GWA03 (Panel 1) 2967.0m - 2986.0m

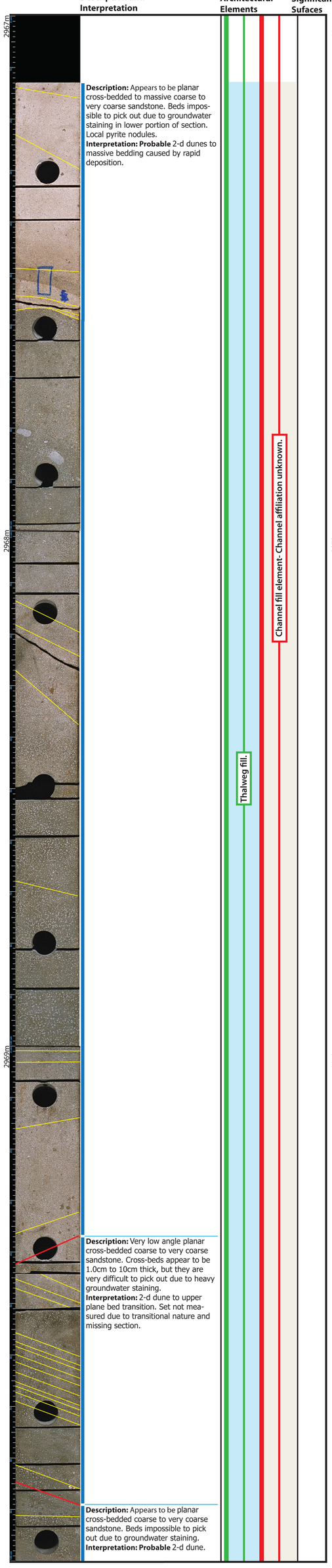
Original Horizontal Surface.

Architectural Element Association
- Thalweg Fill Element
- Unit Bar Element
- Abandonment Phase Element

Channel/Channel Belt Association
- Channel/Channel Belt Affiliation Unknown

Higher Order Surface Association
- 4th Order
- 5th or Higher Order
- 7th or Higher Order

Symbol Key
- Cross-set measurement. 22m
- Ripples.
- Rooting.



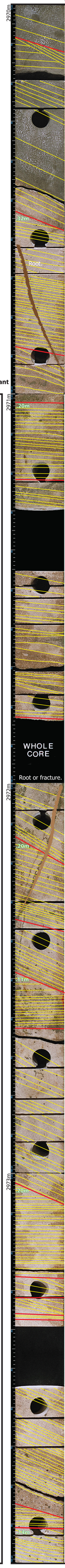
Description and Interpretation | Architectural Elements | Significant Sufaces

Description: Appears to be planar cross-bedded to massive coarse to very coarse sandstone. Beds impossible to pick out due to groundwater staining in lower portion of section. Local pyrite nodules.
Interpretation: Probable 2-d dunes to massive bedding caused by rapid deposition.

Description: Very low angle planar cross-bedded coarse to very coarse sandstone. Cross-beds appear to be 1.0cm to 10cm thick, but they are very difficult to pick out due to heavy groundwater staining.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional nature and missing section.

Description: Appears to be planar cross-bedded coarse to very coarse sandstone. Beds impossible to pick out due to groundwater staining.
Interpretation: Probable 2-d dune.

Thalweg fill. | Channel fill element- Channel affiliation unknown.



Description and Interpretation | Architectural Elements | Higher Order Surfaces

Description: Very low angle planar cross-bedded to washed out very coarse sandstone. Cross-beds are 1.0cm to 8.0cm thick. Ground water staining makes beds hard to pick out.
Interpretation: 2-d dune to upper plane bed transition. Not measured due to transitional nature.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick. Lamina are .50cm to 1.0cm thick. Root passes through set. Local pyrite staining.
Interpretation: 2-d dune.

Description: Very low angle planar cross-bedded to washed out very coarse sandstone. Cross-beds are 1.0cm to 4.0cm thick. Local pyrite stianing.
Interpretation: 2-d dune to upper plane bed transition.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick.
Interpretation: 2-d dune.

Description: Very low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .50cm to 1.0cm thick. Root pases through lower half of set.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional nature and missing section.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.3cm thick. Lamina are .30cm to 1.0cm thick. Root passes through set and there is local pyrite staining.
Interpretation: 2-d dune.

Description: Very low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Lamina are .80cm to 1.0cm thick.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional nature.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.3cm thick. Lamina are .30cm to 1.0cm thick. Local pyrite staining.
Interpretation: 2-d dune.

Description: Very low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 4.0cm thick. Lamina are .70cm to 1.0cm thick. local pyrite staining.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional nature.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.3cm thick. Lamina are .30cm to 1.0cm thick. Local iron staining.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Highly truncated 2-d dune.

