

Habitat Assessment In Nebraska

Nebraska Stream Assessments

- REMAP approach – produce unbiased estimates of conditions
- Random site selection
- Measure fish and macroinvertebrate populations, chemistries (water, sediment, fish tissue) and habitat (instream, stream banks, surrounding environ)

Thalweg Measurements

- Thalweg Profile Data: depth, wetted width, habitat class, pools, sand bars, side-channels, sediment type
- Slope and Bearing: primary and supplemental back sites

Channel Measurements

- Channel Cross-sectional Data: wetted and bankfull width, mid-channel bar width, bankfull depth, incision height, bank angle, undercut distance, depth, embeddedness, and substrate size

Fish Cover Measurements

- Areal cover: filamentous algae, aquatic macrophytes, large woody debris, overhanging vegetation, undercut banks, artificial structures

Large Woody Debris Measurements

- Number of wood pieces in 12 diameter and length size classes for wood within and near the bankfull channel

Canopy Cover Measurements

- Canopy density measurements taken at midstream and stream edges

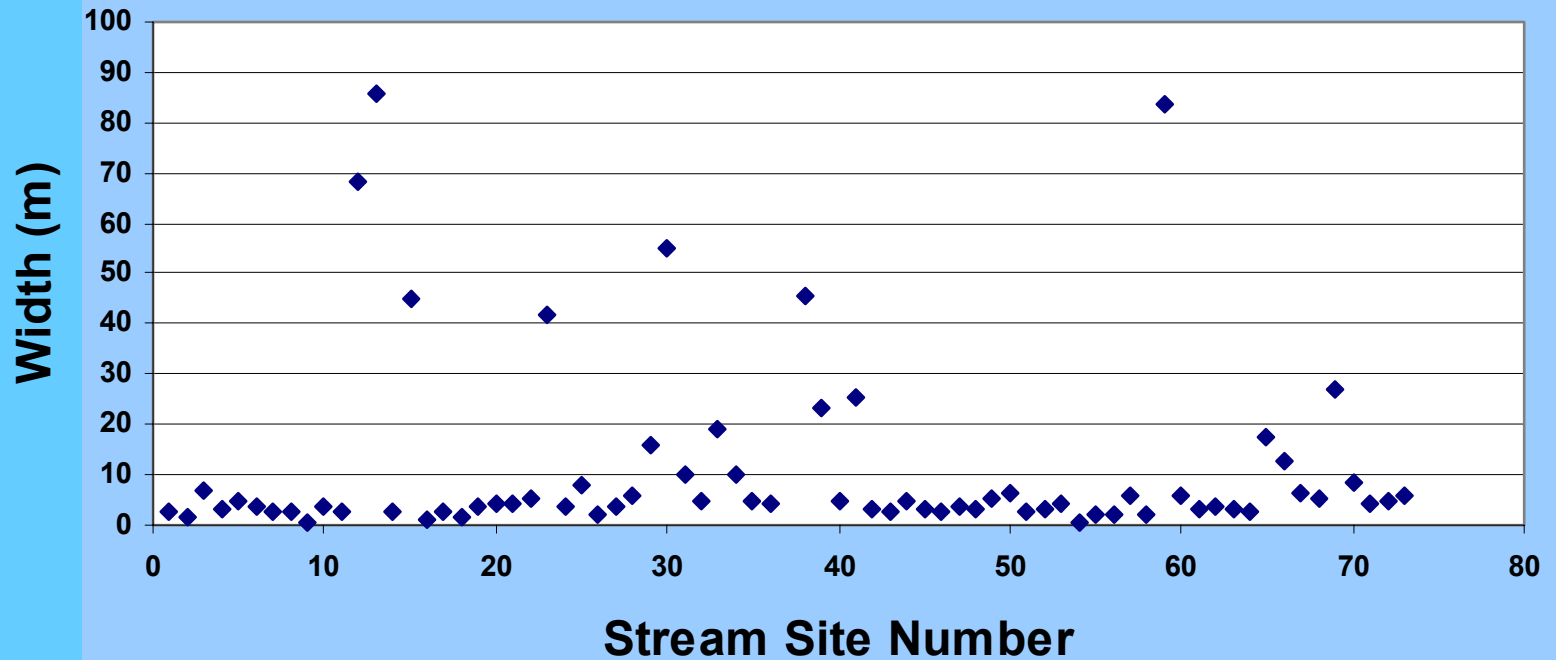
Riparian Measurements – Visual Estimates

