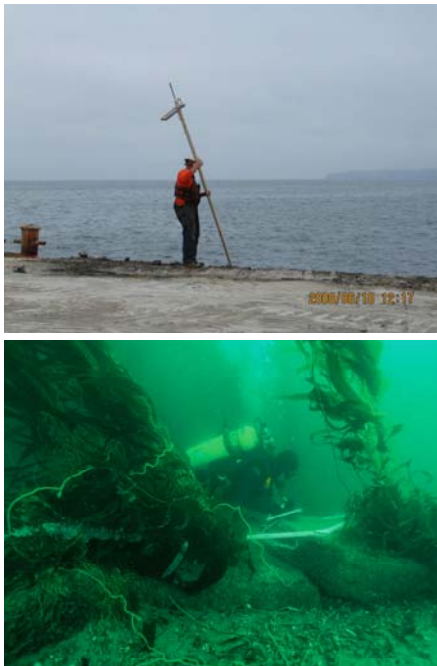


**FINAL CONSTRUCTION REPORT
FOR WHEELER NORTH REEF AT SAN CLEMENTE, CALIFORNIA
(FORMERLY THE SONGS ARTIFICIAL REEF MITIGATION PROJECT,
PHASE 2 MITIGATION REEF)**

Volume II: Data Report



for

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Volume II: Data Report

1.0 INTRODUCTION

Volume II presents all data collected and analyzed for the building of the Wheeler North Reef; including rock type deposition per polygon, daily constructed reef areas, on-site monitoring (DGPS boundary surveys), multibeam surveys, and selected project photographs.

Construction started with the building of Polygon 6 and then moved to the south end of the project site, where construction recommenced with Polygon 2 (Figure 1-1). Polygon 6 and the southern portion of Polygon 2 were immediately surveyed by CE and the CCC's consulting scientists (CCC-CS) to ensure that construction met the agreed-upon engineering specifications. A report was prepared by CE (2008b) and approved by the CCC.

Overall, by the end of construction of Phase 2, 125,957.5 tons of rock had been deposited on 152 acres of reef substrate. The average tonnage per acre was 828.6, calculated by dividing the total tonnage of rock placed, by the total area of the Phase 2 constructed reef. During construction, placed tonnage of rocks per acre varied from 743.7 to 986.8. Table 1-1 gives polygon areas as designed, and as-built, placed rock tonnage, and placed rock density (tons/acre).

There were no consequential delays in construction of the reef due to unfavorable wave and/or weather conditions. A minor loss of two days was due to equipment maintenance. Construction of all polygons was completed 19 days ahead of schedule on September 11, 2008.

