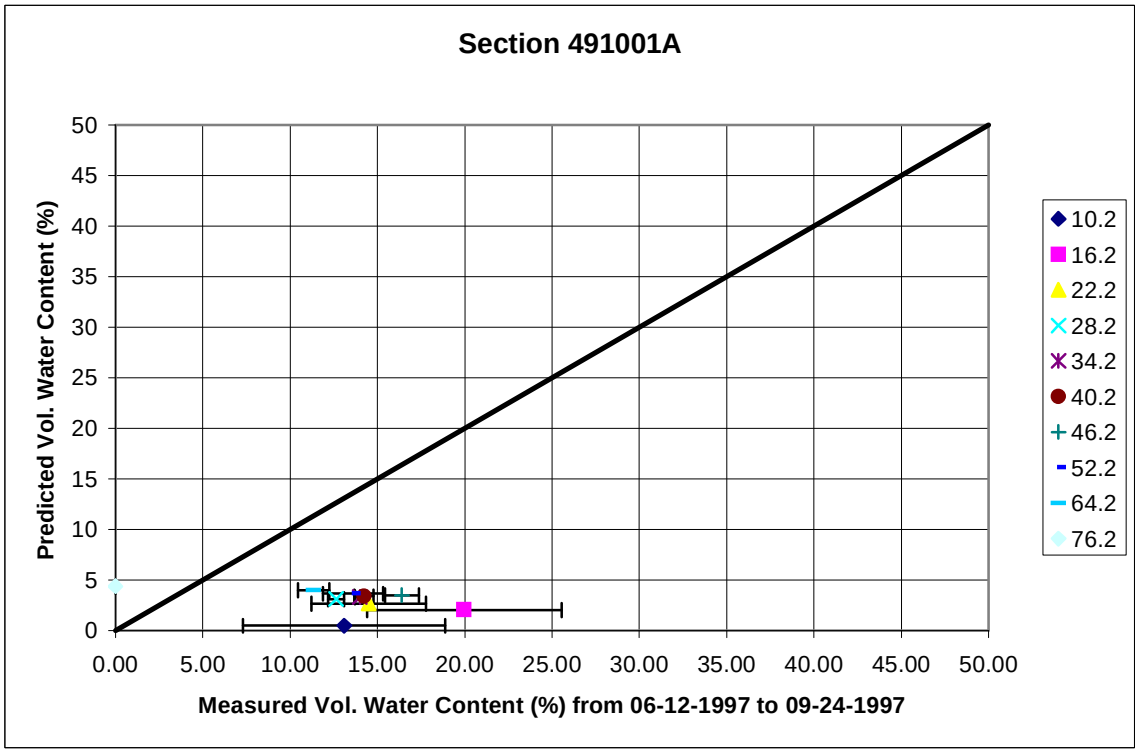

Section 484142B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
20.2
26.0
32.2
38.0
43.7
49.8
56.0
62.0
74.3
85.7


Section 484142B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-12-1996 to 09-26-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
20.2
26.0
32.2
38.0
43.7
49.8
56.0
62.0
74.3
85.7


Section 484143 - Texas
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
18.0
24.5
30.0
36.0
42.5
48.0
54.0
59.5
72.5
84.0


Section 484143 - Texas
Predicted Vol. Water Content (%
Measured Vol. Water Content (%) from 08-19-1997 to 09-25-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
18.0
24.5
30.0
36.0
42.5
48.0
54.0
59.5
72.5
84.0


Section 491001A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.2
16.2
22.2
28.2
34.2
40.2
46.2
52.2
64.2
76.2


Section 491001A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-12-1997 to 09-24-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
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16.2
22.2
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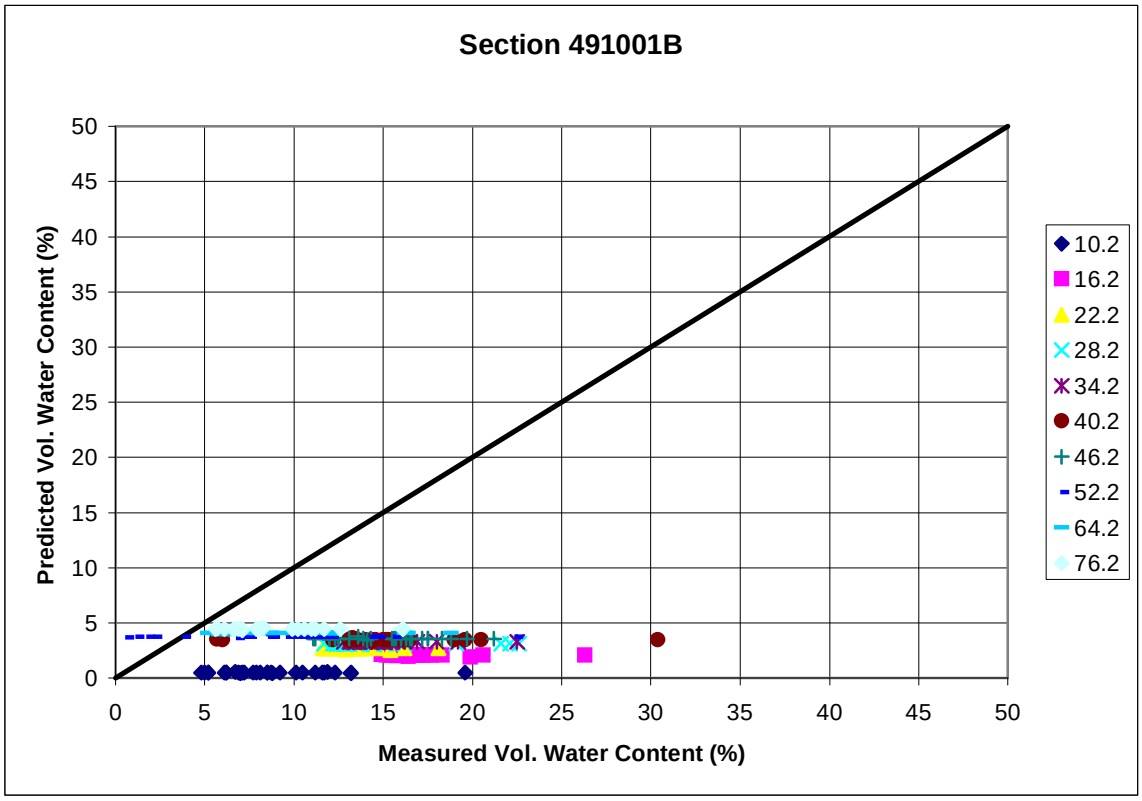
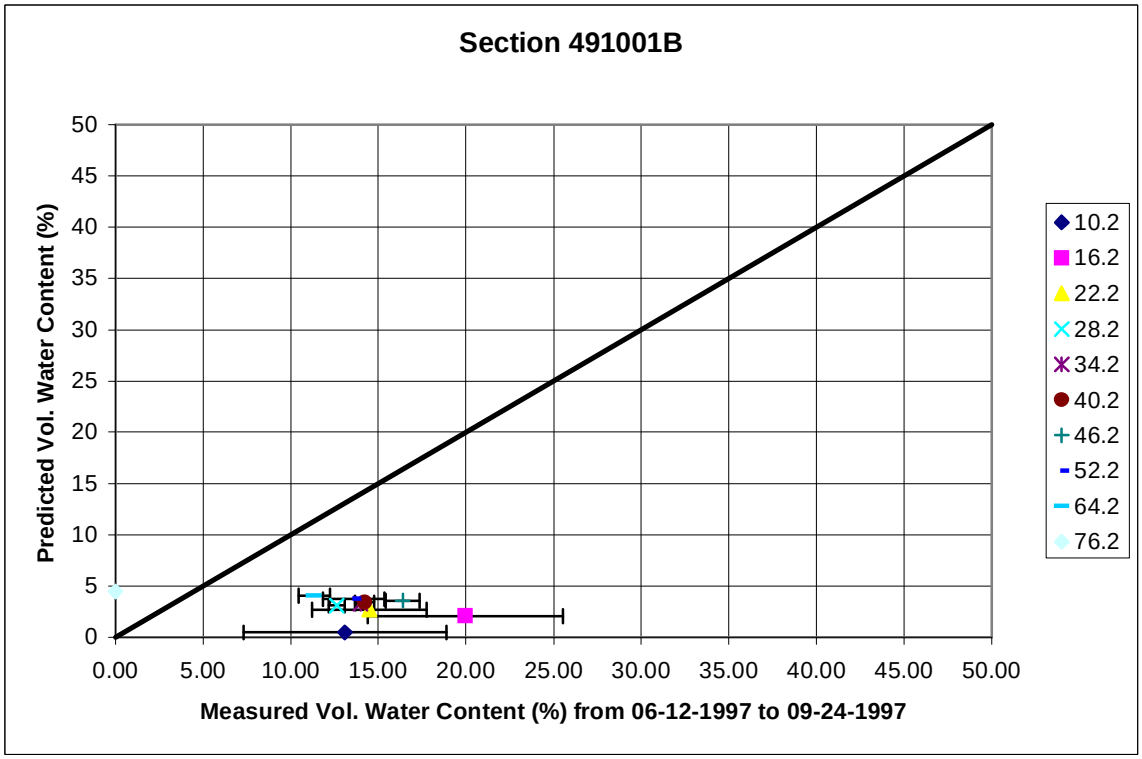
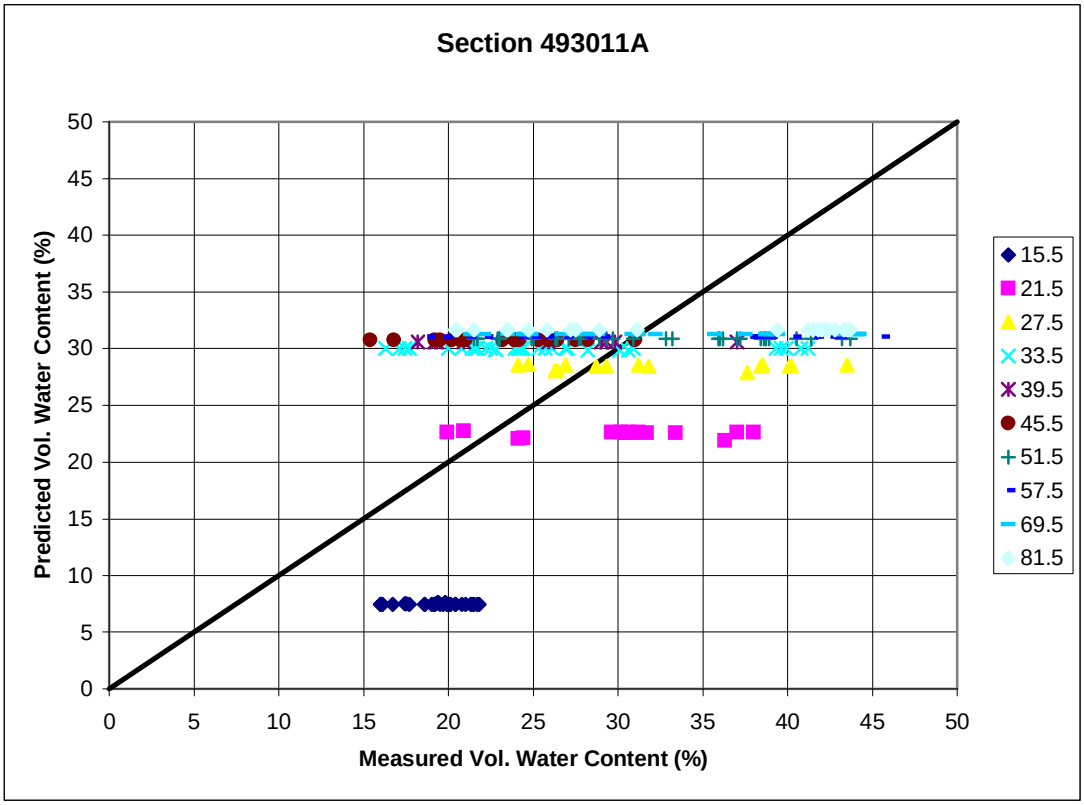
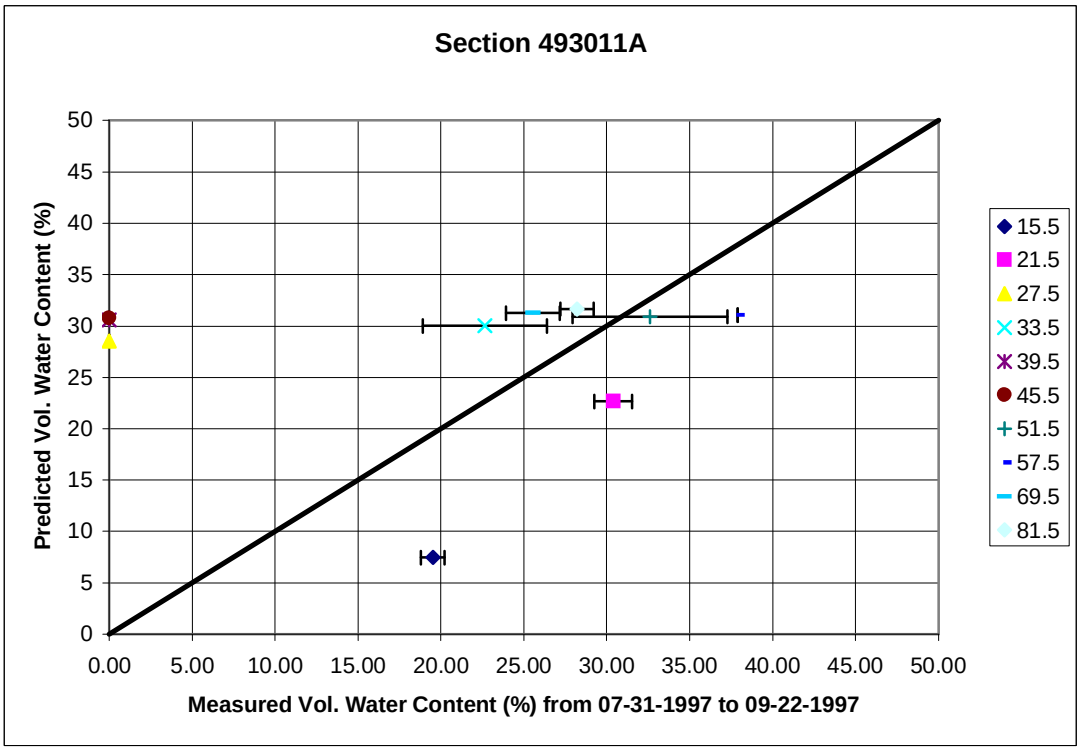
34.2
40.2
46.2
52.2
64.2
76.2


Section 491001B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.2
16.2
22.2
28.2
34.2
40.2
46.2
52.2
64.2
76.2


Section 491001B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 06-12-1997 to 09-24-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.2
16.2
22.2
28.2
34.2
40.2
46.2
52.2
64.2
76.2


Section 493011A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
15.5
21.5
27.5
33.5
39.5
45.5
51.5
57.5
69.5
81.5


Section 493011A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-31-1997 to 09-22-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
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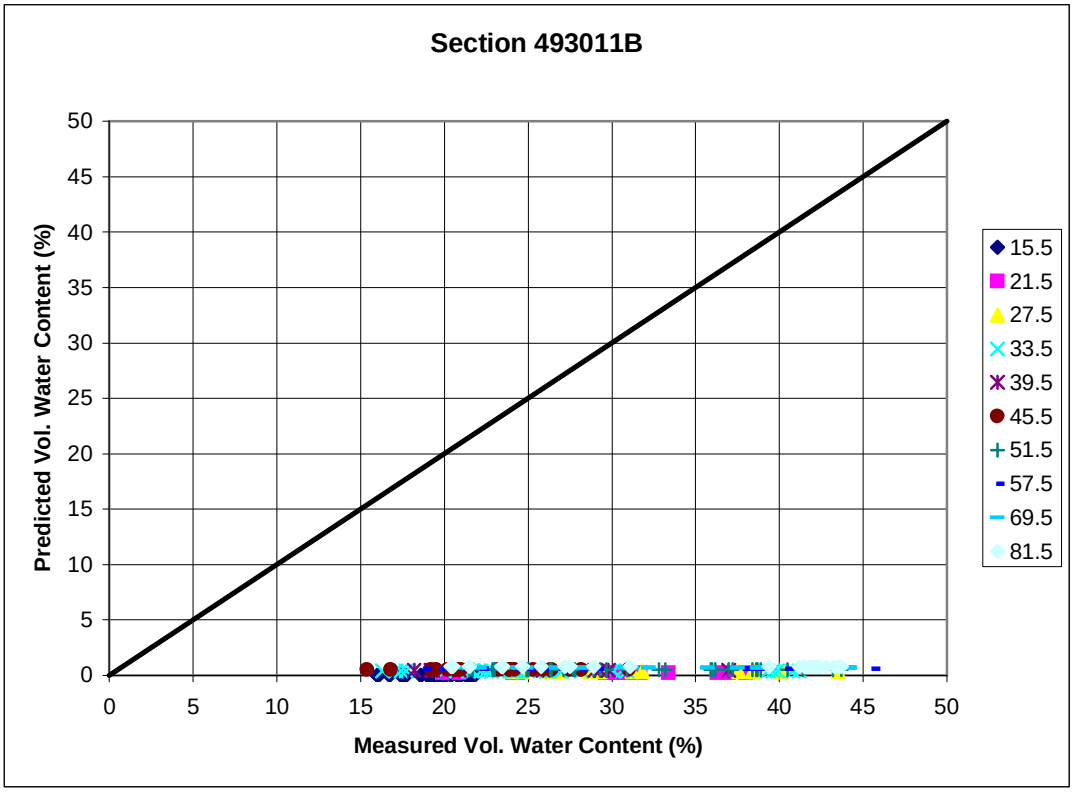
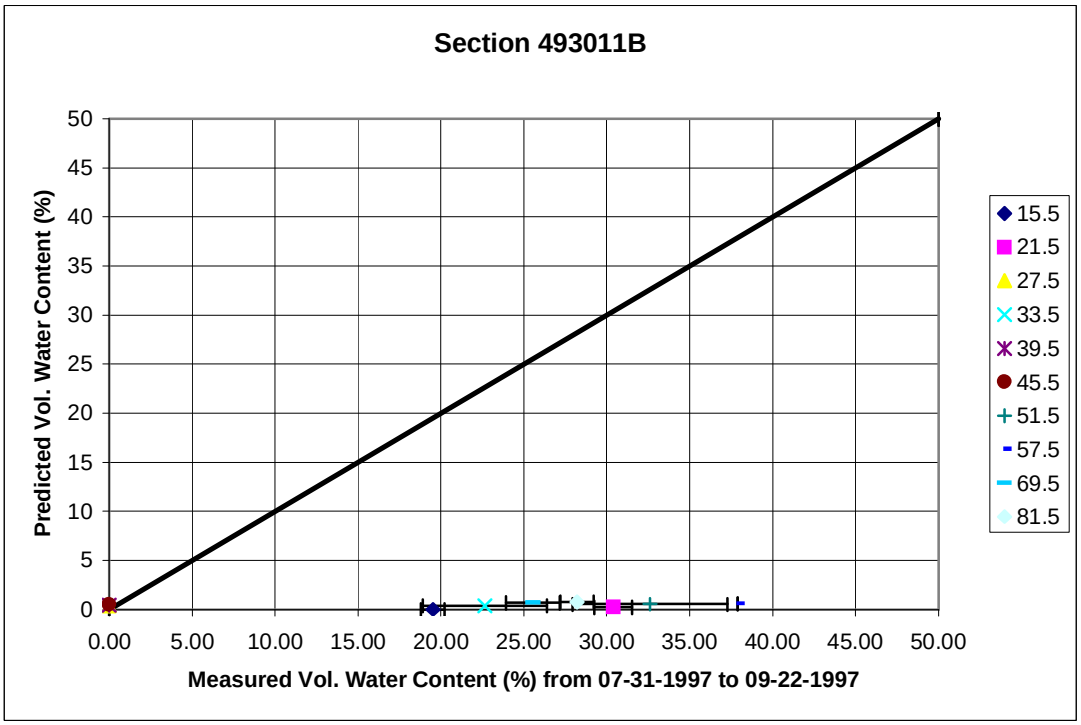
15.5
21.5
27.5
33.5
39.5
45.5
51.5
57.5
69.5
81.5