- Canopy: vegetation type, large- and small-diameter tree cover
- Understory: vegetation type, woody cover, non-woody vegetation cover
- Ground Cover: wood, herbaceous, barren, duff

Riparian Measurements – Human Influences

- Presence or Proximity of:
walls/dikes/revetments, buildings,
road/railroads, pavement,
influent/effluent pipes, landfill or trash,
parks or lawns, row crop agriculture,
pasture/range/hayfields, mining
activity, logging operations

Stream Width (m) From All Nebraska Basins 1994-95 REMAP, Perennial Sites



Physical Habitat Variables

(1) Channel morphology

- Mean thalweg depth (m) (xdepth)
- **Standard deviation of thalweg depth (cm) (sddepth)**
- Mean wetted width (m) (xwidth)
- Mean wetted width x depth (m²) (xwxd)
- **Mean residual depth (m²/100 m reach length)=cm (rp100)**
- **Mean bankfull width (m) (xbkf_w)**
- Mean bankfull height (m) (xbkf_h)
- Mean incision height (m) (xinc_h)
- **Channel Sinuosity (sinu)**
- **Water Surface gradient over reach (%) (xslope)**

Physical Habitat Variables

(2) Substrate

- **Log₁₀[est. geom. mean substrate diam. (mm)] (lsub_dmm)**
- Substrate mean embeddedness – channel + margin (%) (xembed)
- Substrate % fine (silt/clay) (pct_fn)
- Substrate % sand (0.6 to 2 mm) (pct_sa)
- Substrate % concrete (pct_rc)
- Substrate % hard pan (pct_hp)
- Substrate % sand + fines (< 2 mm) (pct_safn)
- **Substrate % fine gravel and smaller (< 16 mm) (pct_sfgf)**
- Substrate % coarse gravel and larger (> 16 mm) (pct_bigr)
- Substrate % bedrock (pct_bdrk)
- Log₁₀[erodible substrate diameter (mm)] – estimate 1 (ltest)
- Log₁₀[relative bed stability] – estimate 1 (lrbs_test)
- Log₁₀[erodible substrate diameter (mm)] – estimate 2 (ldmb_bw4)
- **Log₁₀[relative bed stability] – estimate 2 (lrbs_bw4)**

Physical Habitat Variables

(3) Fish Cover & Woody Debris

- Filamentous algae areal cover (xfc_alg)
- Aquatic macrophyte areal cover (xfc_aqm)
- **Large woody debris areal cover (xfc_lwd)**
- **Brush and small woody debris areal cover (xfc_brs)**
- Overhanging vegetation areal cover (xfc_ohv)
- Sum of cover from large wood, overhanging banks, human structures (xfc_big)
- **Sum of cover from large wood, brush, overhanging vegetation, undercut banks (xfc_nat)**
- **LWD volume in active channel (m^3/m^2) – size classes 1 to 5 (v1w_msq)**
- LWD volume in and above active channel ($\text{m}^3/100\text{m}$) (v1tm100)