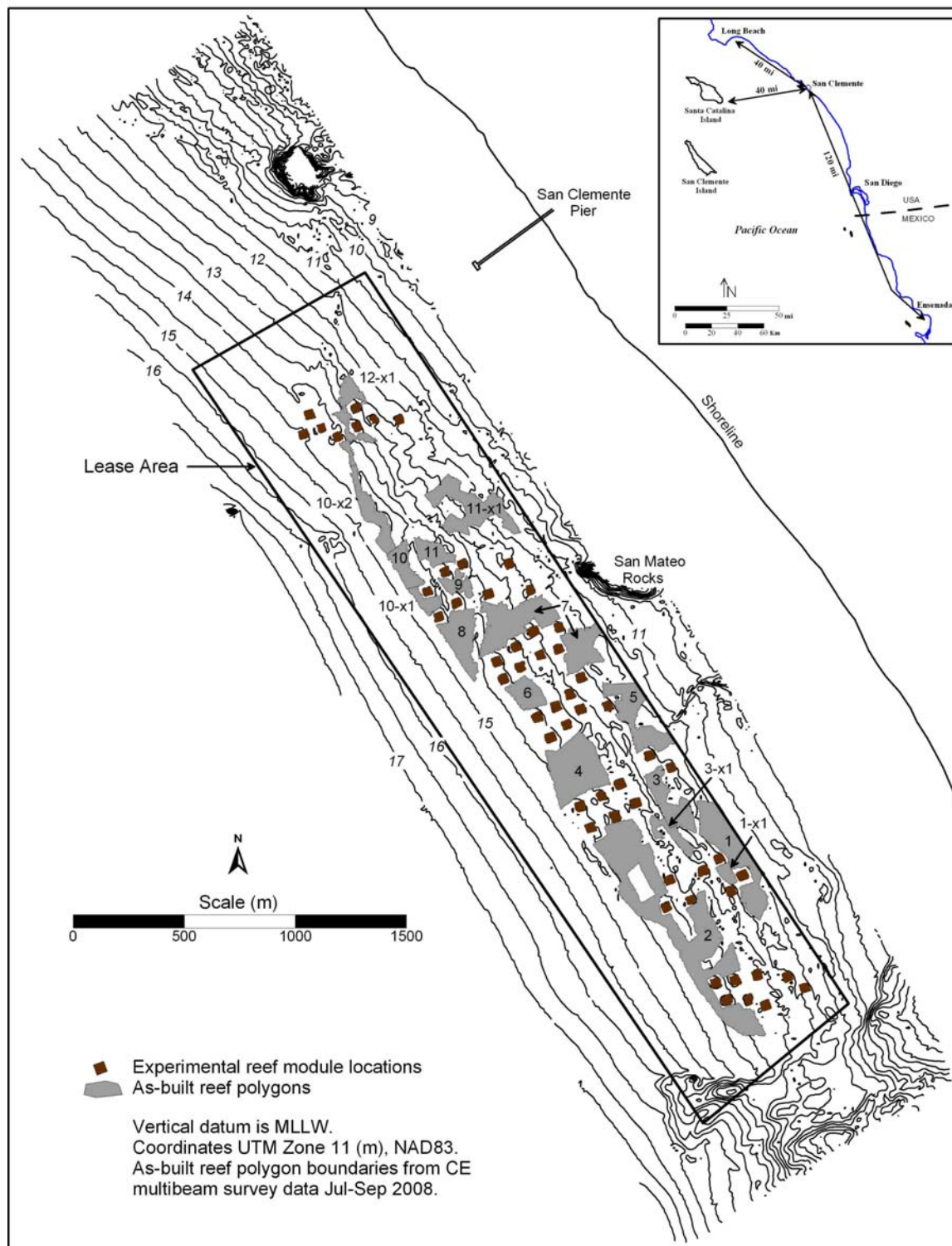


Figure 1-1. WNR polygons and project location site.