Section 493011B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
15.5
21.5
27.5
33.5
39.5
45.5
51.5
57.5
69.5
81.5


Section 493011B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-31-1997 to 09-22-1997
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
15.5
21.5
27.5
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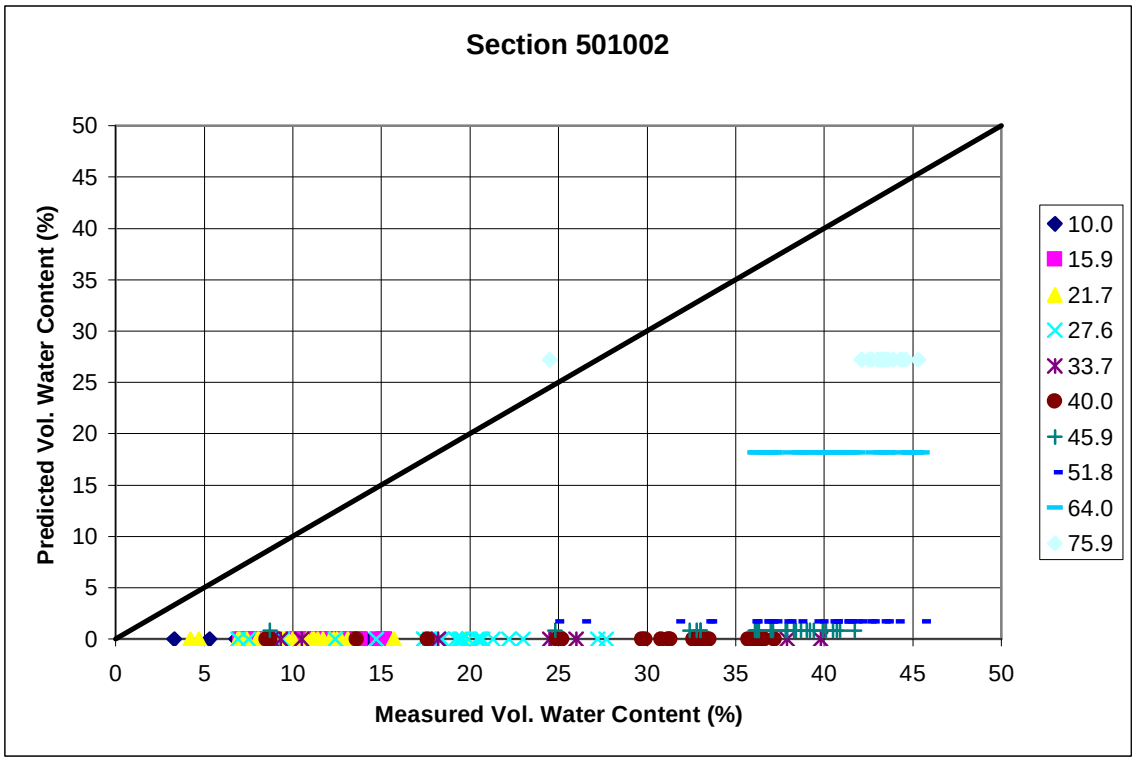
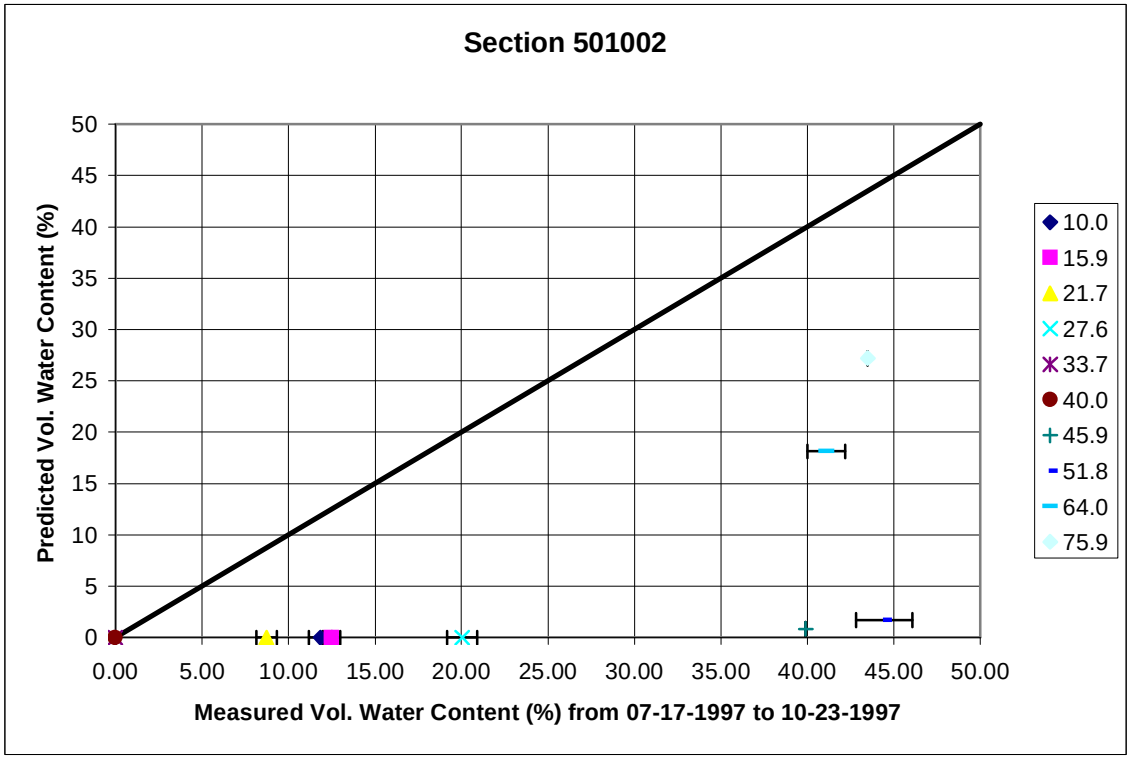
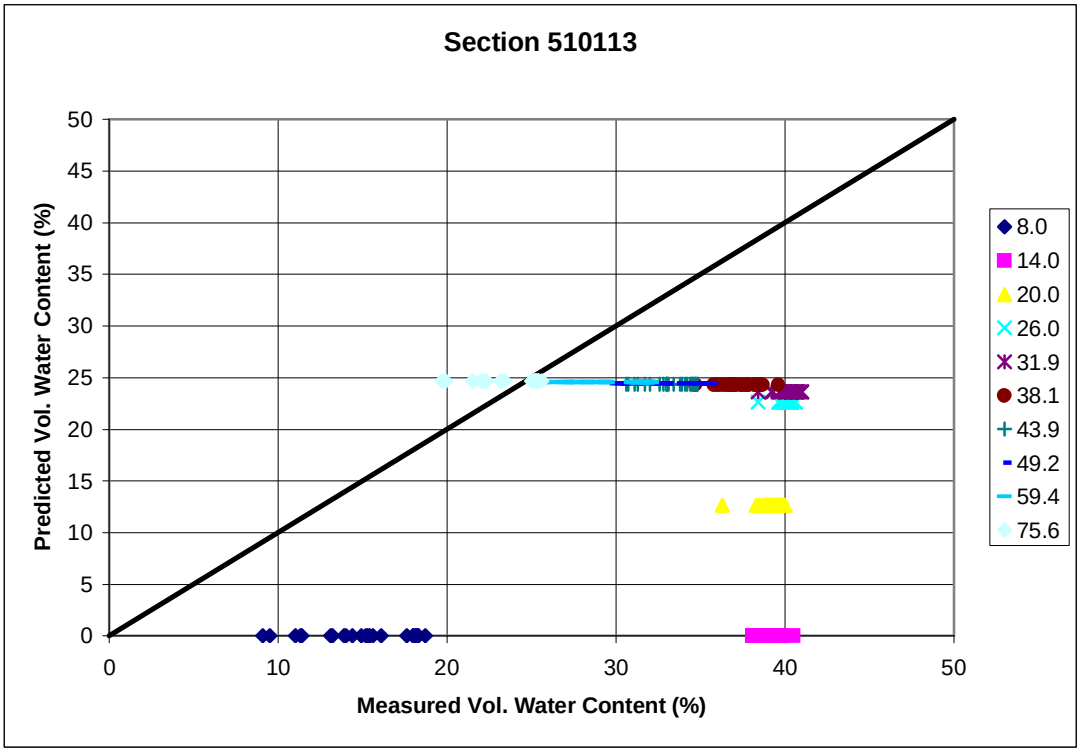
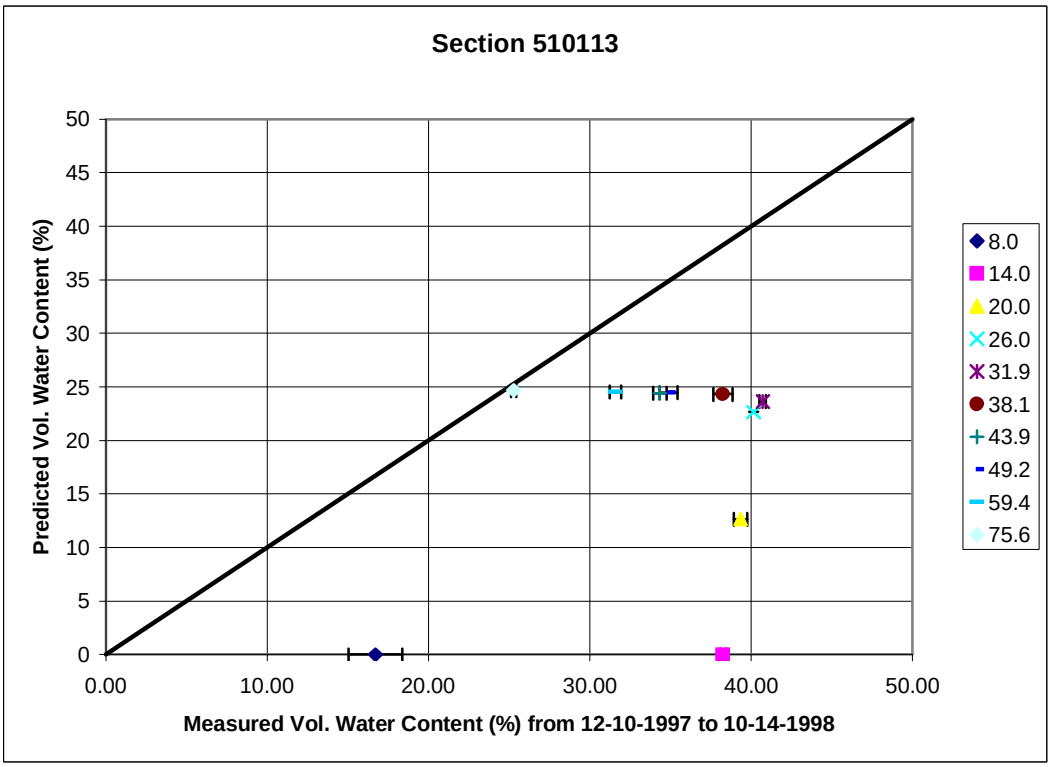
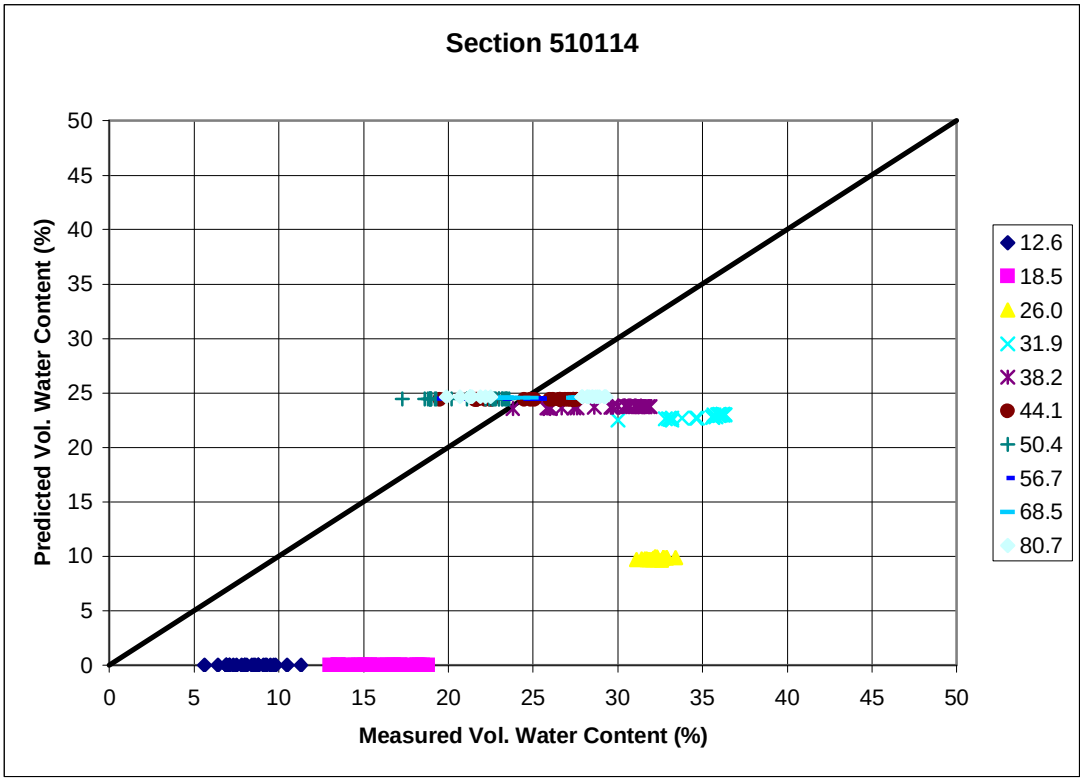
39.5
45.5
51.5
57.5
69.5
81.5