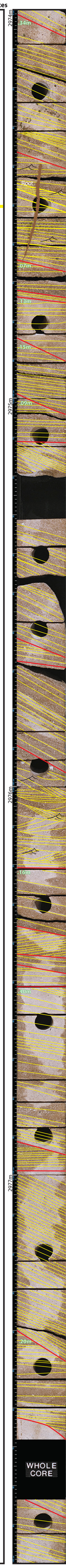
Highly truncated 2-d dune.

Description: Very low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Lamina are .30cm to 1.0cm thick. Part of set is missing.
Interpretation: 2-d dune to upper plane bed transition.

Highly truncated 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Lamina are .30cm to 1.0cm thick.
Interpretation: 2-d dune.

Thalweg fill. | Unit bar. | Channel fill element- Channel affiliation unknown.



Description and Interpretation | Architectural Elements | Higher Order Sufaces

Description: Planar cross-bedded coarse to very coarse sandstone with a few lamina. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone.
Interpretation: Ripple to upper plane bed transition. Not measured due to transitional state.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Very low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .30cm to 1.0cm thick.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional state.

Highly truncated 2-d dune.

Description: Planar bedded very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick.
Interpretation: Upper plane bed.

Description: Rippled to trough cross-bedded very coarse sandstone.
Interpretation: Ripple to 3-d dune transition. Not measured due to transitional state.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.5cm to 3.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Highly truncated 2-d dune.

Highly truncated 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone with a few lamina. Cross-beds are 1.0cm to 4.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

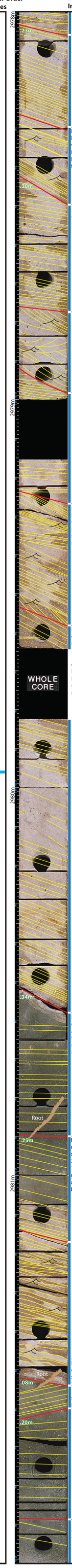
Description: Very low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick. Lamina are .70cm to 1.0cm thick.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional nature.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Lamina are .30cm to 1.0cm thick. Local iron staining.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone with missing section in middle and soft sediment deformation at top. Cross-beds are 1.0cm thick.
Interpretation: 2-d dune. Set not measured due to missing section.

Description: Planar cross-bedded coarse to very coarse sandstone with some lamina at base . Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Unit bar. | Channel fill element- Channel affiliation unknown.



Description and Interpretation | Architectural Elements | Higher Order Sufaces

Description: Low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .05cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone.
Interpretation: Ripple to upper plane bed transition. Not measured due to transitional state.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick. Lamina are .05cm to 1.0cm thick. Set not measured due to missing section.
Interpretation: 2-d dune.

Description: 3-d ripples and planar bedding in coarse sandstone.
Interpretation: Ripple to upper plane bed transition. Not measured due to transitional state.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick. Lamina are .05cm to 1.0cm thick. Set not measured due to missing section.
Interpretation: 2-d dune.

Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone.
Interpretation: Ripple to 2-d dune transition. Not measured due to transitional state.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .25cm to 1.0cm thick. Local soft sediment deformation and iron staining. Irregular scour base
Interpretation: 2-d dune. Start of next unit bar. Set not measured due to missing section.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 3.0cm to 6.0cm thick. Set is groundwater stained and beds are hard to pick out.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .25cm to 1.0cm thick. Upper 15cm of set is groundwater stained and beds/lamina are hard to pick out.
Interpretation: 2-d dune.

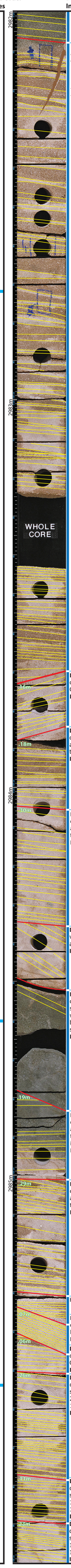
Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone. Common soft sediment deformation.
Interpretation: Ripple to 2-d dune transition. Not measured due to transitional state.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.2cm to 2.5cm thick. Lamina are .50cm to 1.0cm thick. Set is groundwater stained.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 3.0cm to 6.0cm thick, but set is groundwater stained and beds are hard to pick out.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 3.0cm to 6.0cm thick, but set is groundwater stained and beds are hard to pick out.
Interpretation: 2-d dune.

Unit bar continued. | Unit bar. | Channel fill element- Channel affiliation unknown.



Description and Interpretation | Architectural Elements | Higher Order Sufaces

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Many beds appear to be washed out.
Interpretation: 2-d dune to upper plane bed. Set not measured due it's transitional nature and missing section.