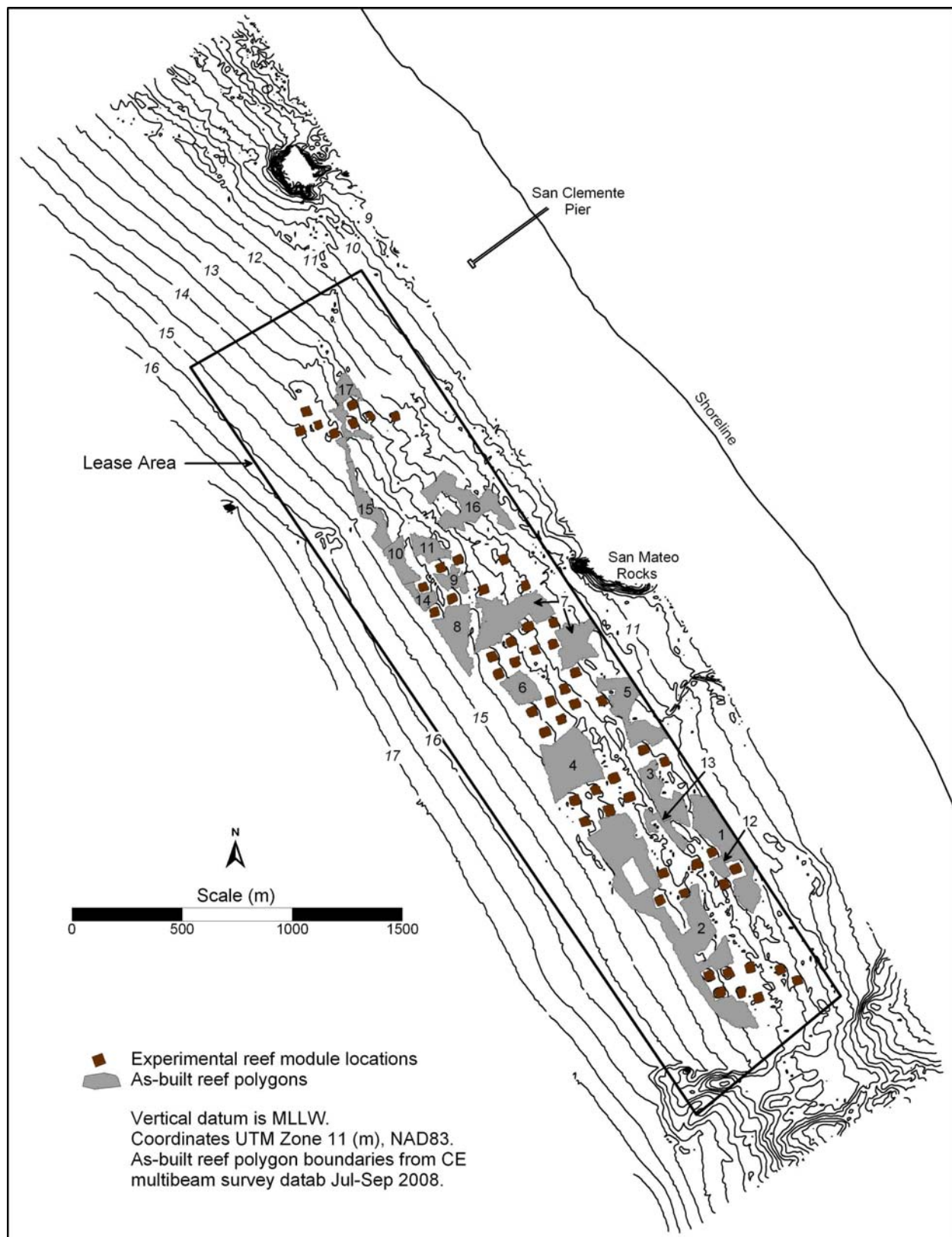


Figure 1-2. Polygon numbering system.

Table 1-1. Polygon areas as designed and as-built, placed tonnage, and tons/acre.

Polygon Number	Polygon ID	Polygon Area (Design)	Polygon Area^a (As-built, acres)	Placed Rock^b (Tons)	Tons/Acre^c (As-built / Polygon)
1	1	13.3	13.83	11,444.8	827.5
2	2	37.5	38.88	31,872.0	819.8
3	3	6.5	6.61	5,093.0	770.5
4	4	14.1	14.05	10,996.9	782.7
5	5	9.2	9.48	7,046.1	743.3
6	6	4.1	4.24	3,208.8	756.8
7	7	25.8	19.03	15,541.9	816.7
8	8	7.5	7.64	6,087.4	796.8
9	9	2.4	2.52	1,967.2	780.6
10	10	3.8	3.89	3,838.6	986.8
11	11	3.5	3.48	3,094.2	889.1
12	1-x1	1.3	1.35	1,258.7	932.4
13	3-x1	2.8	2.85	2,600.3	912.4
14	10-x1	2.0	2.12	2,008.1	947.2
15	10-x2	5.3	5.54	4,642.4	838.0
16	11-x1	10.9	11.19	10,440.7	933.0
17	12-x1	7.0	5.32	4,816.4	905.3
Totals		157.0	152.02	125,957.5	N/A ^d

^a Area of polygons as determined by the multibeam sonar system.