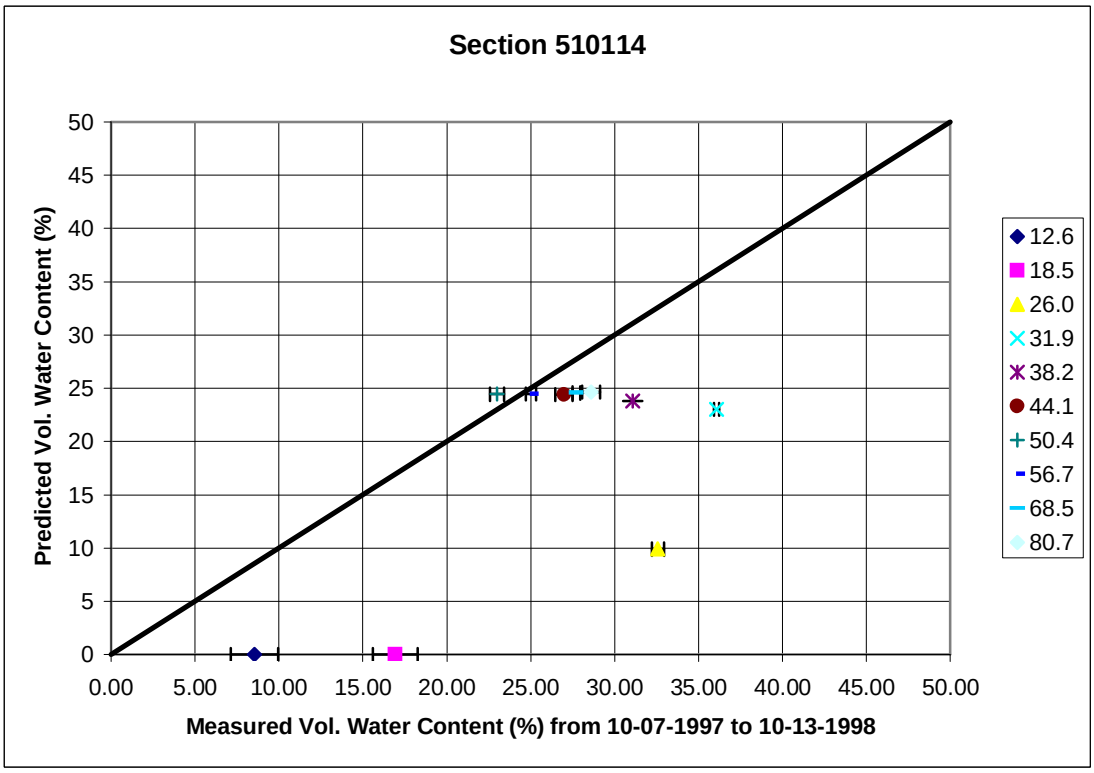

Section 501002
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

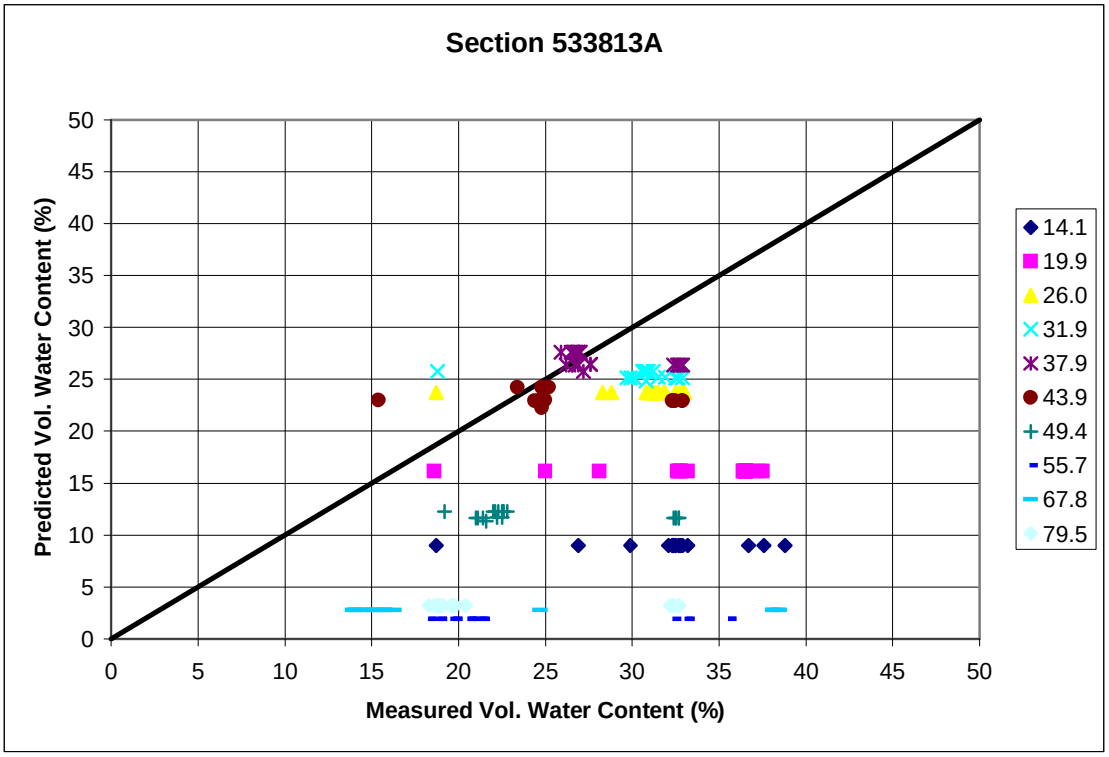

Section 501002
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 07-17-1997 to 10-23-1997
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

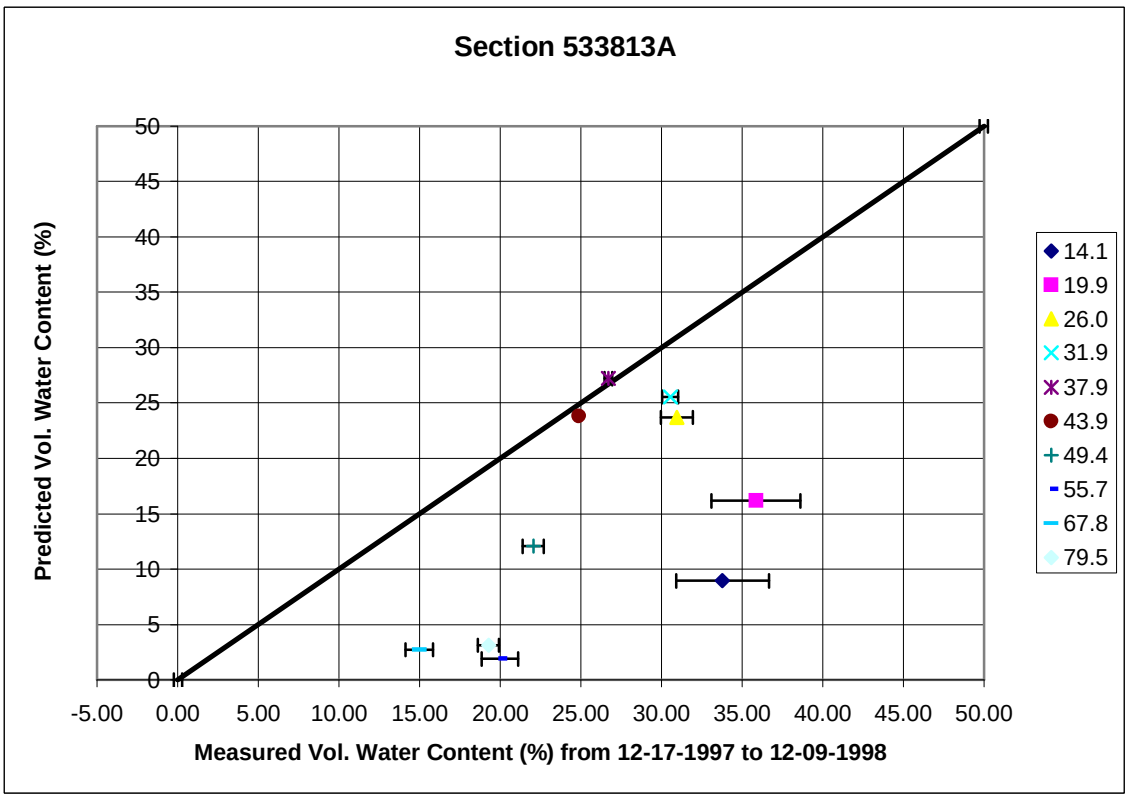

Section 510113
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
0
10
20
30
40
50
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6

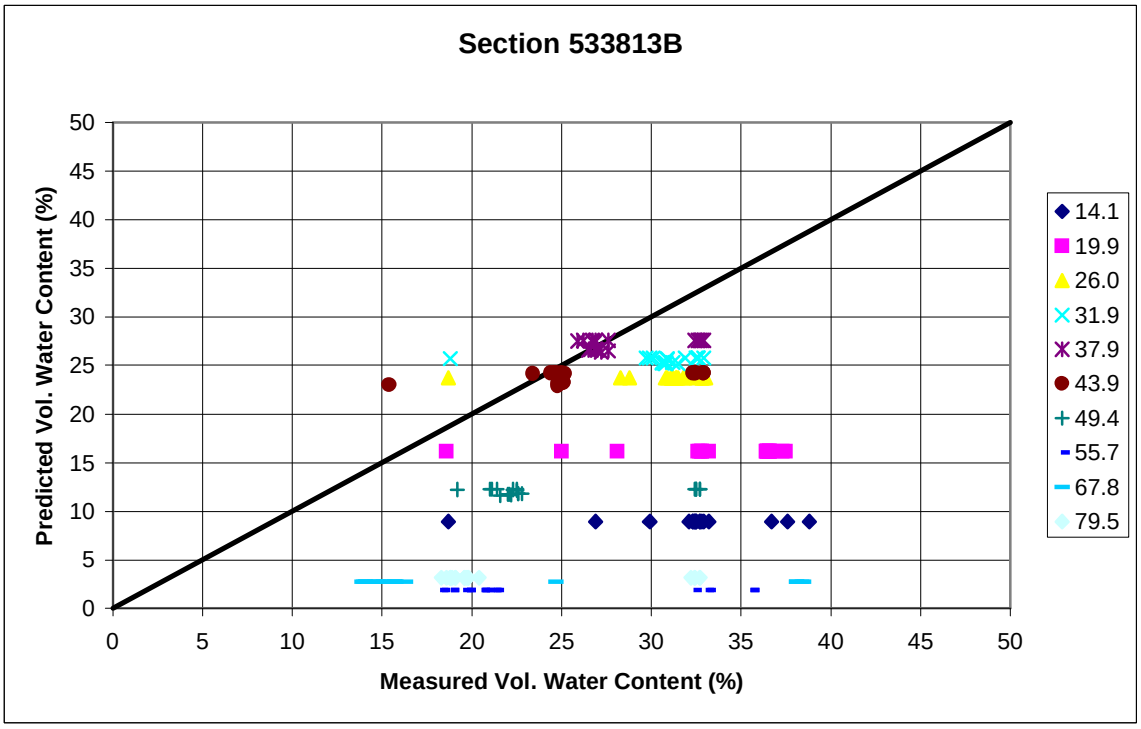

Section 510113
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-10-1997 to 10-14-1998
0
5
10
15
20
25
30
35
40
45
50
0.00
10.00
20.00
30.00
40.00
50.00
8.0
14.0
20.0
26.0
31.9
38.1
43.9
49.2
59.4
75.6

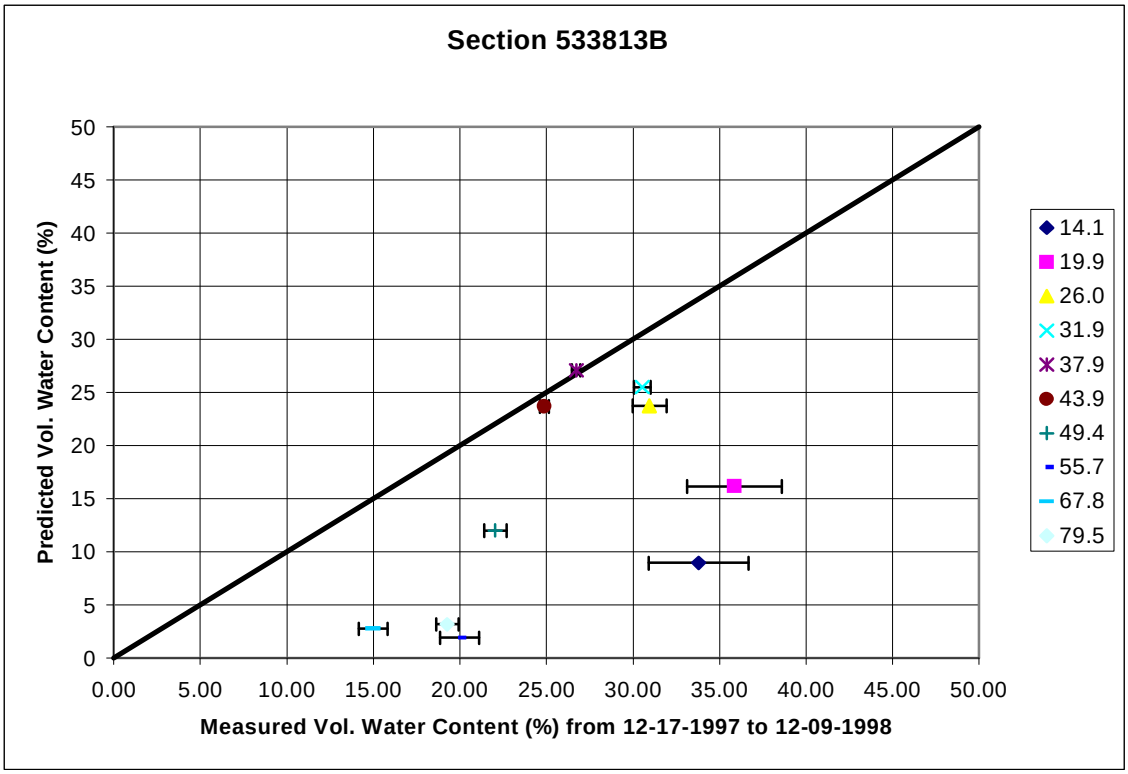

Section 510114
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
12.6
18.5
26.0
31.9
38.2
44.1
50.4
56.7
68.5
80.7


Section 510114
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 10-07-1997 to 10-13-1998
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
12.6
18.5
26.0
31.9
38.2
44.1
50.4
56.7
68.5
80.7

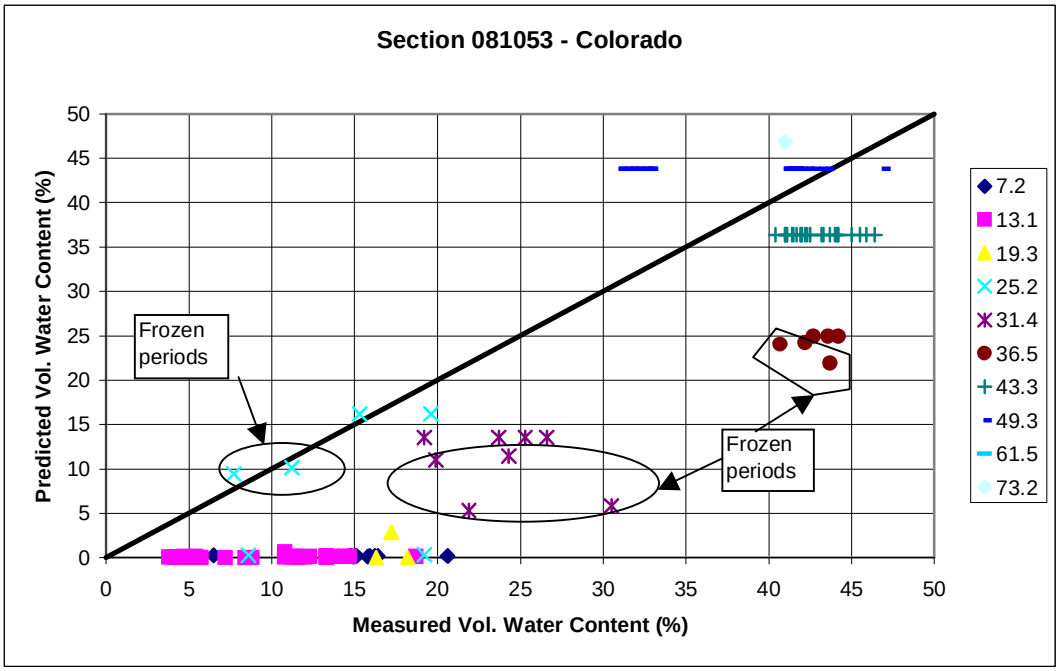

Section 533813A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
14.1
19.9
26.0
31.9
37.9
43.9
49.4
55.7
67.8
79.5

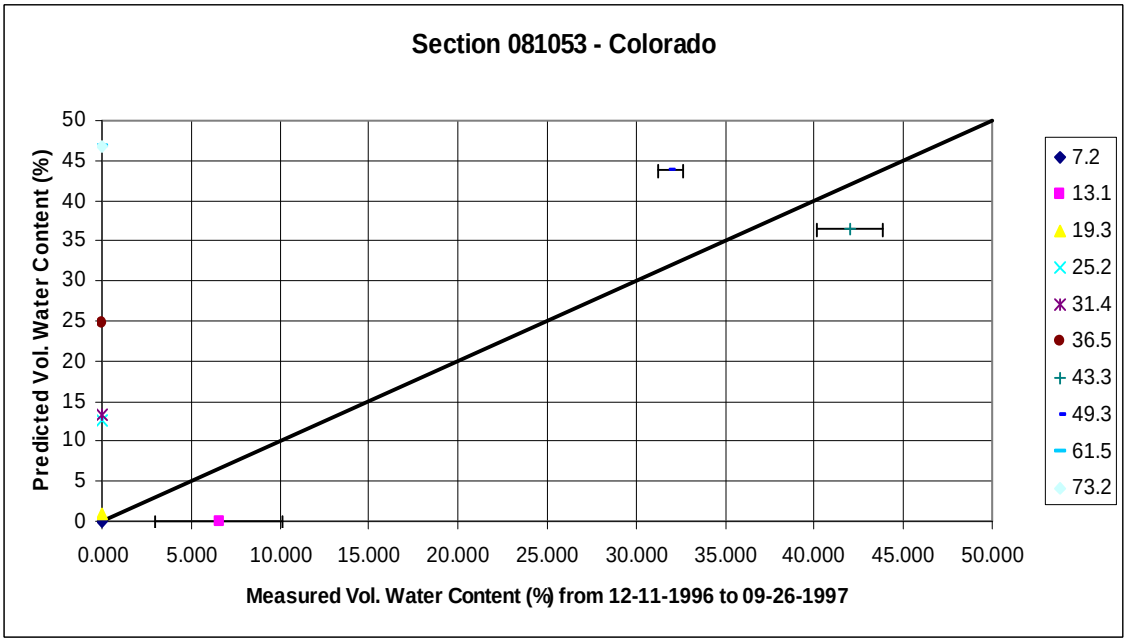

Section 533813A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-17-1997 to 12-09-1998
-5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
14.1
19.9
26.0
31.9
37.9
43.9
49.4
55.7
67.8
79.5