Physical Habitat Variables

(4) Riparian Vegetation Cover and Structure

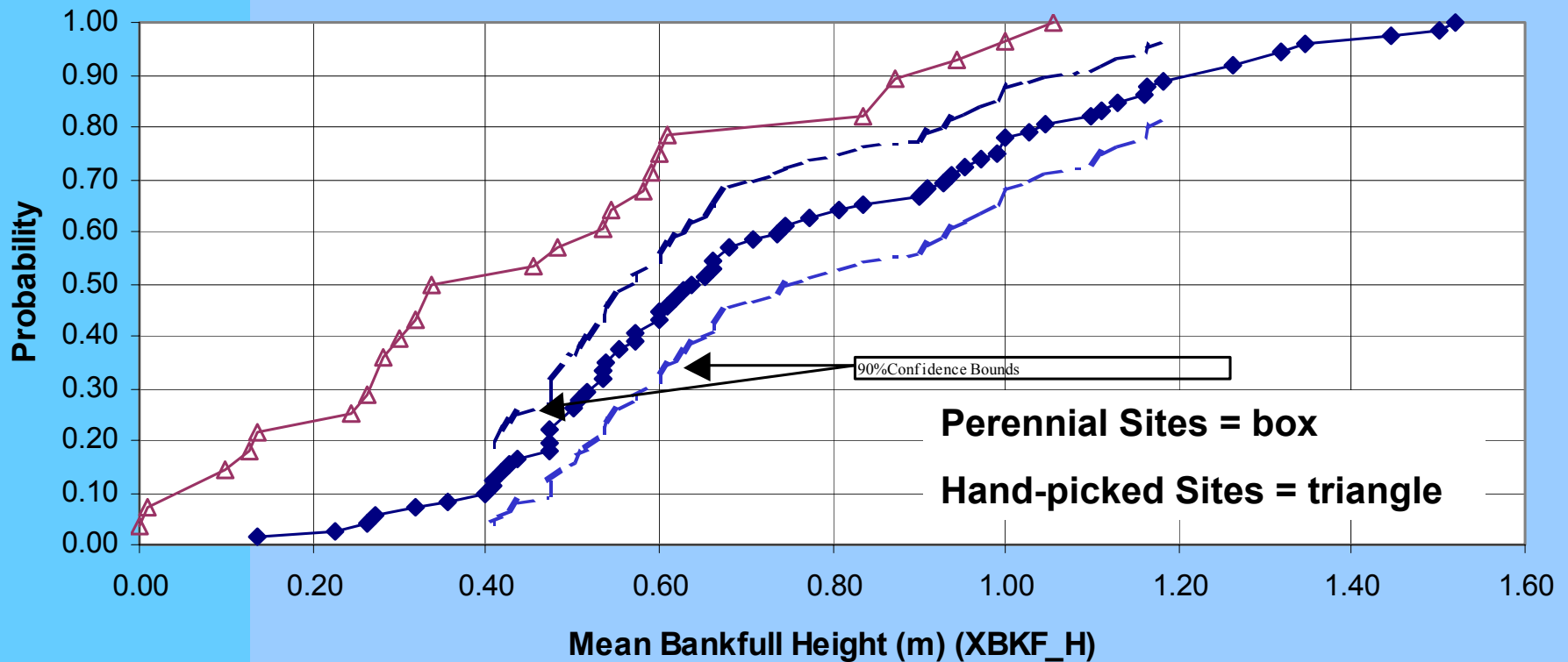
- Mean % canopy density at bank (xcdenbk)
- **Mean % canopy density midstream (xcdenmid)**
- Riparian canopy (<5 m high) cover-trees > 0.3 diameter) (xcl)
- Riparian ground-layer (<0.5 m high) bare ground cover (xgb)
- **Riparian canopy cover (XCL + XCS) (xc)**
- Riparian canopy + mid-layer cover (XC+XM) (xcm)
- **Riparian wood cover, sum of 3 layers (XC+XMW+XGW) (xcmgw)**
- Riparian canopy presence (proportion of reach) (xpcan)
- Riparian canopy and mid-layer presence (portion of reach) (xpcm)
- **3-layer riparian vegetation presence (portion of reach) (xpcmg)**
- Coniferous riparian canopy presence (proportion of reach) (pcan_c)