^b Total tonnage placed on the polygon.

^c Tonnage divided by as-built area as determined by multibeam sonar system.

^d Not applicable.

2.0 ROCK SPECIFICATIONS

Phase 2 of the Wheeler North Reef was constructed with quarry material, specifically quarter-ton boulders obtained from the Pebbly Beach and Empire quarries on Santa Catalina Island and the La Piedra quarry in Ensenada, Mexico. The boulders were removed from the working face of the quarry with explosives, sorted to specifications, and stockpiled. The quarries provided the following approximate tonnage: a) Pebbly Beach - 86,904 tons, b) Empire - 12,157 tons, and c) La Piedra - 26,897 tons.

Each quarry supplied boulders of differing composition. Boulders from the Pebbly Beach quarry are predominantly a dense, iron-rich breccia (San Onofre Breccia), which is a sedimentary rock composed of multiple clasts from different rock types, and secondarily, a volcanic andesite/dacite. The Empire quarry boulders are a less dense, silica-rich rhyolite tuff that has been slightly metamorphosed. The La Piedra (Ensenada) quarry boulders are dense granite.

Project boulder specifications were provided by CE (2008a). Materials inspection was performed by CP and CE to ensure conformance with specifications and permits. Twining Laboratories of Southern California, Inc. performed independent tests on the boulders used on Phase 2. Boulders used for the project conformed to project specifications, including size, specific gravity, durability, and purity. In all cases, our observations indicated that the materials were satisfactory and of good quality. The quarry material was tested for specific gravity, water absorption, and abrasion resistance (Twining Laboratories, 2008a,b,c), and the results met the American Society of Civil Engineers (ASCE) specifications for quarter-ton rock riprap. The tests also indicated that the durability of the rocks met the California Department of Fish and Game's (CDFG) guidelines regarding the capacity to remain unchanged while being submerged in seawater for 30 years (Bedford, 1997). The purity of the rocks (absence of debris, stains or foreign materials) was confirmed by CE representatives, both at the quarry and on the barge during placement. The results of the rock specification tests are presented in Table A-1 and the design specifications are presented in Table A-2 (Appendix A). These design specifications are from the Final Design Plan (CE, 2008a).

Twining Laboratories also performed six random rock size tests (gradation tests) to ensure that the rocks being stockpiled at the quarries for use on the reef met the CE and CCC-CS specifications for size and quantity of each size for the rocks. The results of these six rock gradation tests (Figures A-1 through A-6) are included in Appendix A of this report. Figure A-7 compares the average from these six rock size gradation tests to the upper and lower limits presented in the Final Design Plan (CE, 2008a).

3.0 ROCK PLACEMENT

Placement of material on the reef site began on June 9, 2008, and was completed on September 11, 2008. The contractor, Connolly-Pacific, deposited on average, 1,725 tons/day. The polygons were generally constructed from south to north in the following order: 6, 2, 1, 12 (1-x1), 13 (3-x1), 3, 5, 4, 7, 8, 9, 10, 11, 14 (10-x1), 16 (11-x1), 15 (10-x2), and 17 (12-x1). Generally, construction activities took place Monday through Saturday between June 9 and July 25, and Monday through Friday from July 26 through the end of construction.

Appendices B and C present two sets of polygon completion diagrams. One shows the areas of each polygon that were constructed with each rock type (Appendix B), and the other shows the areas of each polygon completed on each individual work day (Appendix C). The tonnage per acre shown in Table 1-1 differs slightly from that shown in Figures B-2 through B-18 and C-2 through C-18 due to the use of multibeam surveyed as-built acreage for Table 1-1 and the use of the construction design areas in Appendices B and C.