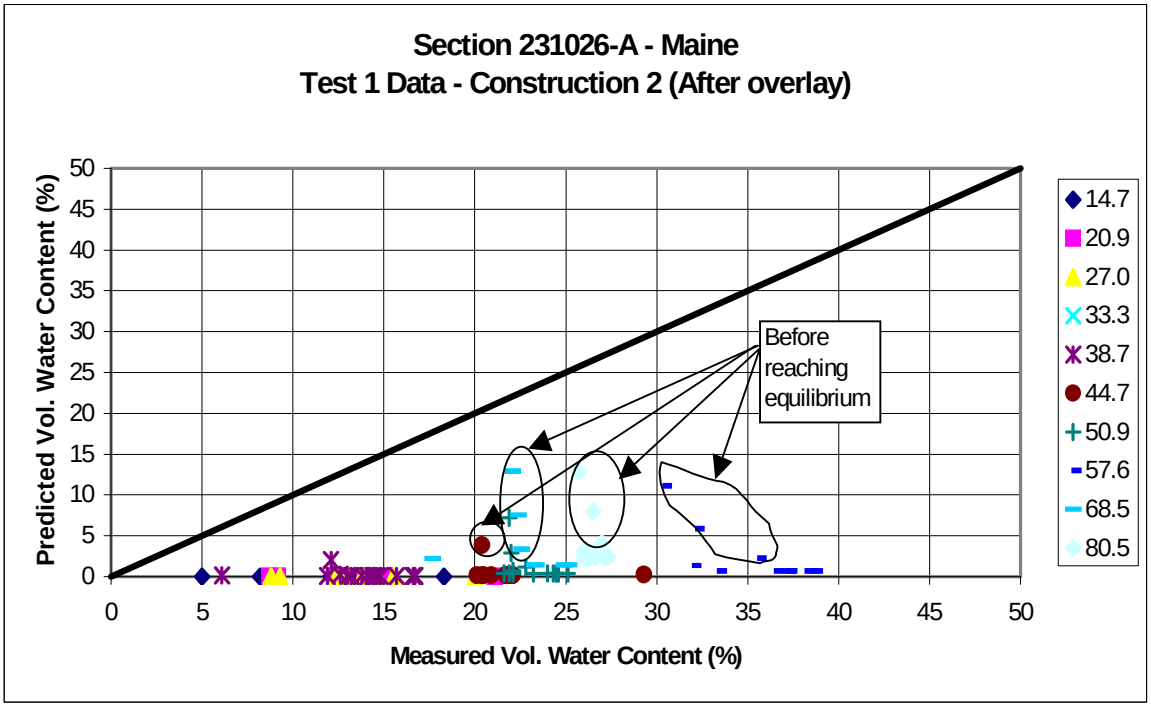

Section 533813B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
0
5
10
15
20
25
30
35
40
45
50
14.1
19.9
26.0
31.9
37.9
43.9
49.4
55.7
67.8
79.5

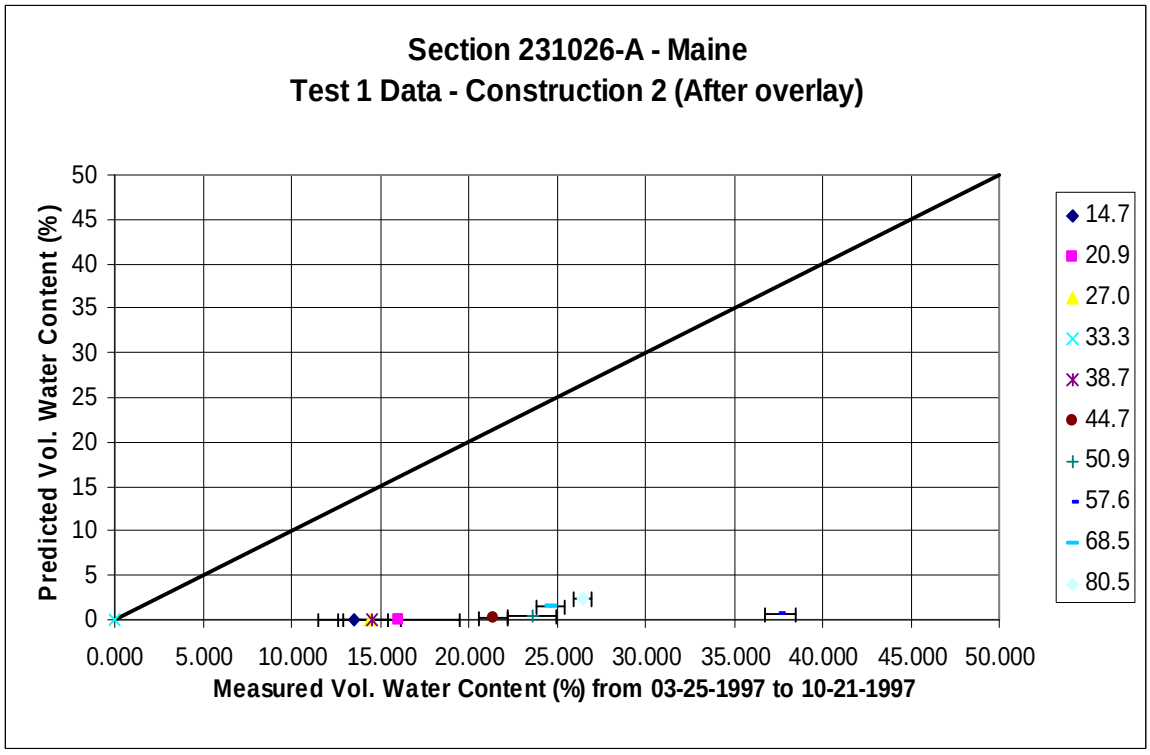

Section 533813B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-17-1997 to 12-09-1998
0
5
10
15
20
25
30
35
40
45
50
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
14.1
19.9
26.0
31.9
37.9
43.9
49.4
55.7
67.8
79.5

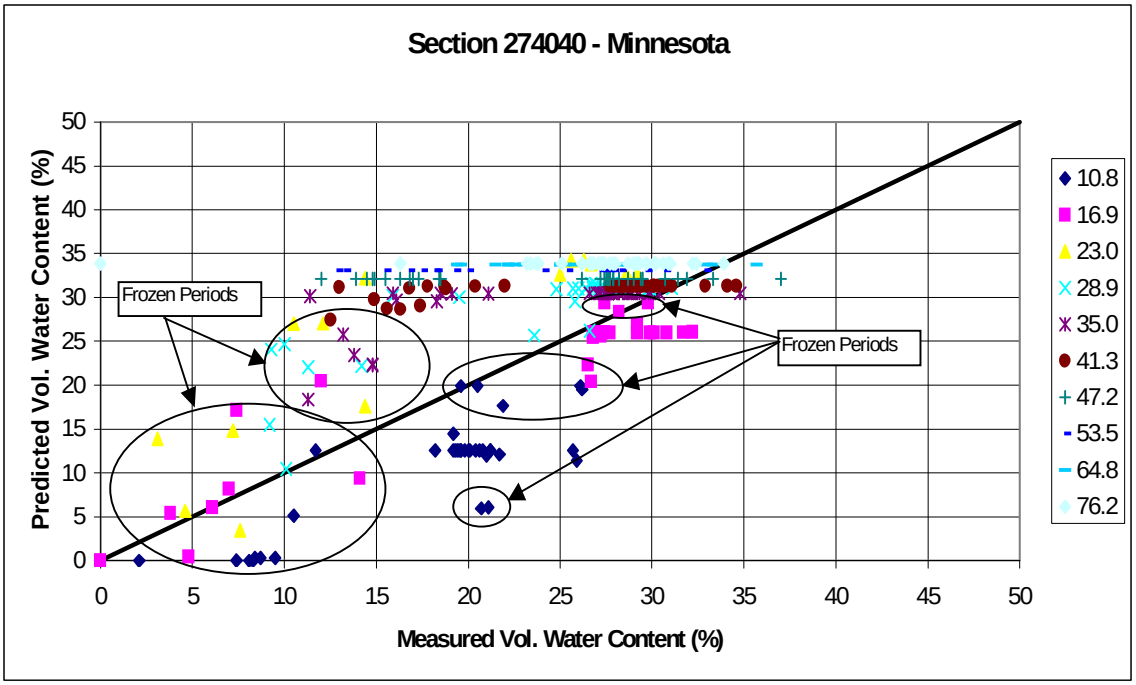
APPENDIX F.
SECTIONS WITH MEASURED TDR MOISTURE CONTENT THAT DO NOT CORRESPONDED TO EQUILIBRIUM CONDITIONS

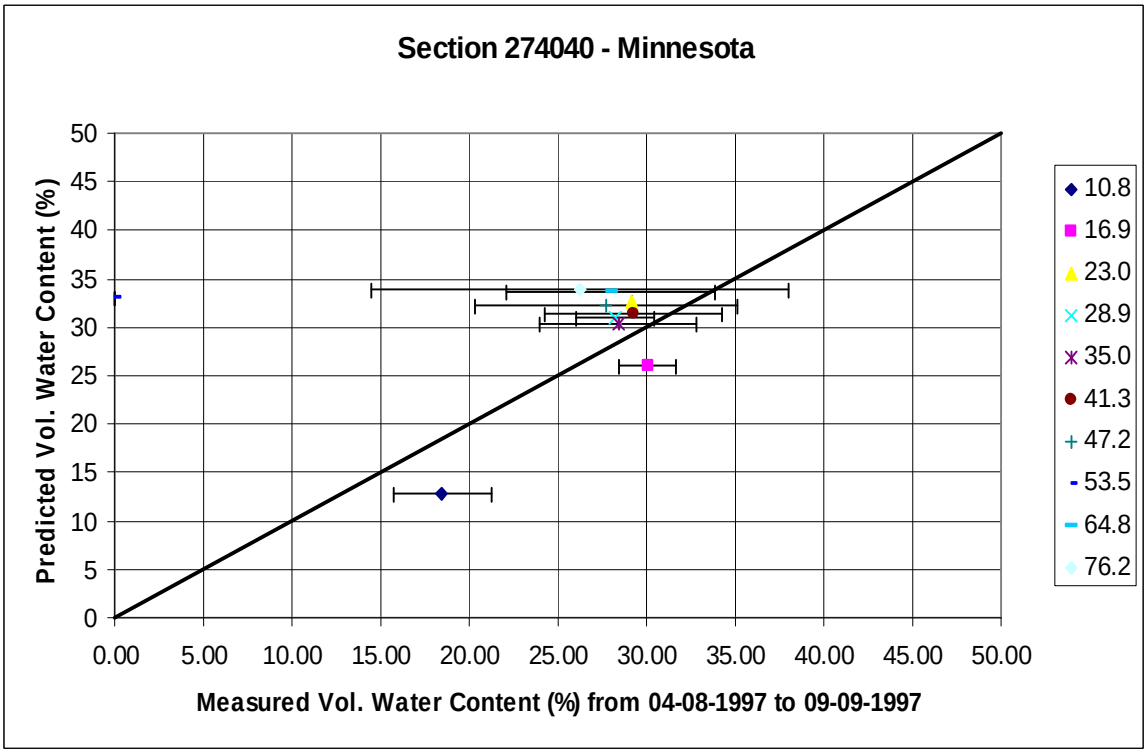

Section 081053 - Colorado
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen periods
Frozen periods
7.2
13.1
19.3
25.2
31.4
36.5
43.3
49.3
61.5
73.2

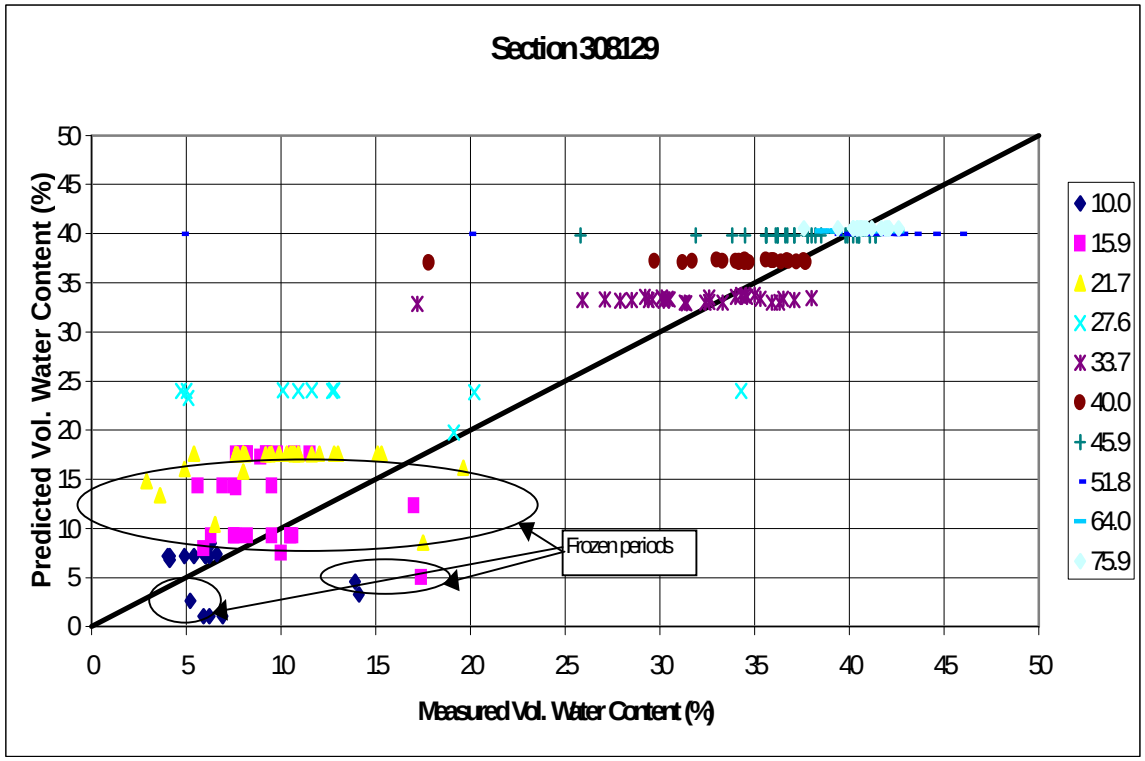

Section 081053 - Colorado
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-11-1996 to 09-26-1997
7.2
13.1
19.3
25.2
31.4
36.5
43.3
49.3
61.5
73.2

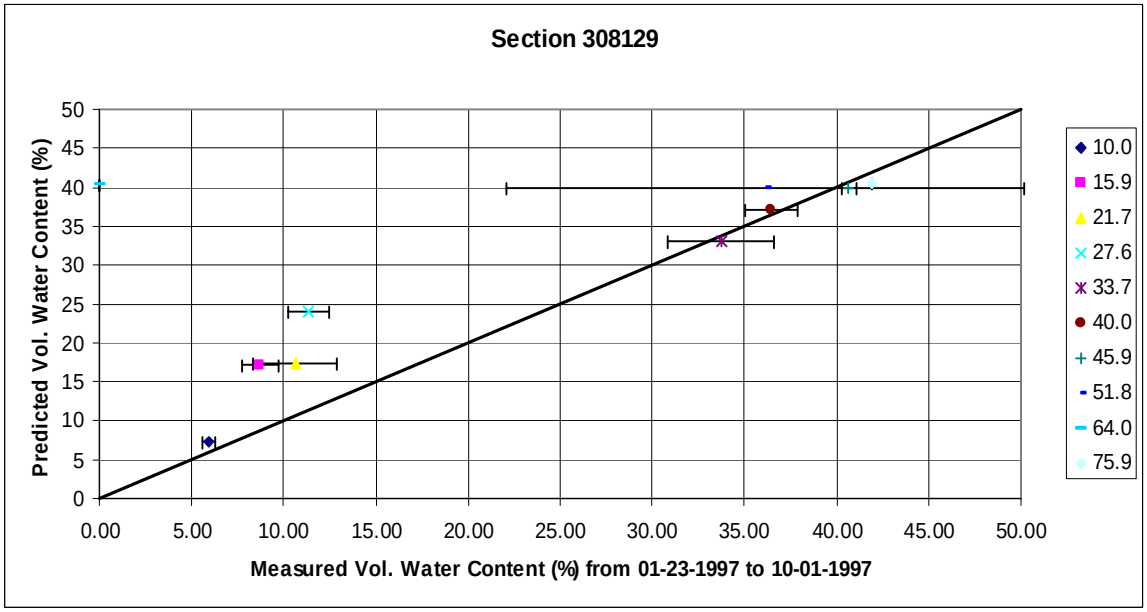

Section 231026-A - Maine
Test 1 Data - Construction 2 (After overlay)
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Before reaching equilibrium
14.7
20.9
27.0
33.3
38.7
44.7
50.9
57.6
68.5
80.5