Physical Habitat Variables

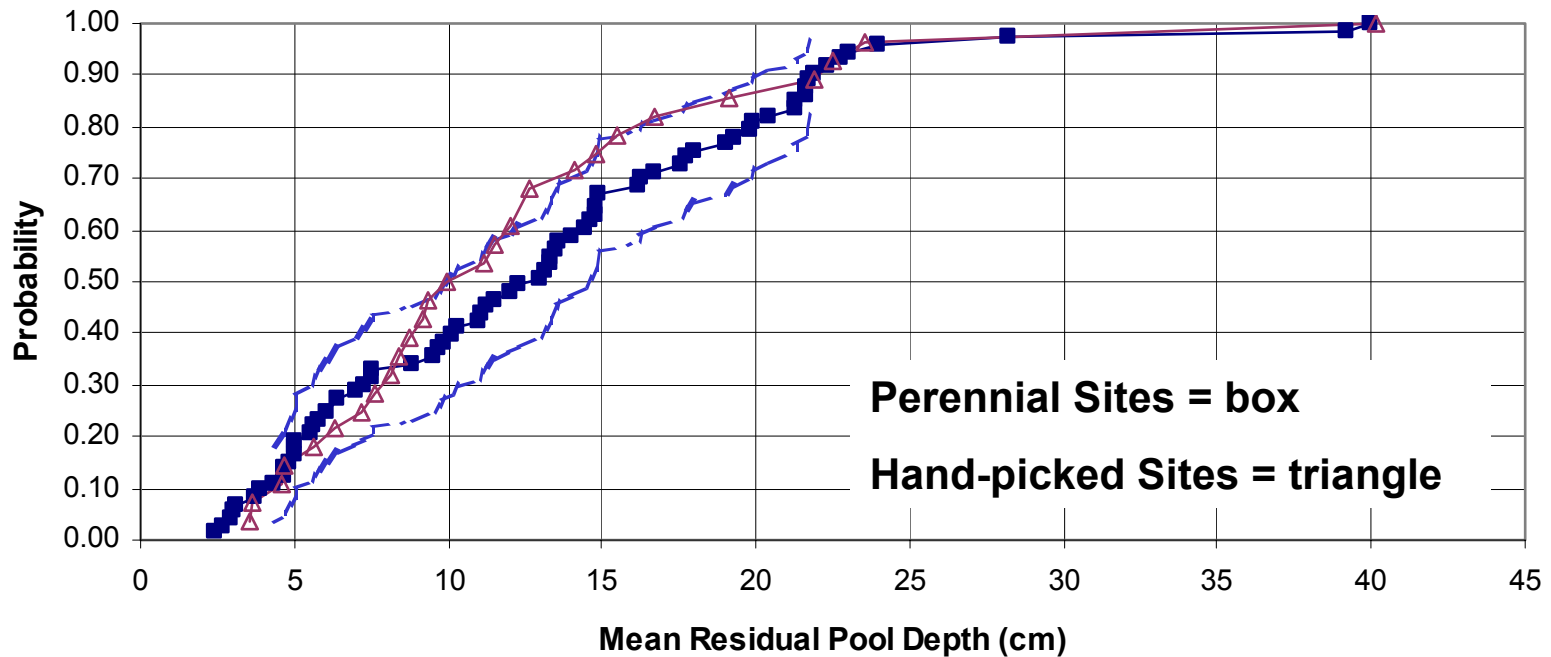
(5) Human Disturbances

- Riparian human disturbance – channel revetment (proximity-weighted) (w1h_wall)
- Riparian human disturbance – logging (proximity-weighted) (w1h_log)
- **Riparian human disturbance index (proximity-weighted) (w1_hall)**