Root

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone with a few lamina. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone with a few lamina. Cross-beds are 1.0cm to 4.0cm thick.
Interpretation: 2-d dune.

Description: Planar bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 6.0cm thick.
Interpretation: Upper plane bed.

Description: Very low angle planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.5cm to what appears to be 20cm plus thick, but ground water staining in entire set makes beds very hard to pick out.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone with a few lamina. Cross-beds are 3.0cm to 7.0cm thick. Ground water staining in top 14cm of set.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone with a few lamina. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Description: Planar cross-laminated coarse to very coarse sandstone. Lamina are .30cm to .50cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick. Lamina are .30cm to 1.0cm thick.
Interpretation: 2-d dune.

Unit bar. | Channel fill element- Channel affiliation unknown.

GWA03 (Panel 2) 2986.0m - 3006.0m

Original Horizontal Surface.

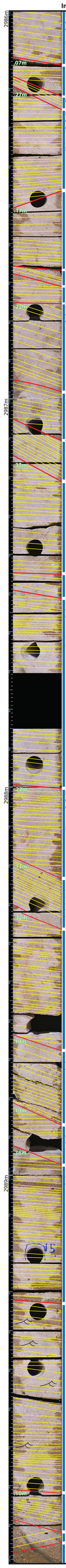
Architectural Element Association: Thalweg Fill Element; Unit Bar Element; Abandonment Phase Element

Channel/Channel Belt Association: Channel/Channel Belt Affiliation Unknown

Higher Order Surface Association: 4th Order; 5th or Higher Order; 7th or Higher Order

Symbol Key: Cross-set measurement. .22m; Rooting.; Ripples.

Description and Interpretation | Architectural Elements | Higher Order Sufaces



Description: Planar cross-bedded to cross laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Planar lamination. Upper plane bed.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Highly truncated 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick.
Interpretation: 2-d dune.

Description: Planar laminated coarse to very coarse sandstone. Lamina are .50cm to 1.0cm thick.
Interpretation: Upper plane bed.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.5cm thick. Lamina are .25cm to 1.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Lamina are .25cm to 1.0cm thick.
Interpretation: 2-d dune. Set not measured due to missing section.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.5cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Low angle planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 1.5cm thick. Lamina are .25cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.5cm thick. Lamina are .50cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

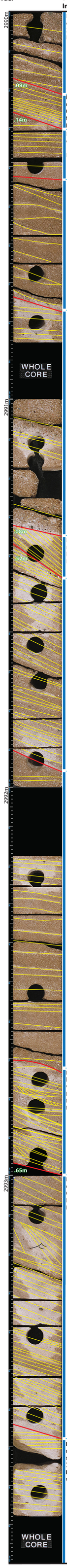
Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.8cm thick. Lamina are .25cm to 1.0cm thick.
Interpretation: 2-d dune.

Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone.
Interpretation: Ripple to 2-d dune transition. Not measured due to transitional state.

Description: Planar cross-laminated coarse sandstone. Cross-lamina are .05cm to 1.0cm thick.
Interpretation: 2-d dune.

Highly truncated 2-d dune.

Unit bar. | Channel fill element- Channel affiliation unknown.



Description: Planar cross-bedded very coarse sandstone. Cross-beds are 2.0cm to 4.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse sandstone. Cross-lamina are .25cm to .75cm thick.
Interpretation: 2-dune.

Description: Planar cross-bedded coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse sandstone. Most beds appear washed out. Cross-beds are 2.0cm to 4.0cm thick.
Interpretation: 2-d dune to upper plane bed transition. Set not measured due to transitional state.

Description: Planar cross-bedded coarse to granule sandstone. Set fines up with granules at base. Cross-beds are 1.0cm to 15cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded medium to coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded medium to coarse sandstone. Some pebble in top 2.0cm. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

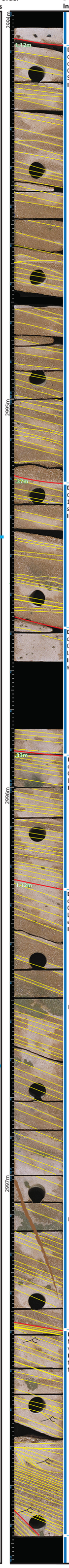
Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick. Some beds appear to be washing out.
Interpretation: 2-d dune to upper plane bed. Set not measured due to missing section.

Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone.
Interpretation: Ripple to 2-d dune transition. Not measured due to transitional state.

Description: Planar cross-bedded to cross-laminated coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Ripples form the face of one fore-set.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated coarse to very coarse sandstone. Cross-beds are 1.5cm to 7.0cm thick. Floating pebbles at base.
Interpretation: 2-d dune. Not measured due to missing section.

Unit bar. | Channel fill element- Channel affiliation unknown.