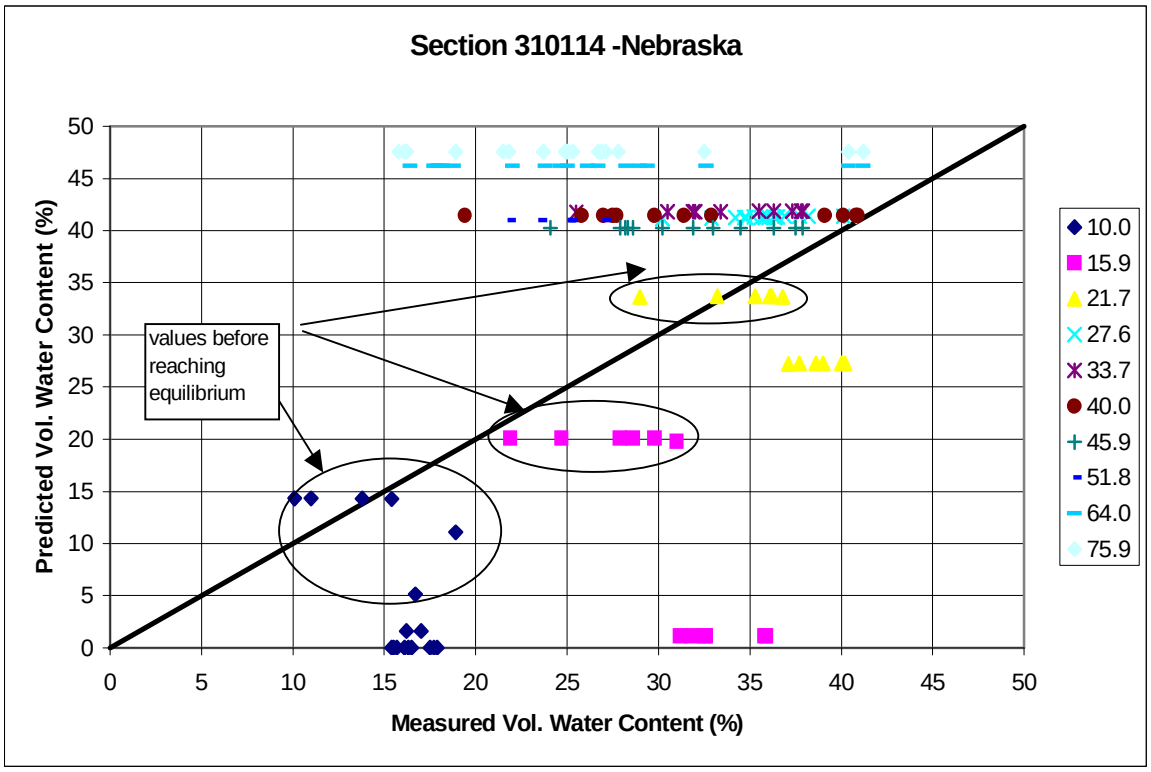

Section 231026-A - Maine
Test 1 Data - Construction 2 (After overlay)
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 03-25-1997 to 10-21-1997
14.7
20.9
27.0
33.3
38.7
44.7
50.9
57.6
68.5
80.5

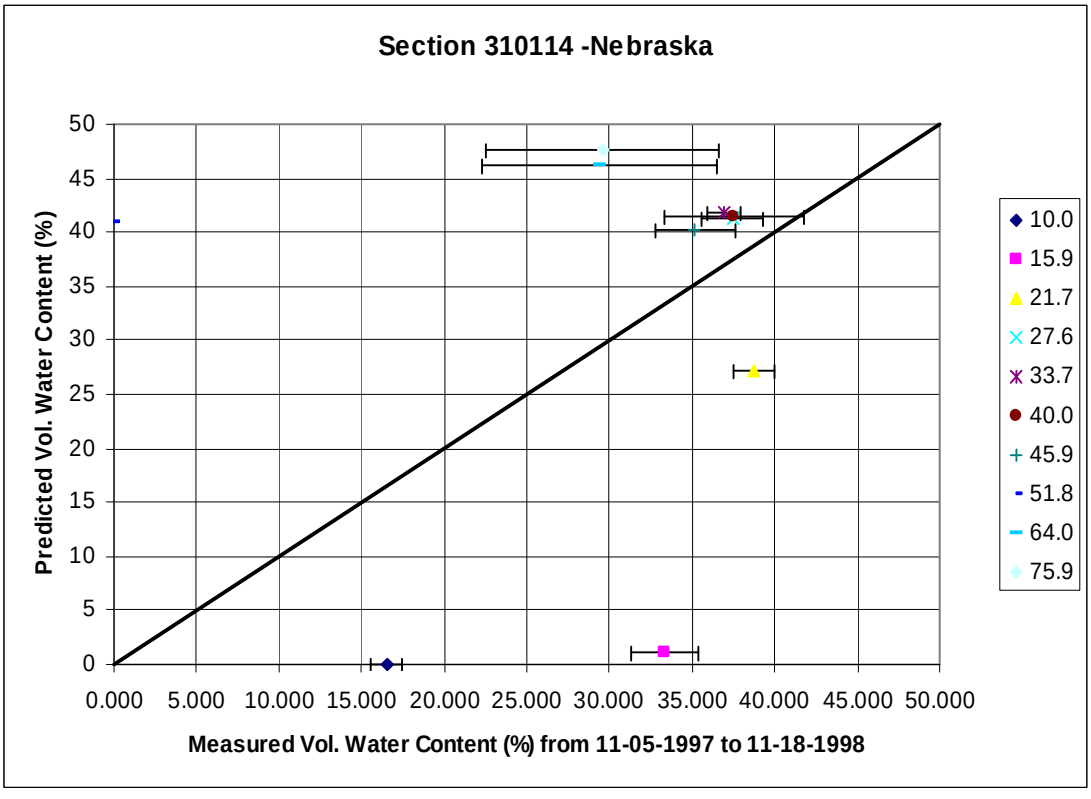

Section 274040 - Minnesota
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen Periods
Frozen Periods
10.8
16.9
23.0
28.9
35.0
41.3
47.2
53.5
64.8
76.2

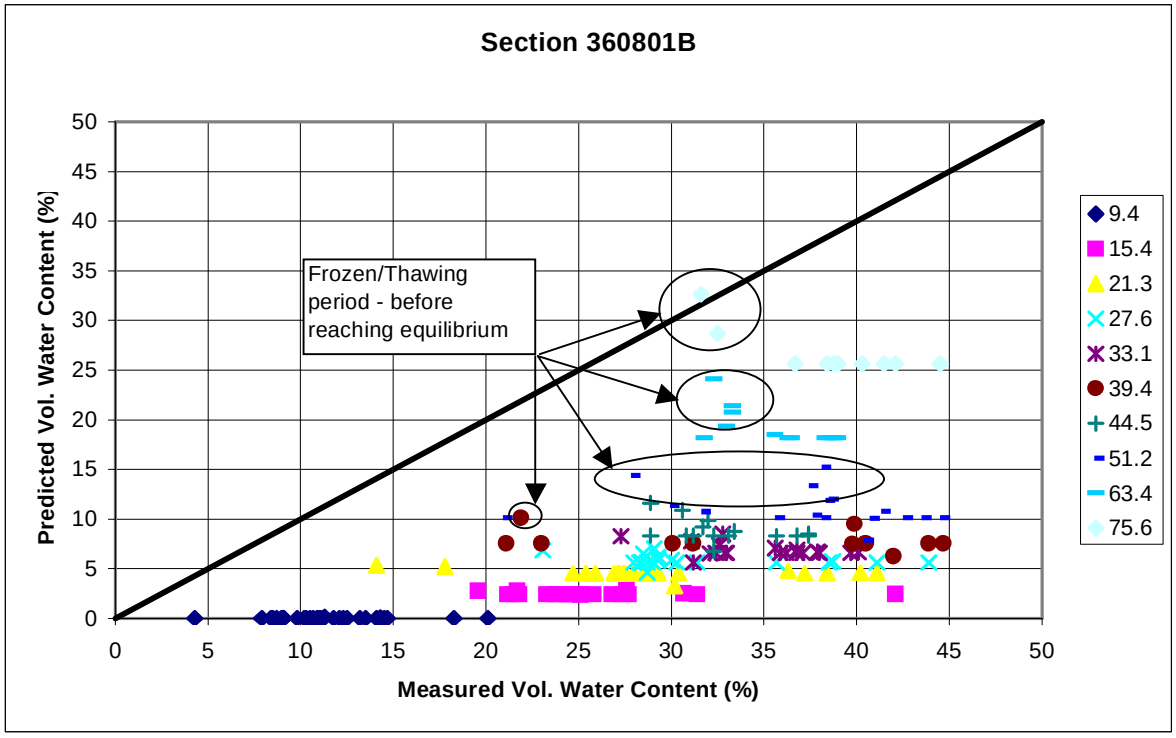

Section 274040 - Minnesota
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-08-1997 to 09-09-1997
10.8
16.9
23.0
28.9
35.0
41.3
47.2
53.5
64.8
76.2

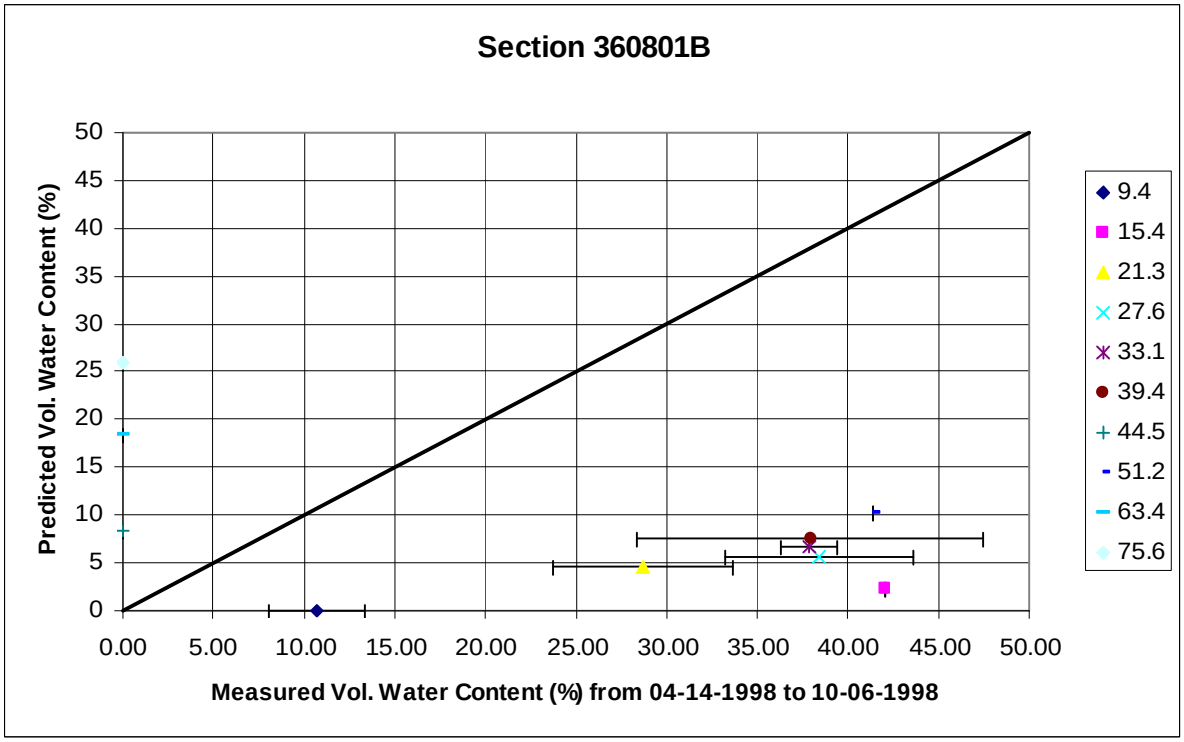

Section 308129
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen periods
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

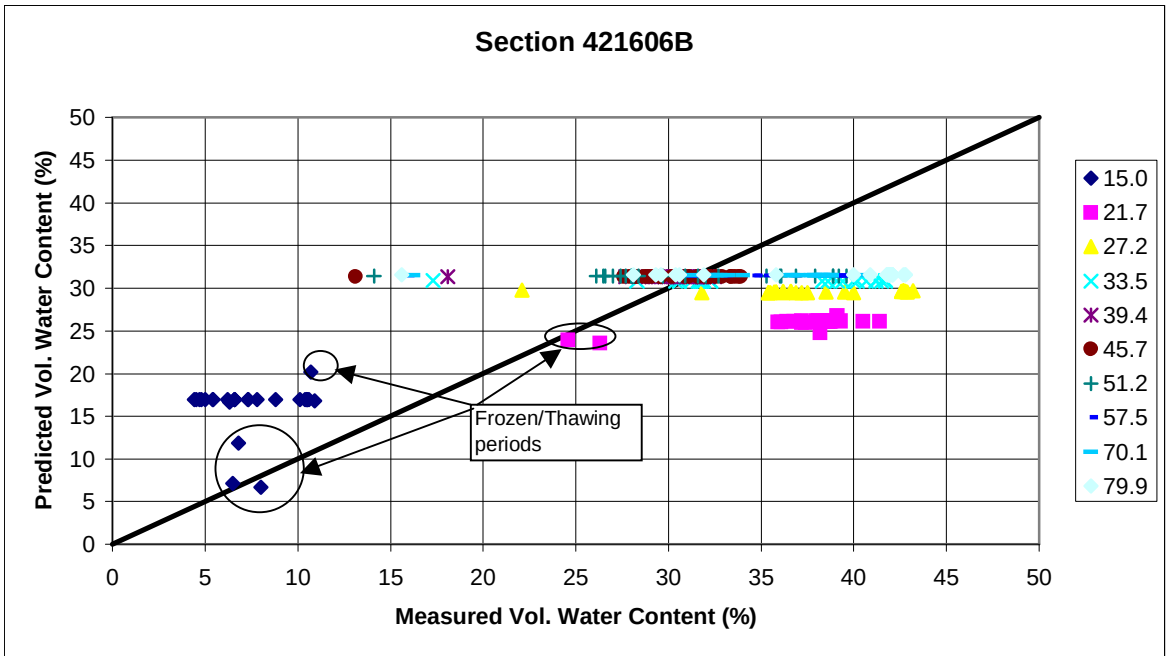

Section 308129
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 01-23-1997 to 10-01-1997
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

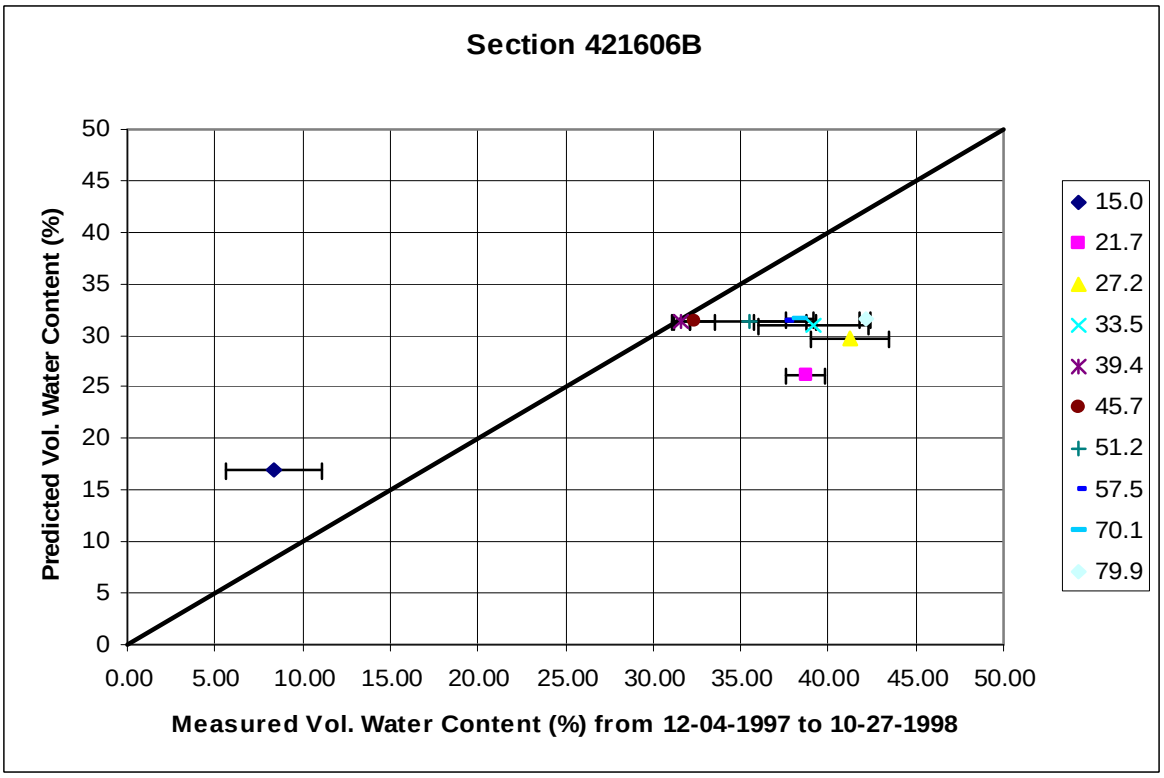

Section 310114 -Nebraska
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
values before reaching equilibrium
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

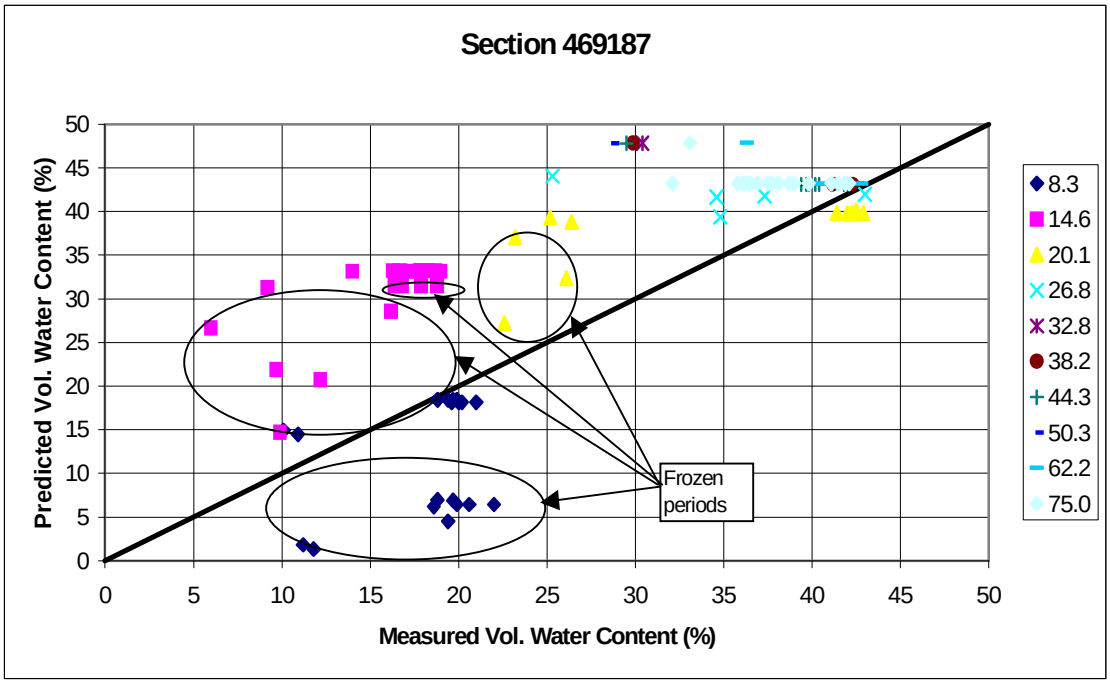

Section 310114 -Nebraska
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 11-05-1997 to 11-18-1998
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