- Riparian human disturbance index – non-agricultural types (proximity-weighted) (w1_hnoag)
- **Riparian human Disturbance index – agricultural types (proximity-weighted) (w1_hag)**

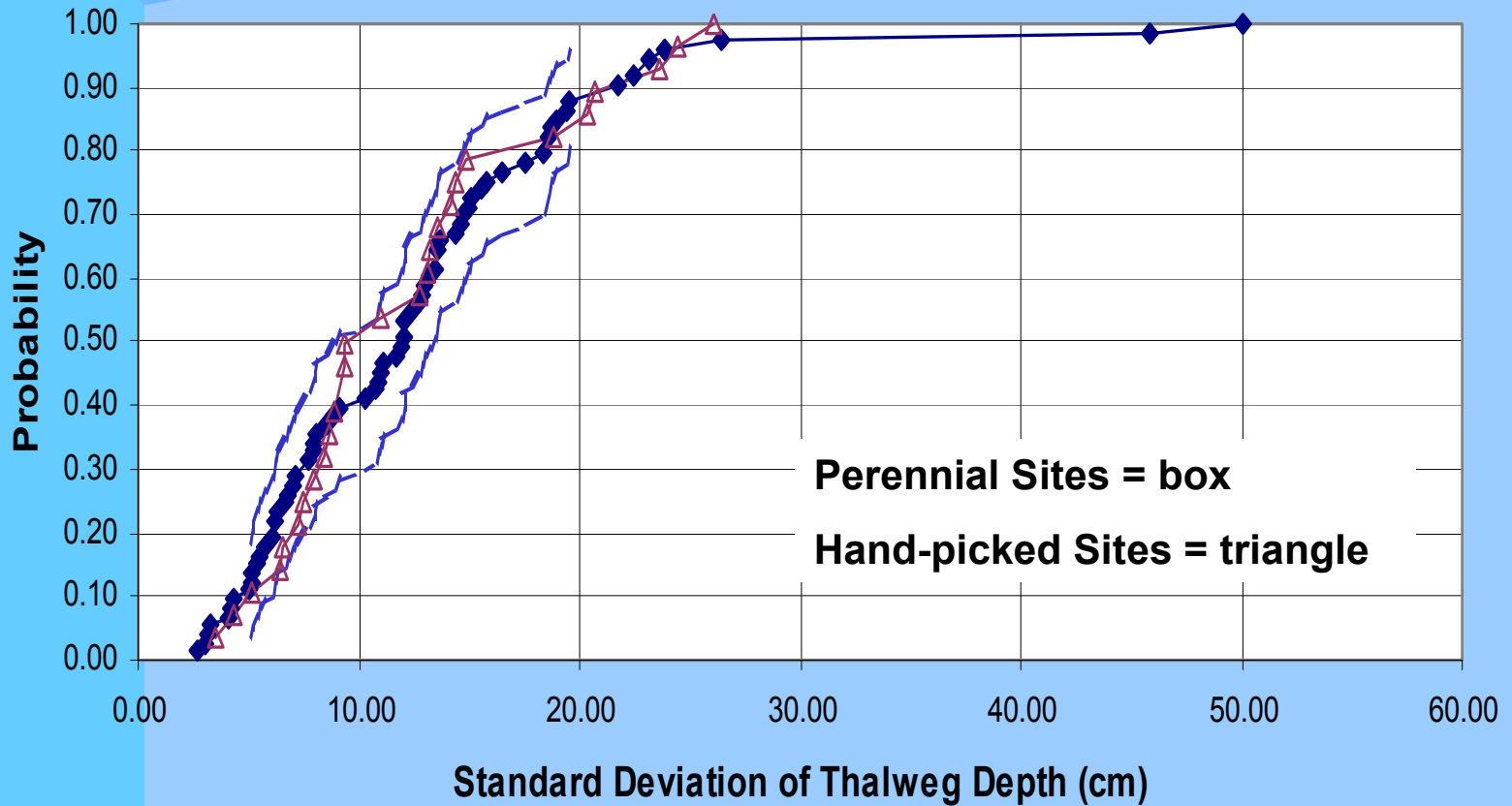
Mean Bankfull Height (m) From All Basins In Nebraska, 1994-95 REMAP