4.0 DGPS SURVEYS

Differential global positioning satellite (DGPS) survey measurements were recorded at the ends of certain placement lines as the boulders were cast in the water. This survey served three purposes: 1) to document the precise locations where the boulders were deposited at the water's surface, 2) to show that these locations were within the boundaries of the designed polygons, and 3) to document the accuracy of CP's survey system. The survey measurements were recorded using a handheld Magellan Mobile Mapper CX (Accuracy $\pm < 1$ meter). The survey data was plotted on the designed boundary diagram (NAD 83, UTM Zone 11, meters) for each polygon to confirm the location of the boulder deposition. These survey data diagrams are included in Appendix D and show the surveyed points are within 10 feet of the polygon boundaries, as specified in the Final Design Plan (CE, 2008a).

5.0 MULTIBEAM SURVEYS

Each of the constructed polygons was surveyed between July 8, 2008 and October 8, 2008 using the following instrumentation:

1. Odom ES3 Multibeam Sonar System
2. Hemisphere GPS Heading and Positioning Receiver (VS110)
3. Hypack and Hysweep Survey and Multibeam Data Acquisition programs
4. Digibar Pro Speed of Sound Profiler
5. TSS DMS 10 Motion Sensor

The ECO-M, a 27-ft Farallon, was used as the survey vessel. Vessel speed varied between 4.0 and 5.5 knots in order to reduce turbulence around the transducer.

The multibeam sonar survey operation has been fully described in Section 5.2 of the Volume I report (CE, 2008c). The results of the multibeam surveys were used for three purposes: 1) to determine the as-built polygon boundaries from which the polygon areas were calculated; 2) to determine the bathymetry within the polygons; and 3) to determine the percentage of rock overlap. Figures showing both the as-built and designed boundaries for all the polygons are in Appendix E. Appendix F presents two bathymetric figures for each polygon on one page. The top panel shows the post-construction bathymetry of each polygon and the lower panel shows the elevational differences determined before and after construction. Rock overlap estimates were determined by subtracting the polygon bathymetry before and after construction. No differences greater than approximately 1 m were observed. The rock overlap percentage is much lower than the 15 percent allowed by the design specifications.

6.0 DIVE SURVEYS

Divers from both the CCC-CS and CE conducted independent dive surveys of all 17 polygons between June 17 and September 24, 2008. Both dive teams used the point contact method for determining the percent coverage. This method was applied in two different ways, however. The CCC-CS methodology and results are discussed in Section 5.3 of the Volume I report (CE, 2008c). The CE dive survey methodology and results are discussed in a separate report (CE 2008d).

7.0 PHOTOGRAPHS

Photographic documentation of the process and materials was done during construction of the Phase 2 Reef. The photographs were of typical individual boulders, quarry stockpiles, supply barge stockpiles, derrick barge activities, “dozer” operations, “dozer” bucket size, and turbidity plumes. Approximately 1,000 photographs were taken during Phase 2 reef construction. Selected photographs are shown in Appendix G.

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- Twining Laboratories, 2008b. Sample analysis at Empire quarry, Santa Catalina Island for SCE Phase 2 WN Reef at San Clemente, CA. Report submitted to Connolly-Pacific Company, Long Beach, CA, May 2008, 3 pp.
- Twining Laboratories, 2008c. Sample analysis at La Piedra Quarry in Ensenada, Mexico for SCE Phase 2 WN Reef at San Clemente, CA. Report submitted to Connolly-Pacific Company, Long Beach, CA, July 2008, 3 pp.

APPENDIX A

TWINING LABORATORIES ROCK GRADATION TESTS

Table A-1. Rock specifications for Phase 2 WNR from Twining Laboratories (2008).

Parameter	Test	Quarry		
		Pebbly Beach	Empire	La Piedra
Apparent Specific Gravity	ASTM ^a C127	2.72	2.45	2.73
Absorption (%)	ASTM C127	2.0	5.5	0.6
Abrasion (%) ^b	ASTM 535	28.9	32.2	11.0

^a ASTM = American Society of Testing and Materials.

^b LA Abrasion Test at 1,000 revolutions.

Table A-2. Required material tests.