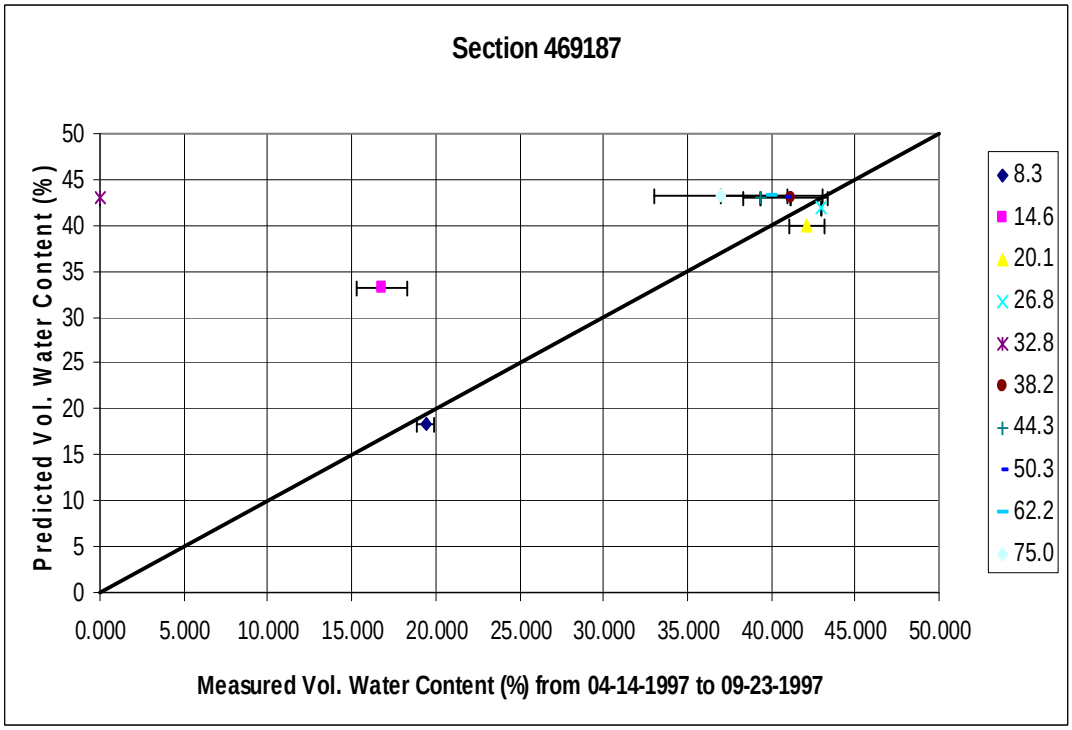

Section 360801B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen/Thawing period - before reaching equilibrium
9.4
15.4
21.3
27.6
33.1
39.4
44.5
51.2
63.4
75.6

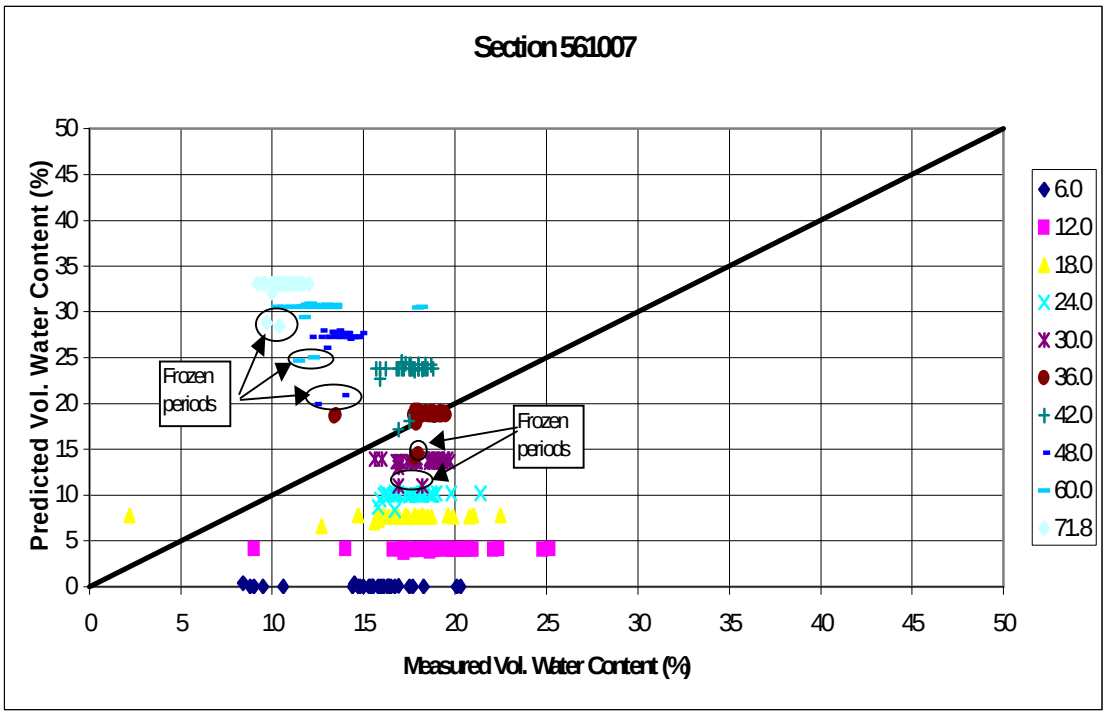

Section 360801B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-14-1998 to 10-06-1998
9.4
15.4
21.3
27.6
33.1
39.4
44.5
51.2
63.4
75.6

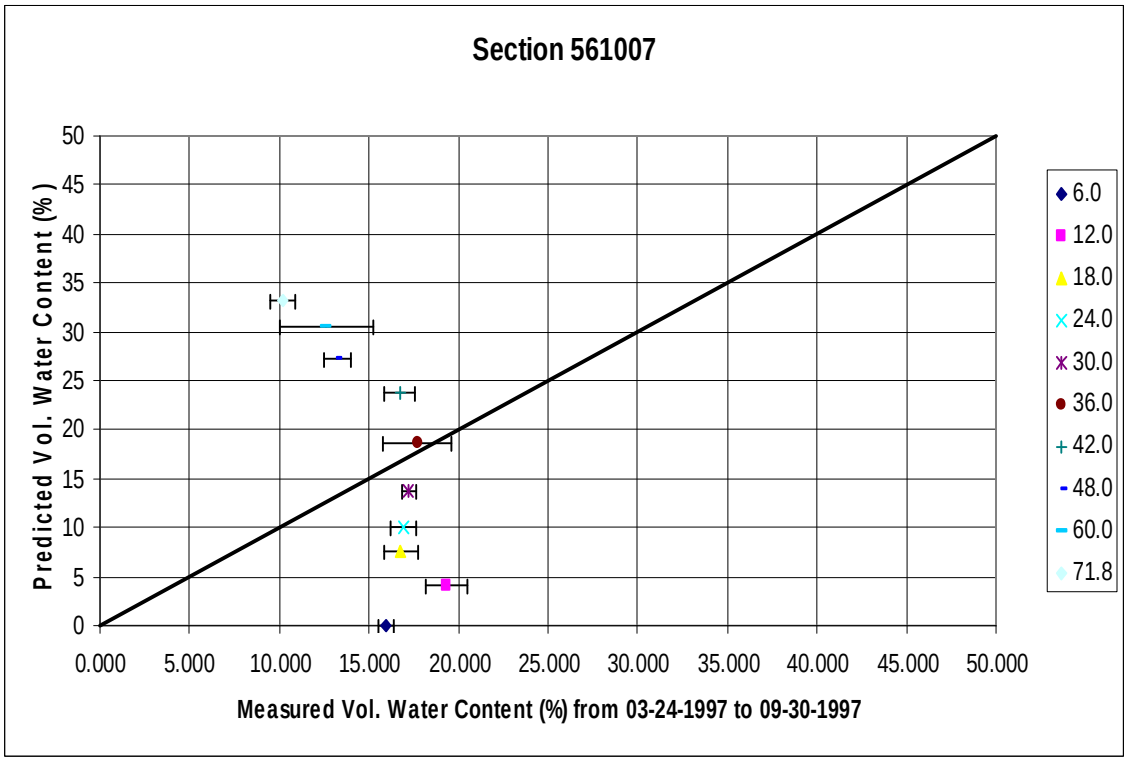

Section 421606B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen/Thawing periods
15.0
21.7
27.2
33.5
39.4
45.7
51.2
57.5
70.1
79.9

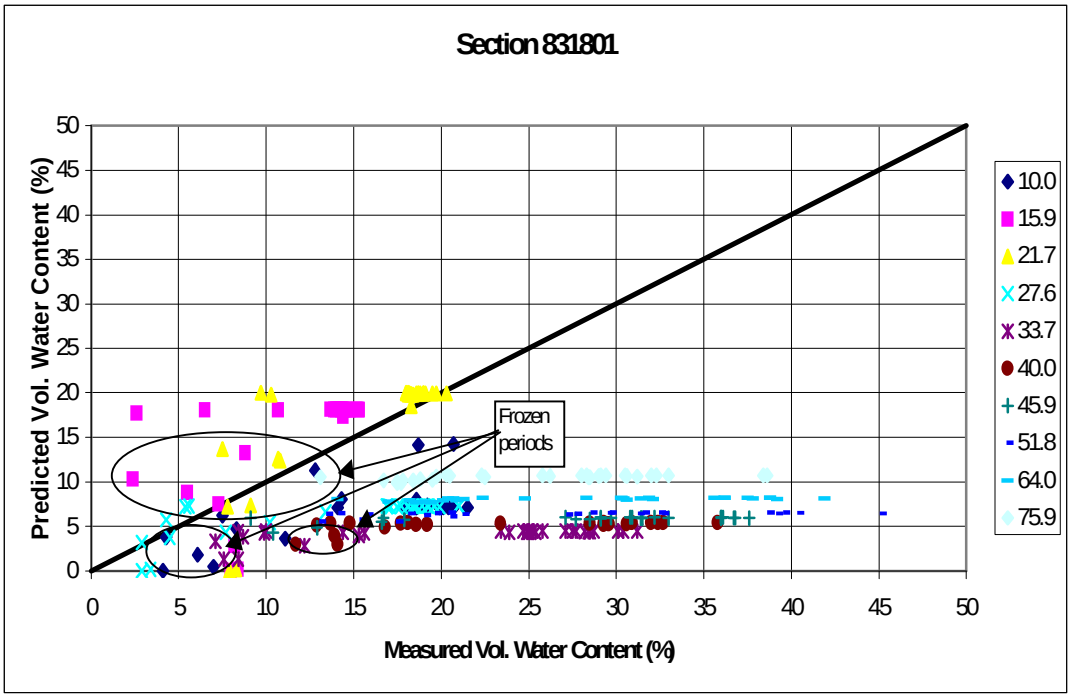

Section 421606B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 12-04-1997 to 10-27-1998
15.0
21.7
27.2
33.5
39.4
45.7
51.2
57.5
70.1
79.9

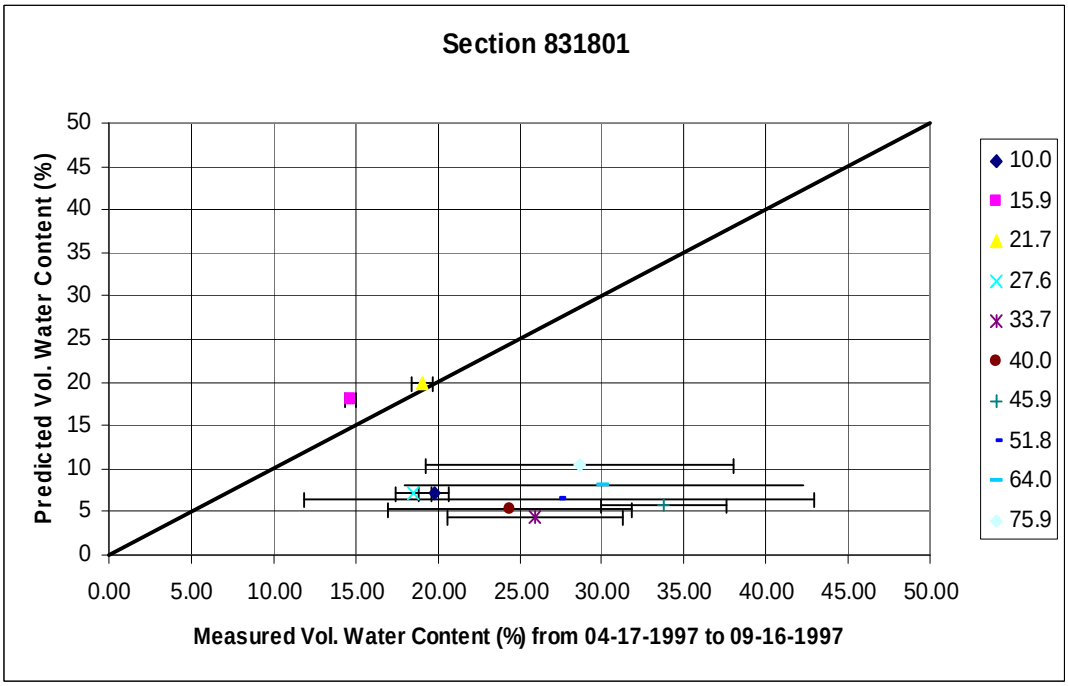

Section 469187
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen periods
8.3
14.6
20.1
26.8
32.8
38.2
44.3
50.3
62.2
75.0

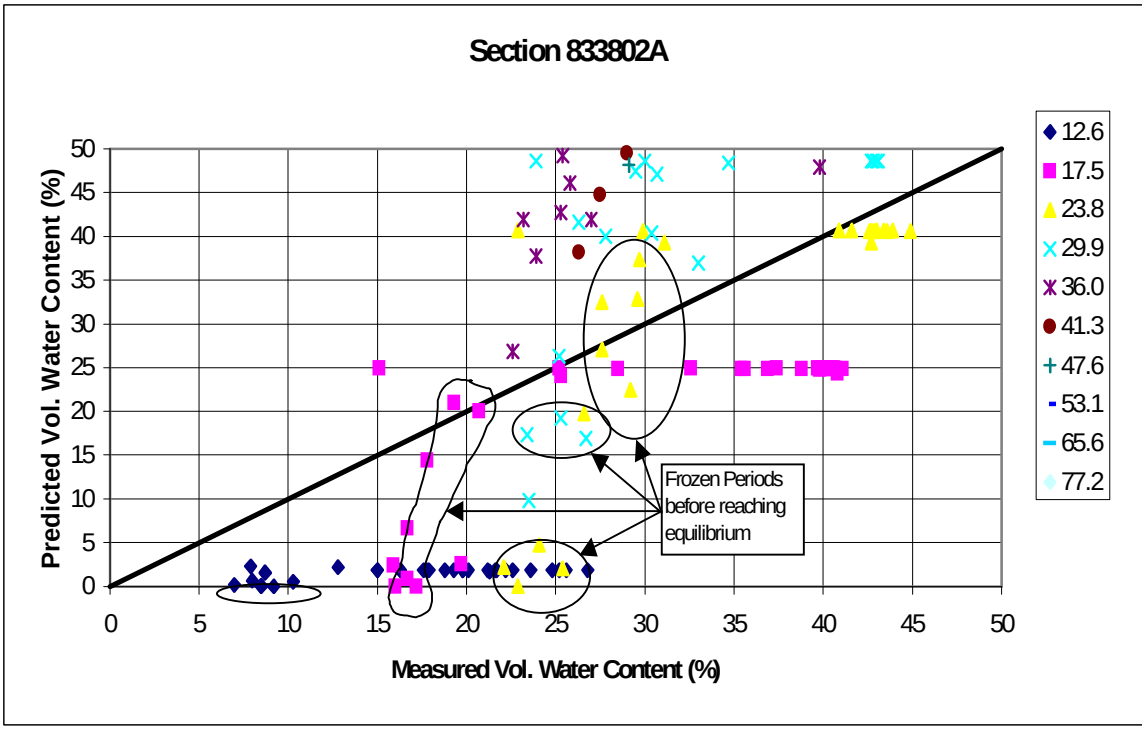

Section 469187
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-14-1997 to 09-23-1997
8.3
14.6
20.1
26.8
32.8
38.2
44.3
50.3
62.2
75.0