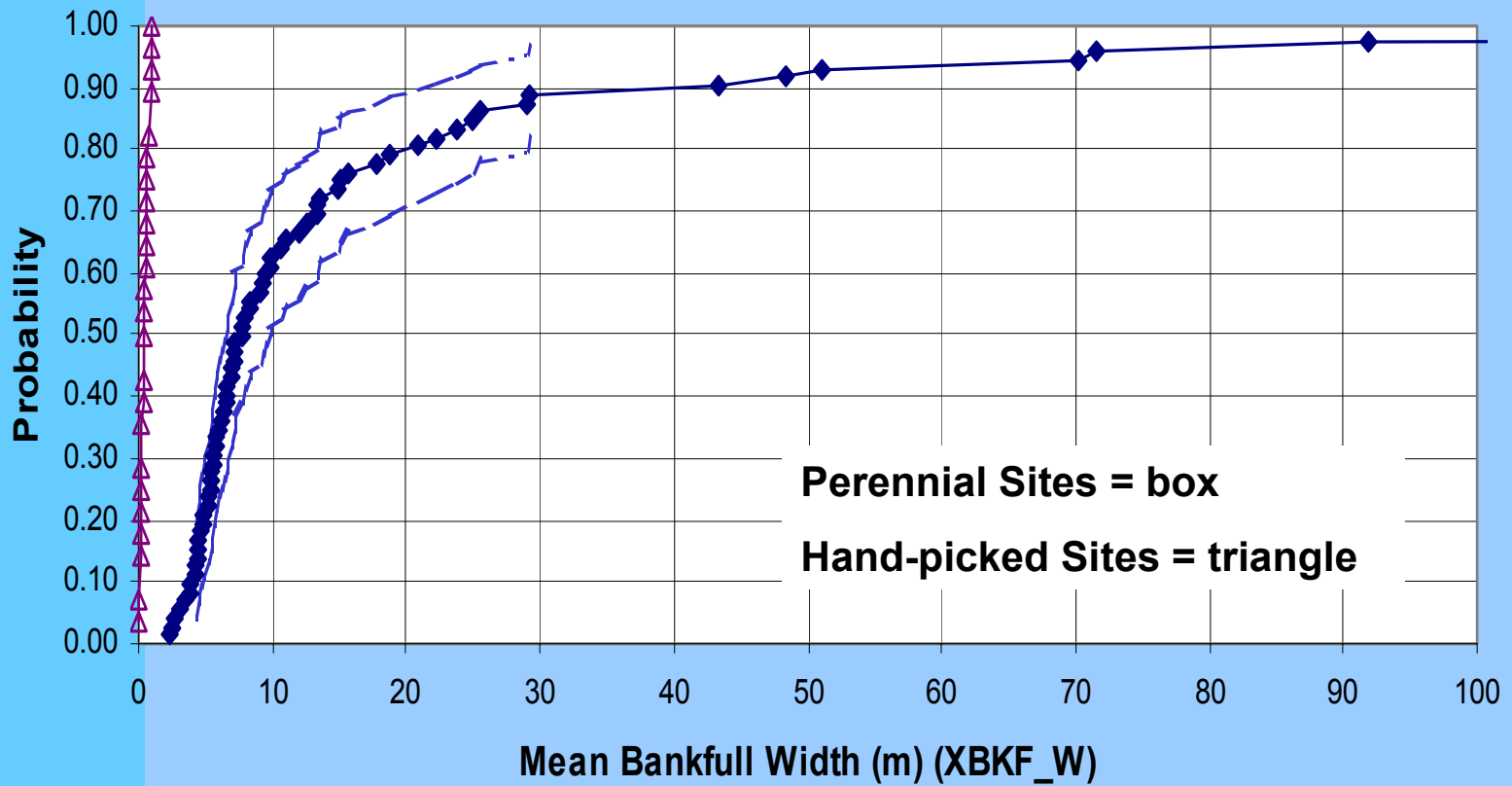
CDF of Mean Residual Pool Depth (cm) From All Basins In Nebraska, 1994-95 REMAP