Test	California / ASTM Test	Requirement
Apparent Specific Gravity	206 / ASTM C127	2.3 minimum
Absorption	206 / ASTM C127	4.2% maximum
Abrasion (%)	ASTM C535	maximum 38% at 500 revolutions / maximum 50% at 1000 revolutions

ASTM = American Society of Testing and Materials

Pebbly Beach Quarry - Twinning Lab Rock Gradation Test - February 15, 2008

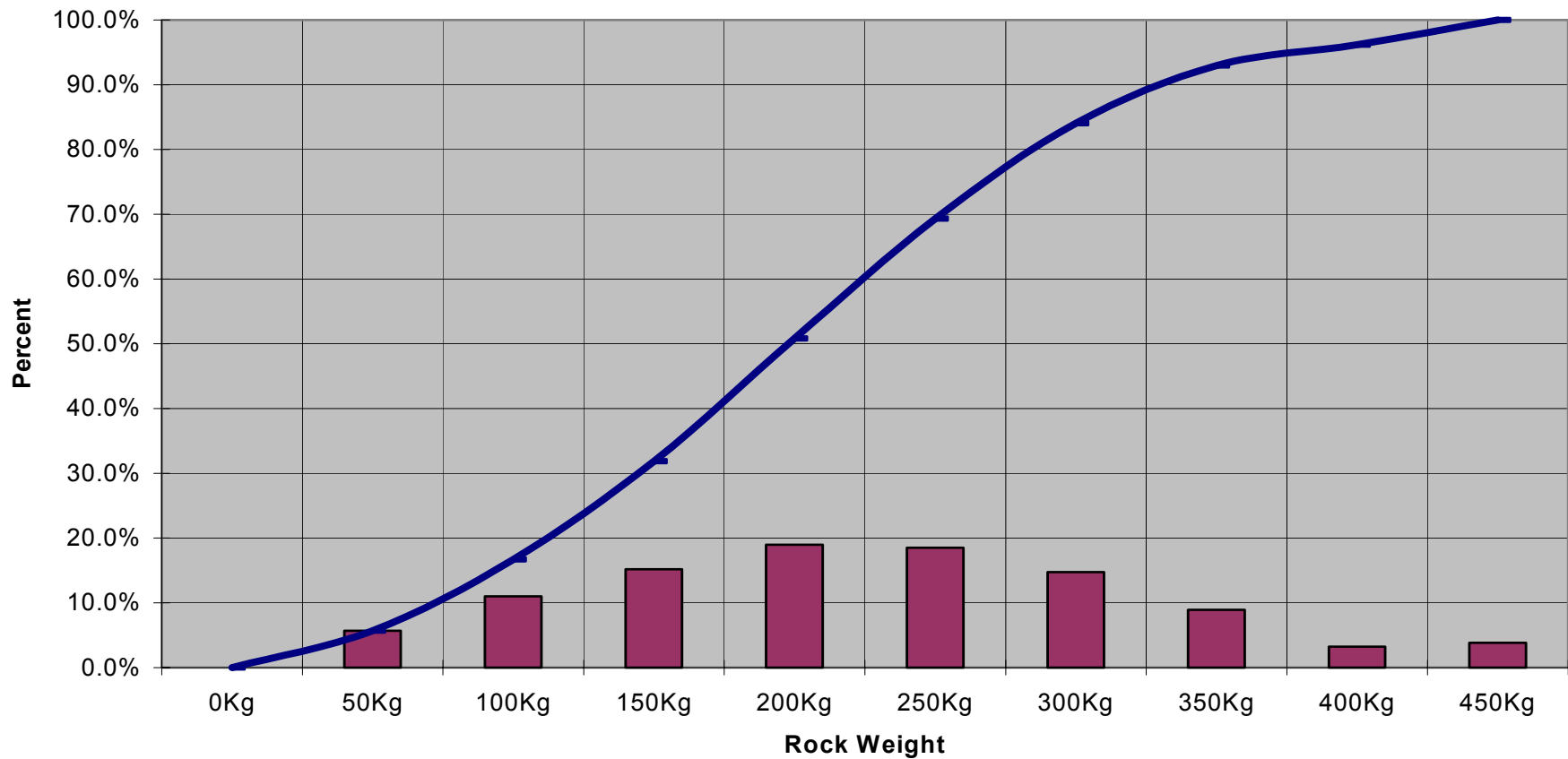


Figure A-1. Pebbly Beach Quarry rock gradation test, 15 February 2008.