Description: Planar cross-bedded coarse sandstone. Appears to be close to transition to 3-d dunes Cross-beds are 1.0cm to 4.0cm thick. Sparse local pyrite staining.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse sandstone. Cross-beds are 1.0cm to 6.0cm thick. Local pyrite staining.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.5cm to 7.0cm thick. Local pyrite staining.
Interpretation: 2-d dune. Not measured due to missing section.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Local pyrite staining.
Interpretation: 2-d dune.

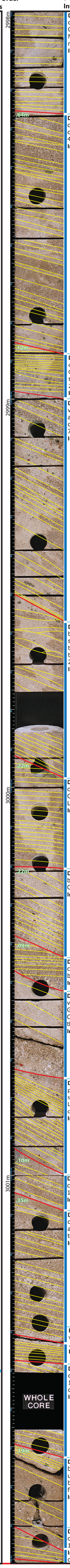
Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 7.0cm thick. Local pyrite staining with two large examples.
Interpretation: 2-d dune.

Large pyrite stain.

Large pyrite stain and root.

Description: Rippled to planar cross-bedded/cross laminated coarse to very coarse sandstone.
Interpretation: Ripple to 2-d dune transition. Not measured due to transitional state.

Unit bar continued. | Channel fill element- Channel affiliation unknown.



Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick. Not measured because top of set is missing.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Set coarsens up. Cross-beds are 1.0cm to 4.0cm thick. Local pyrite nodules.
Interpretation: 2-d dune.

Description: Planar cross-bedded to cross-laminated medium sandstone. Cross-lamina are .50cm to 1.0cm thick and cross-sets are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Planar bedded coarse to very coarse sandstone with pebbles and granules in the top 15cm. Set coarsens up Cross-beds are 1.0cm to 7.0cm thick. Pyrite staining at base.
Interpretation: 2-d dune.

Description: Low angle planar cross-bedded coarse to very coarse sandstone with smale scale 3-d dunes in the top 15cm. Cross-beds are 1.0cm to 2.5cm thick. Pyrite staining in top 2.0cm.
Interpretation: 2-d dune.

Description: Planar cross-bedded coarse to very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick. Local pyrite staining.
Interpretation: 2-d dune.

Description: Low angle planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse fining up sandstone. Cross-beds are 1.0cm to 3.0cm thick.
Interpretation: 2-d dune.

Description: Planar bedded coarse to very coarse, fining up sandstone. Granules and pebbles in bottom bed Cross-beds are 2.0cm to 11.0cm thick.
Interpretation: Upper plane bed.

Description: Planar bedded to planar laminated very coarse sandstone. Some pebbles in top bed Lamina are .25m to 1.0cm thick and cross-beds are 1.0cm to 2.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 2.5cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone with some pebbles and granules. Cross-beds are 1.0cm to 5.0cm thick. Fines up over all.
Interpretation: 2-d dune.

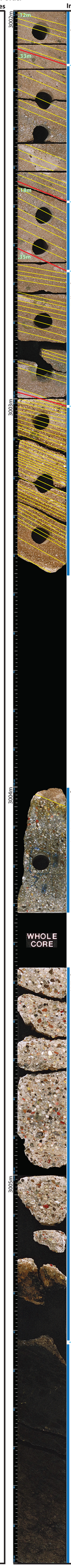
Description: Planar cross-laminated very coarse sandstone. Lamina are .30cm to .80cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 5.0cm thick. Not measured due to missing section.
Interpretation: 2-d dune.

Description: Low angle planar cross-bedded very coarse sandstone. Granules to pepples in lower beds Cross-beds are 1.0cm to 5.0cm thick. Set fines up.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 2.0cm thick.
Interpretation: Highly truncated 2-d dune.

Unit bar. | Channel fill element- Channel affiliation unknown.



Description: Low angle planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 5.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 5.0cm thick. Local pyrite staining.
Interpretation: 2-d dune.

Description: Low angle planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 5.0cm thick.
Interpretation: 2-d dune.

Description: Planar cross-bedded very coarse sandstone. Cross-beds are 1.0cm to 5.0cm thick. Local pyrite staining.
Interpretation: 2-d dune.

Description: Planar bedded to planar laminated very coarse sandstone. Cross-beds 1.0cm to 4.0cm thick. Lamina .50cm thick. Irregular erosive base.
Interpretation: Upper plane bed.

Abrupt change to very coarse sandstone.

Clast supported conglmerate. Mostly granules with some pebbles. Mostly subrounded clasts. Coarsens towards top.

Clast supported conglomerate up to pebble size. Mostly subrounded clasts. Scour base.

Composite soil at base grading to Coal.

Unit bar continued. | Thalweg fill. | Channel fill element- Channel affiliation unknown.