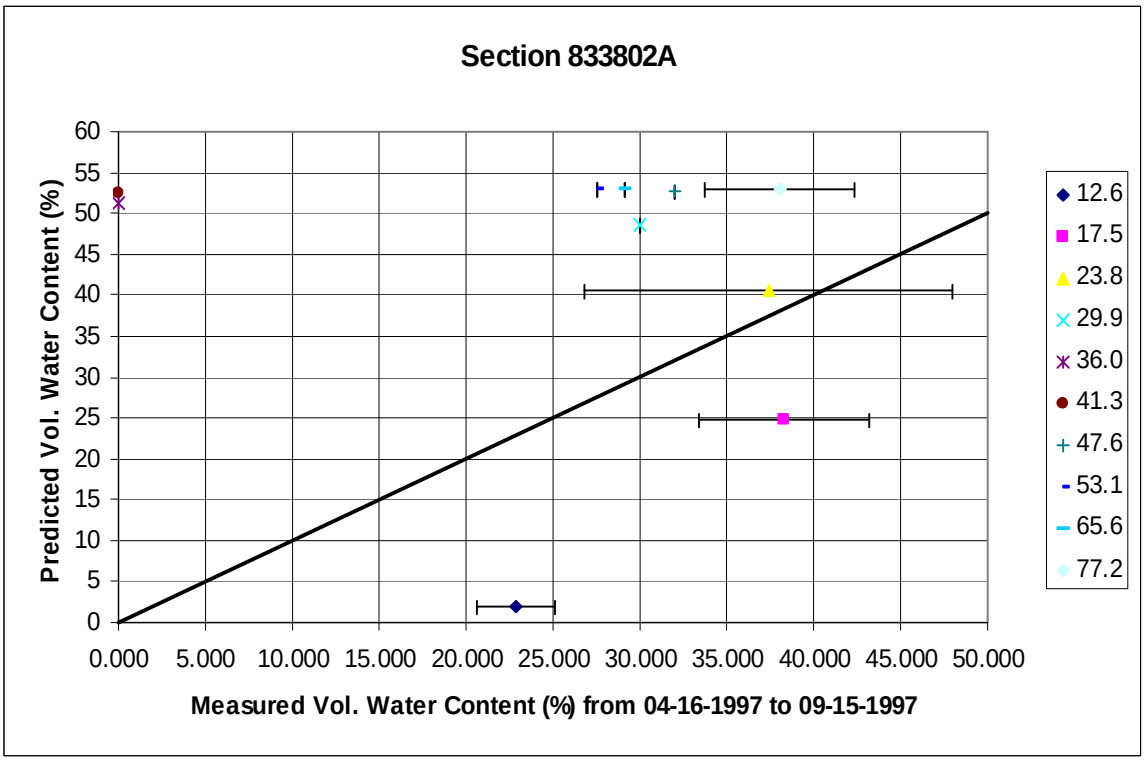

Section 561007
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen periods
Frozen periods
6.0
12.0
18.0
24.0
30.0
36.0
42.0
48.0
60.0
71.8

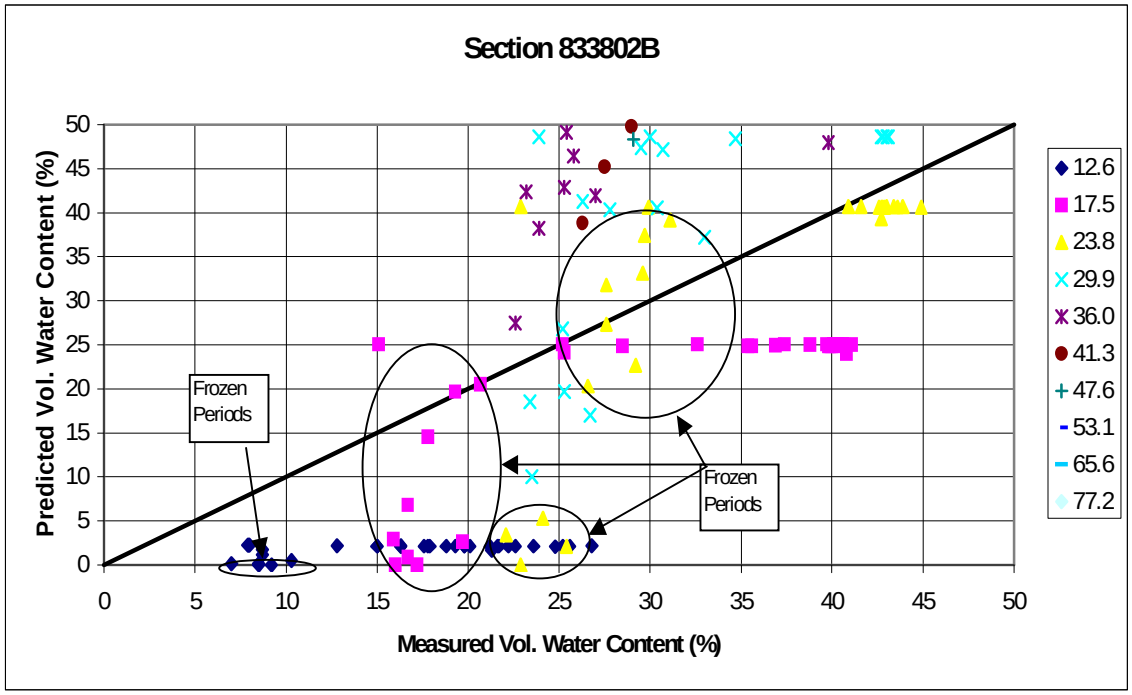

Section 561007
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 03-24-1997 to 09-30-1997
6.0
12.0
18.0
24.0
30.0
36.0
42.0
48.0
60.0
71.8

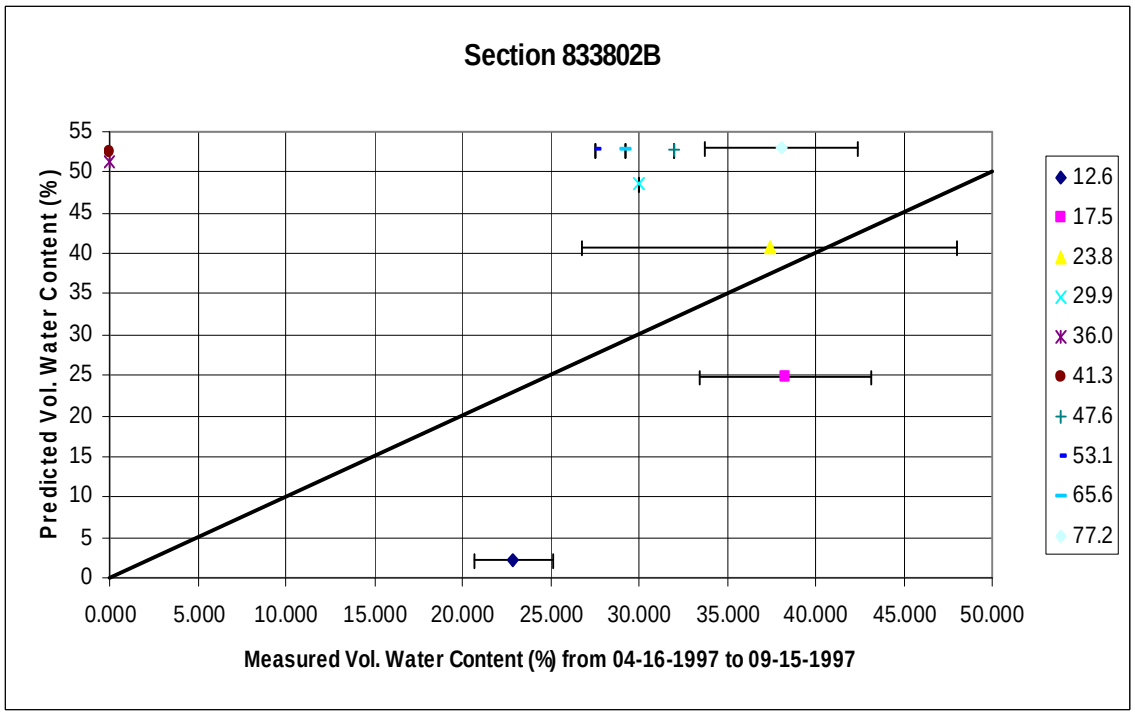

Section 831801
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen periods
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

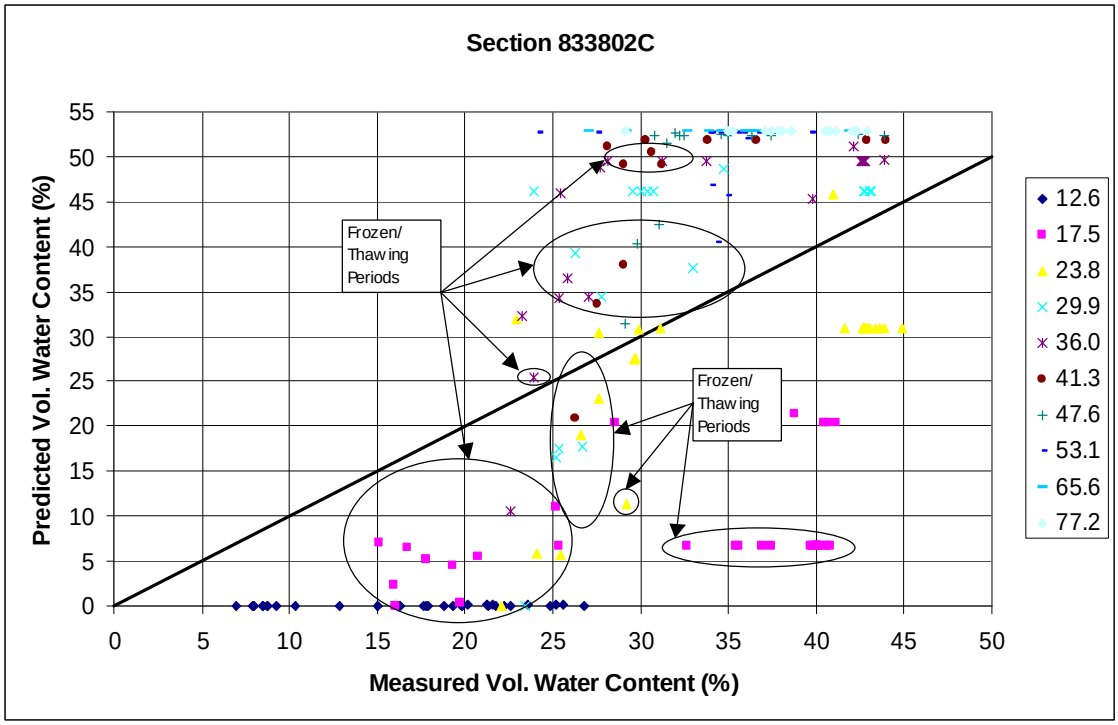

Section 831801
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-17-1997 to 09-16-1997
10.0
15.9
21.7
27.6
33.7
40.0
45.9
51.8
64.0
75.9

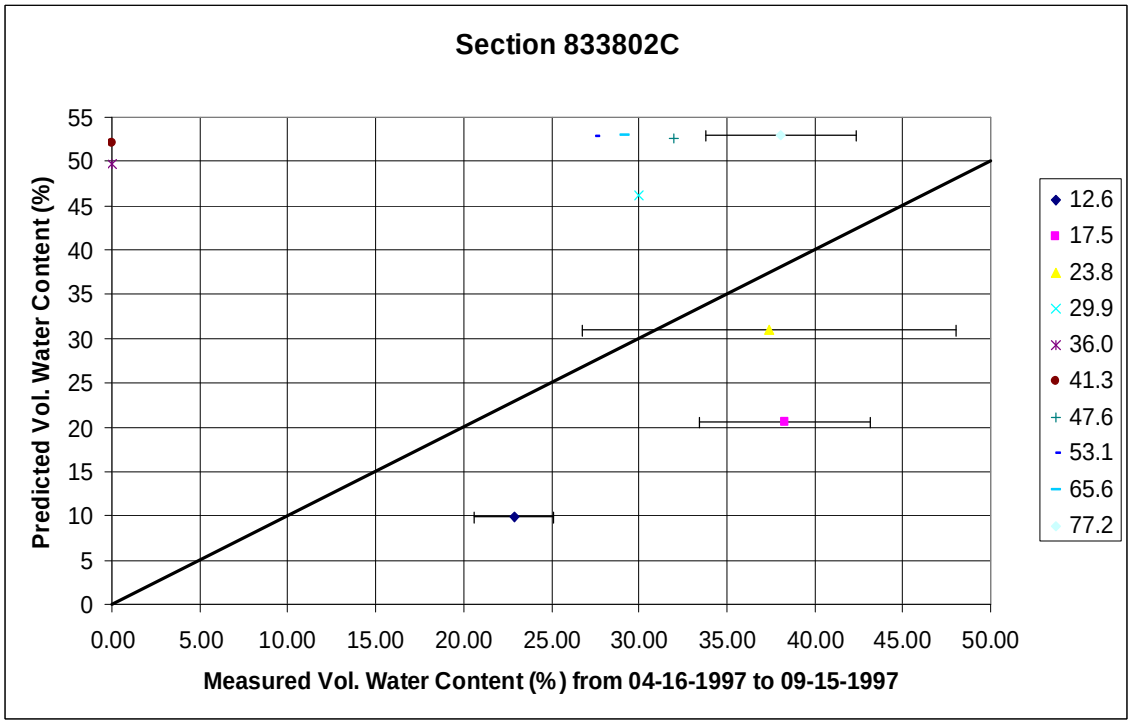

Section 833802A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen Periods before reaching equilibrium
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

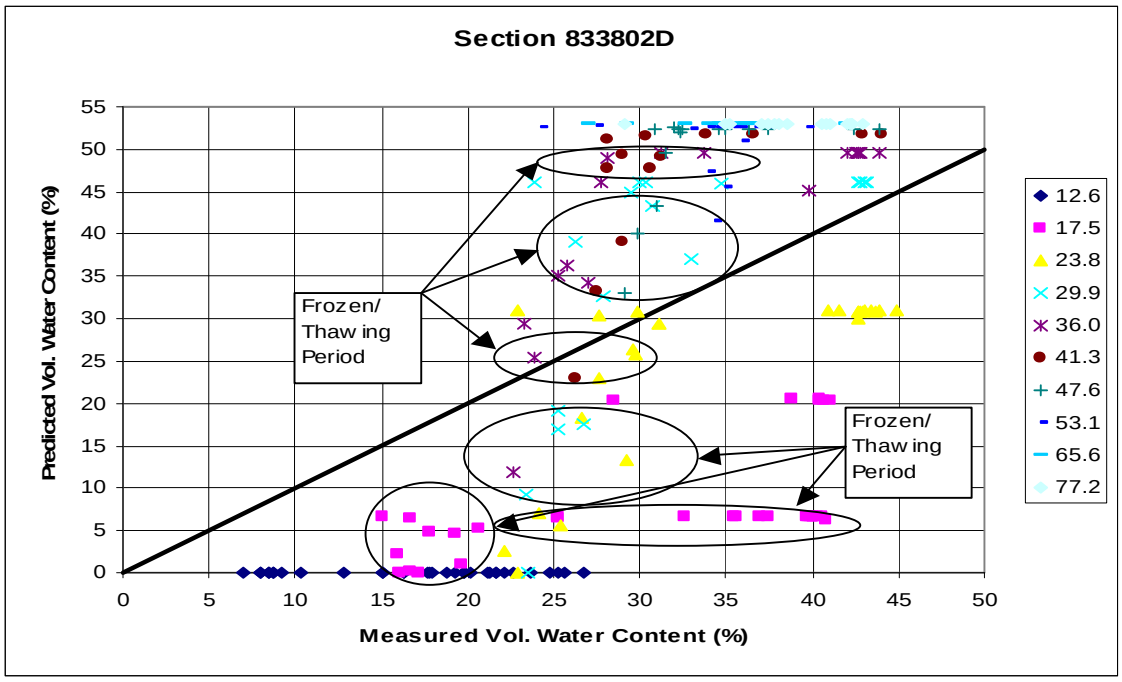

Section 833802A
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-16-1997 to 09-15-1997
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

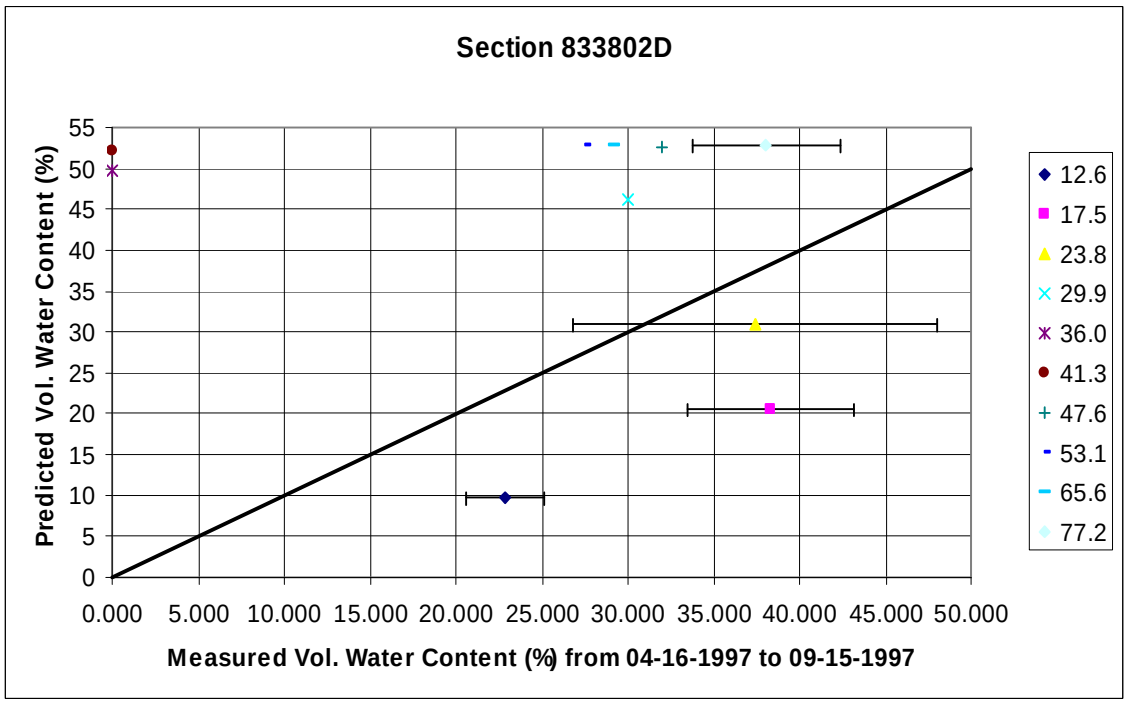

Section 833802B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen Periods
Frozen Periods
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