Pebbly Beach Quarry - Twinning Lab Rock Gradation Test - April 17,2008

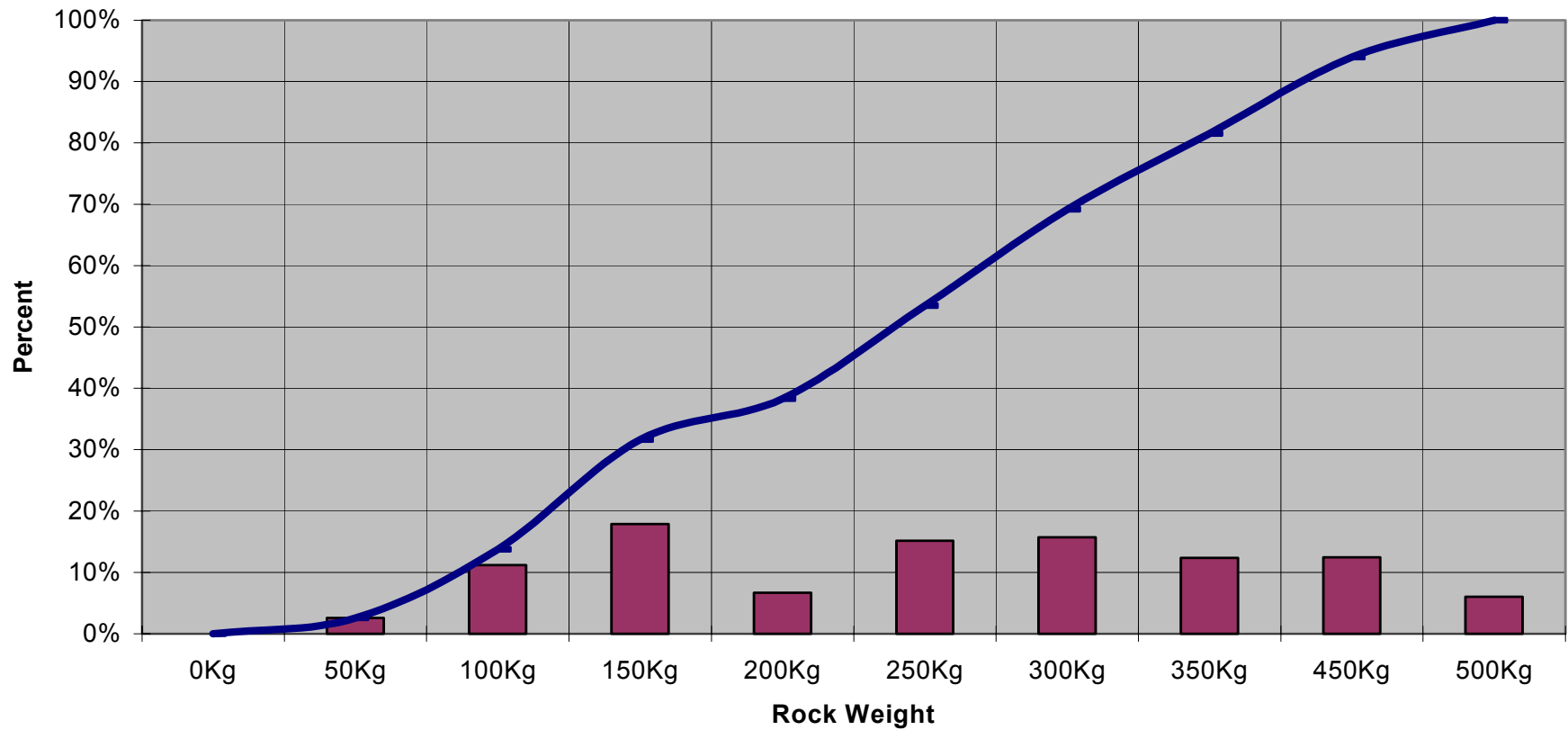


Figure A-2. Pebbly Beach Quarry rock gradation test, 17 April 2008.