CDF of Std. Dev. Of Thalweg Depth (m) From All Basins In Nebraska, 1994-95 REMAP

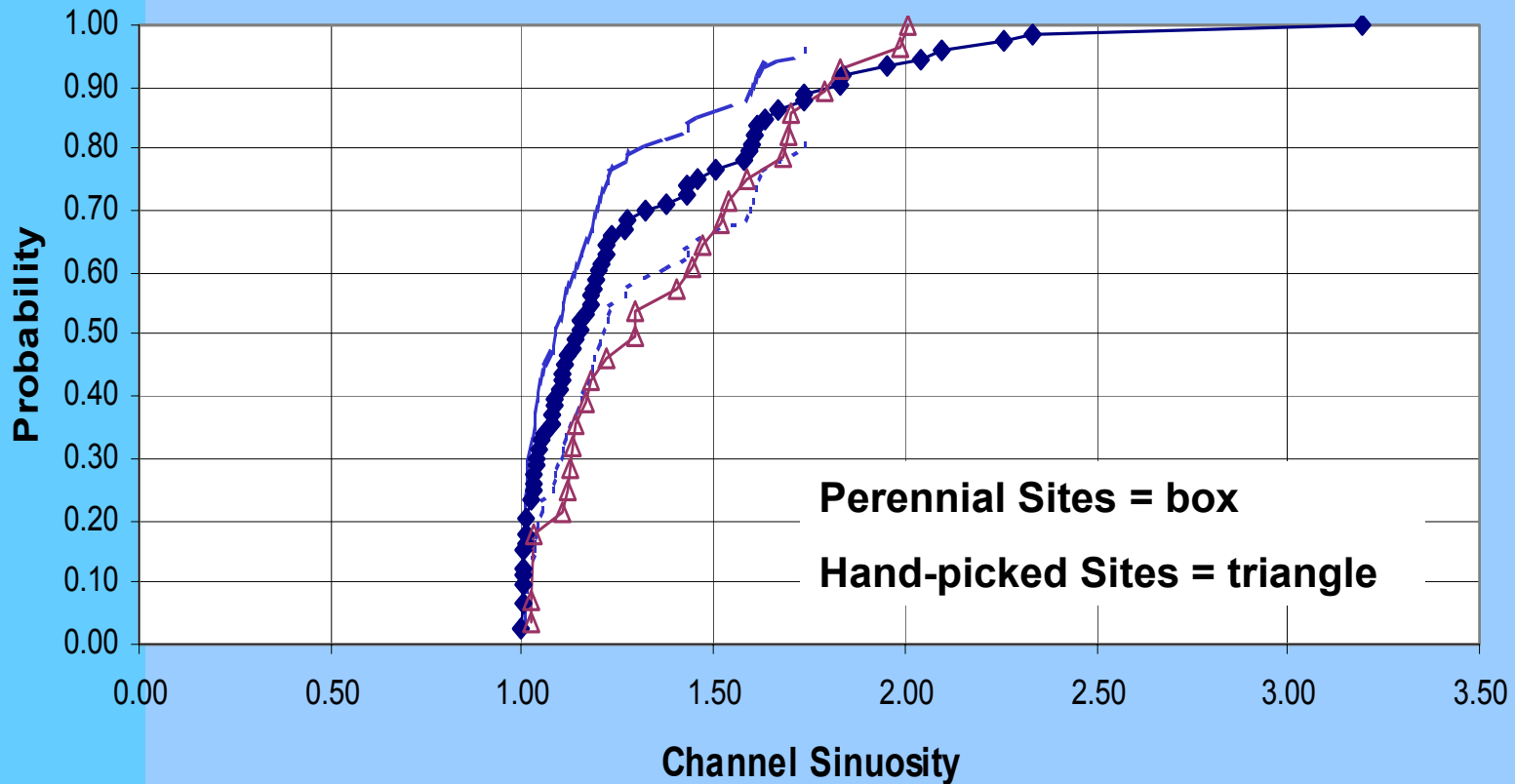


CDF of Mean Bankfull Width (m) From All Basins In Nebraska, 1994-95 REMAP

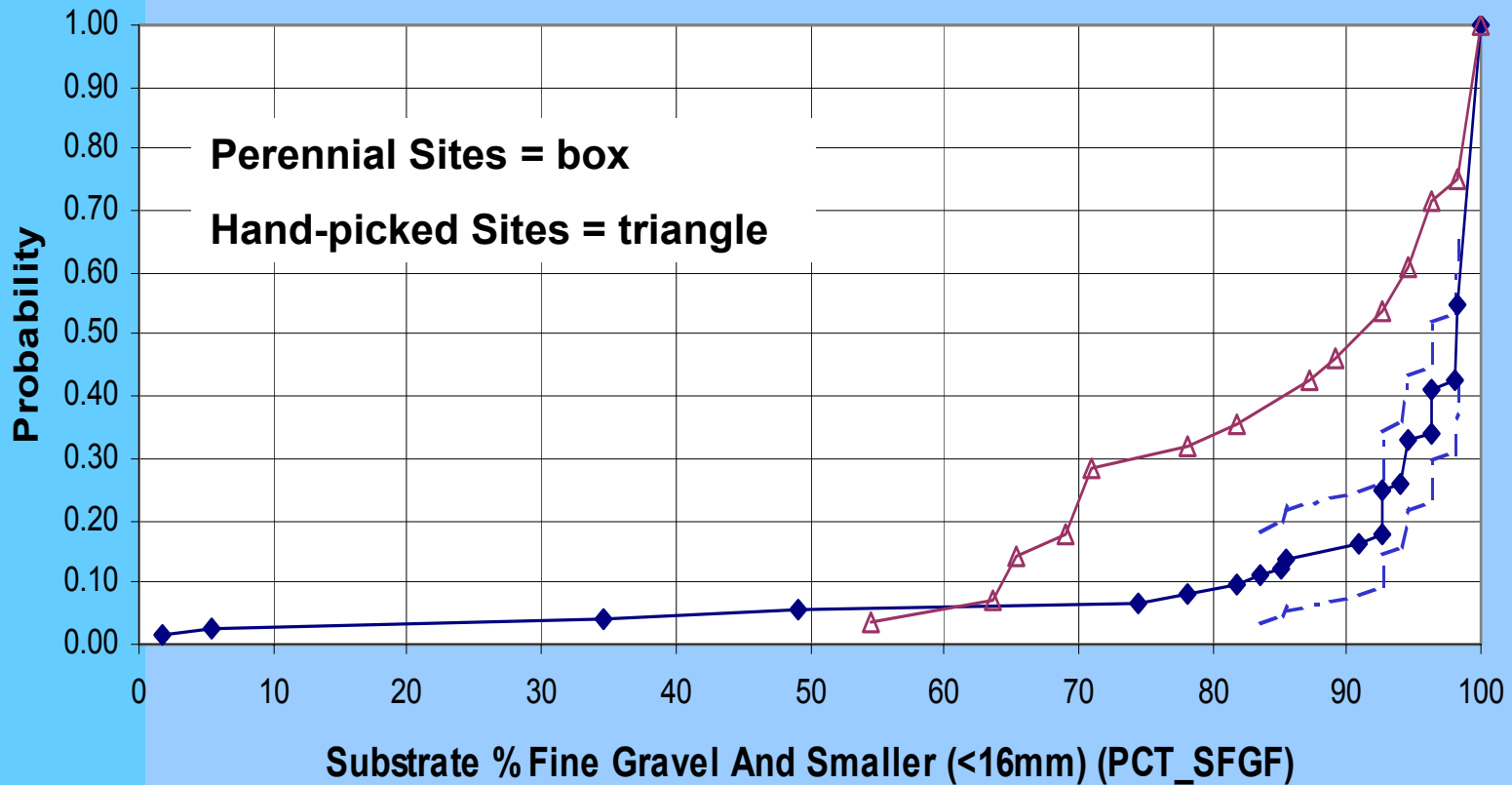


CDF of Channel Sinuosity