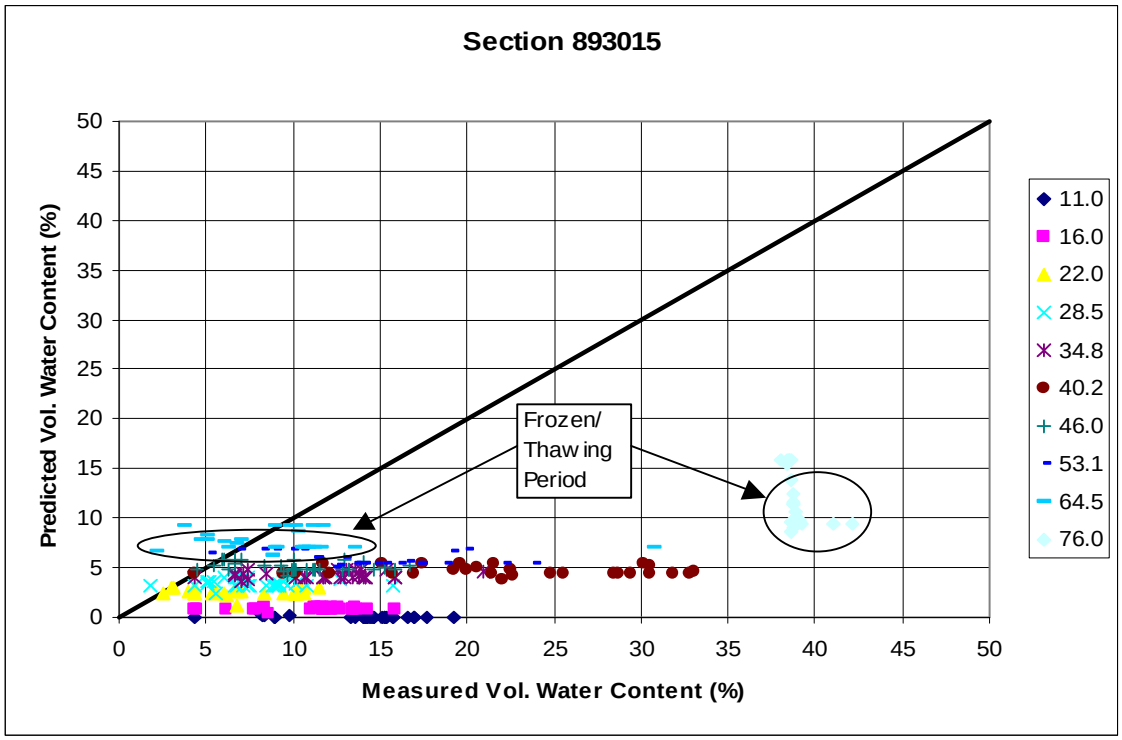

Section 833802B
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-16-1997 to 09-15-1997
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

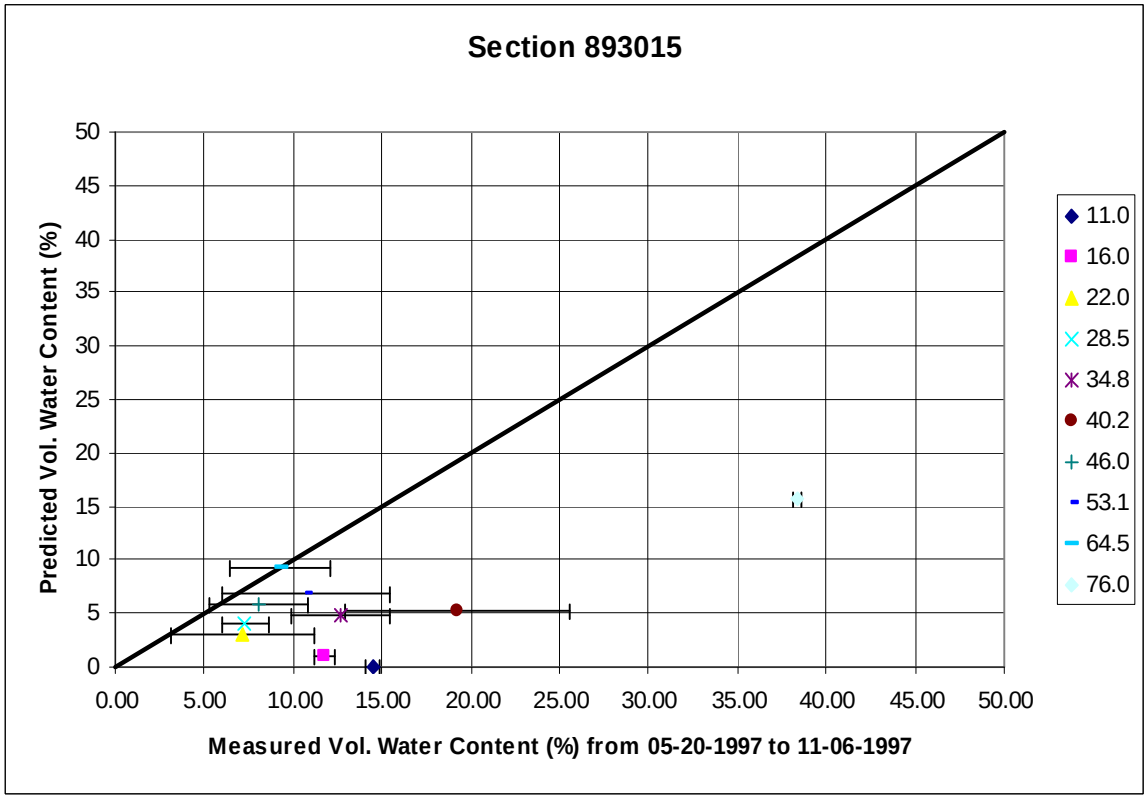

Section 833802C
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen/ Thaw ing Periods
Frozen/ Thaw ing Periods
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

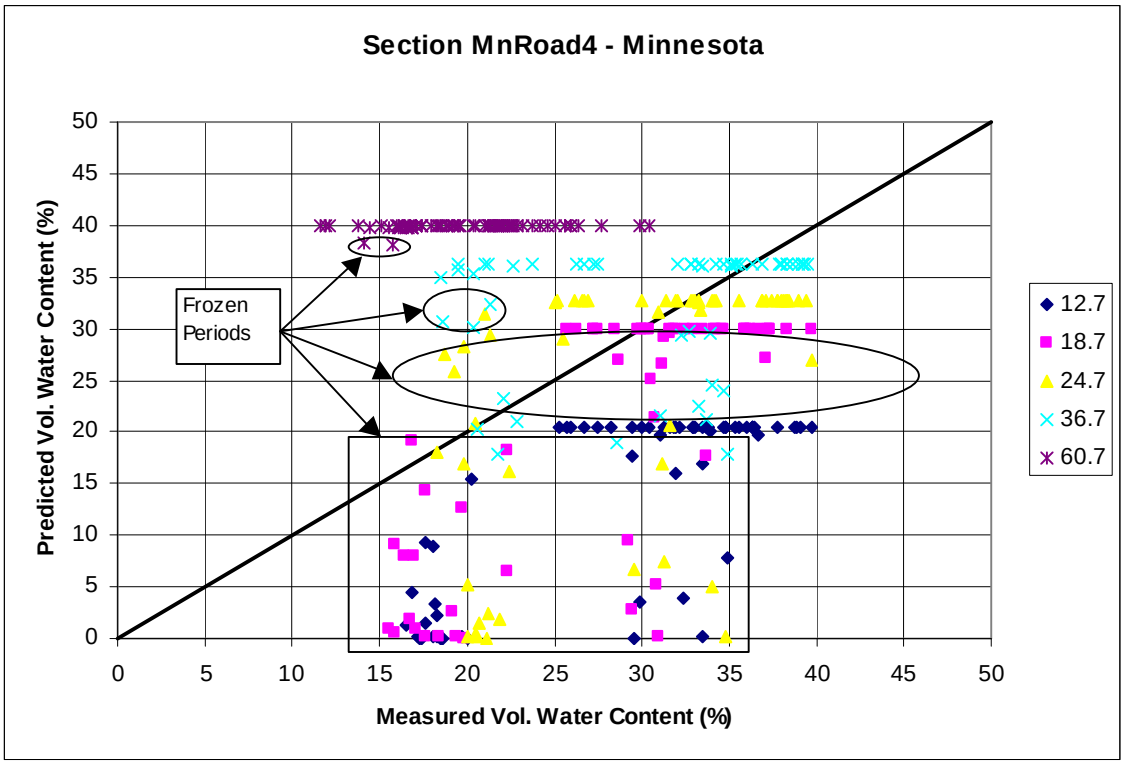

Section 833802C
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-16-1997 to 09-15-1997
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

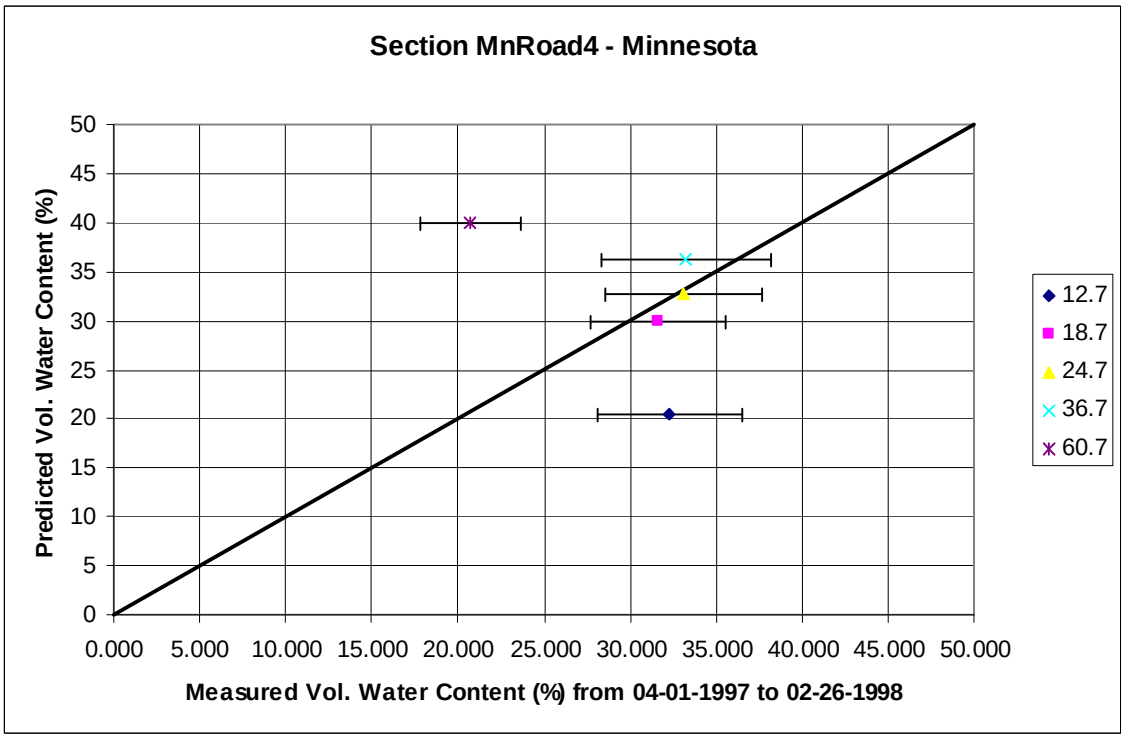

Section 833802D
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen/ Thaw ing Period
Frozen/ Thaw ing Period
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

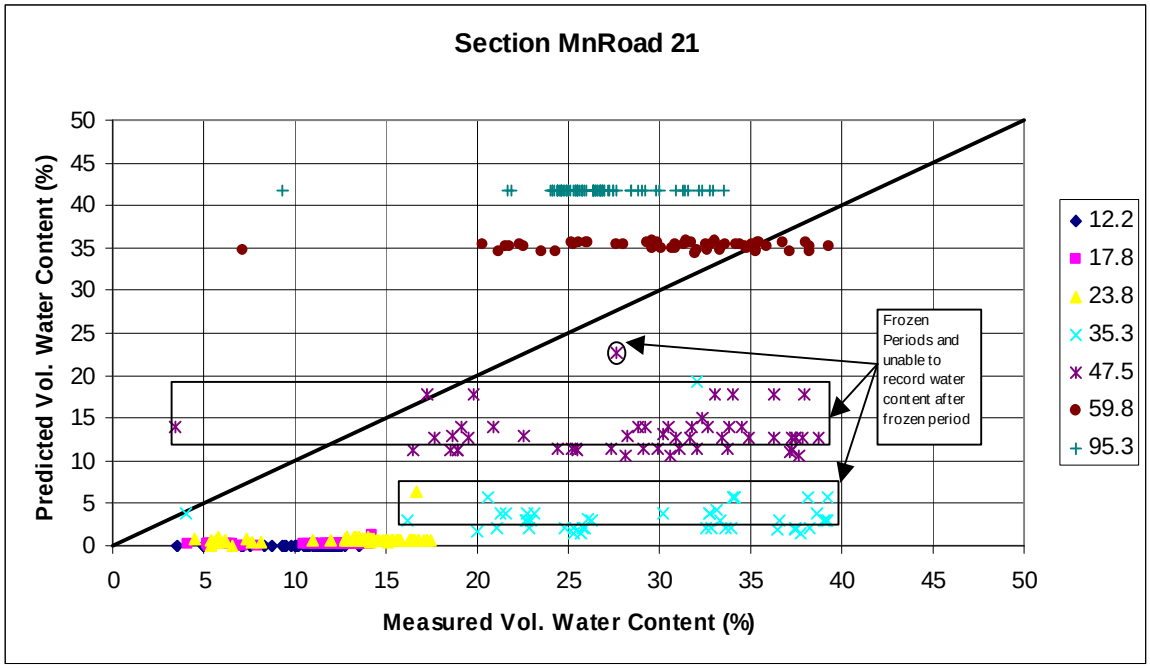

Section 833802D
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-16-1997 to 09-15-1997
12.6
17.5
23.8
29.9
36.0
41.3
47.6
53.1
65.6
77.2

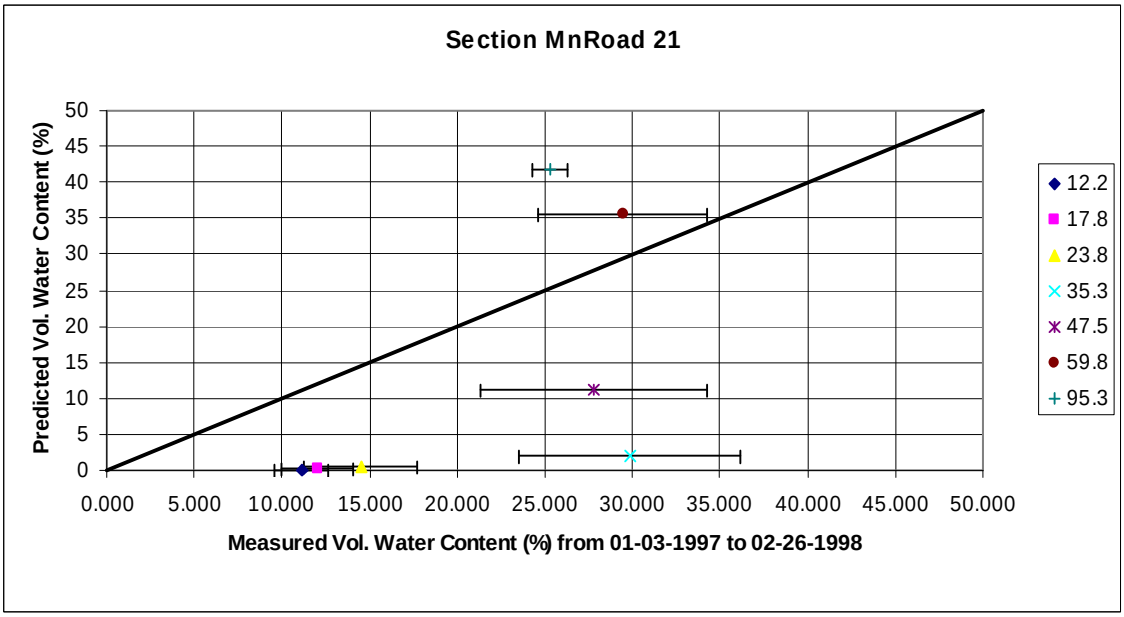

Section 893015
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen/
Thaw ing
Period
11.0
16.0
22.0
28.5
34.8
40.2
46.0
53.1
64.5
76.0


Section 893015
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 05-20-1997 to 11-06-1997
11.0
16.0
22.0
28.5
34.8
40.2
46.0
53.1
64.5
76.0


Section MnRoad4 - Minnesota
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen Periods
12.7
18.7
24.7
36.7
60.7


Section MnRoad4 - Minnesota
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 04-01-1997 to 02-26-1998
12.7
18.7
24.7
36.7
60.7


Section MnRoad 21
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%)
Frozen Periods and unable to record water content after frozen period
12.2
17.8
23.8
35.3
47.5
59.8
95.3


Section MnRoad 21
Predicted Vol. Water Content (%)
Measured Vol. Water Content (%) from 01-03-1997 to 02-26-1998
12.2
17.8
23.8
35.3
47.5
59.8
95.3