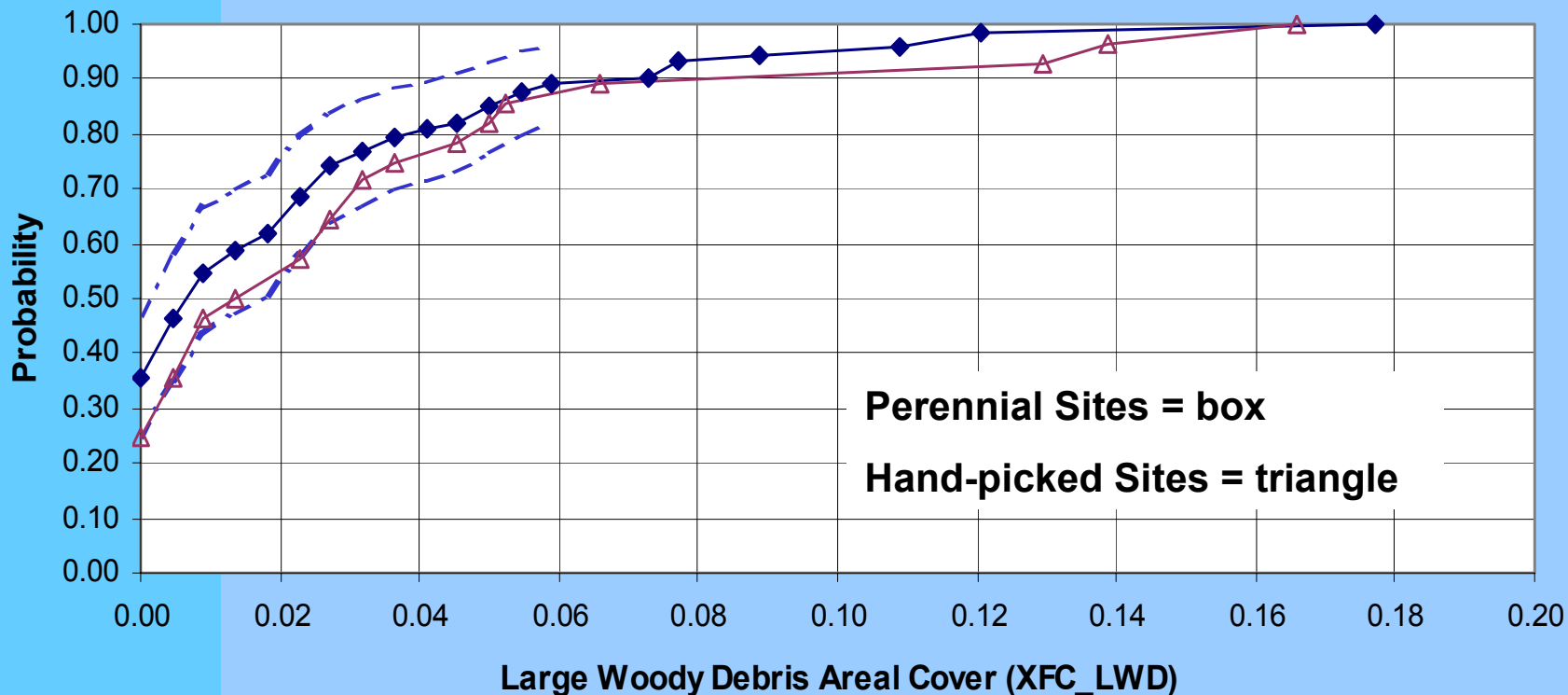
From All Basins In Nebraska, 1994-95 REMAP



CDF of Fine Gravel and Smaller Substrate From All Basins In Nebraska, 1994-95 REMAP



CDF of Large Woody Debris Areal Cover From All Basins In Nebraska, 1994-95 REMAP



Questions