Empire Quarry-Twinning Lab Rock Gradation Test - April 24, 2008

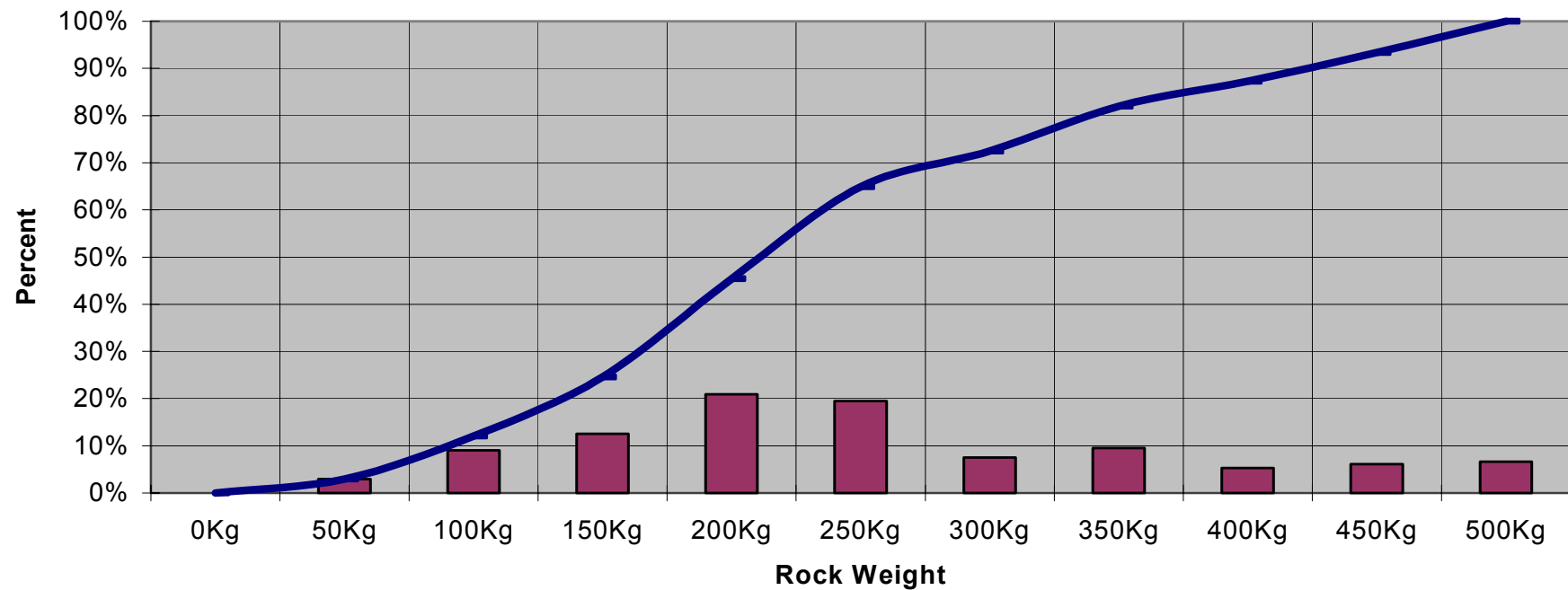


Figure A-3. Empire Quarry rock gradation test, 24 April 2008.

Pebbly Beach Quarry - Twinning Lab Rock Gradation Test - July 10, 2008

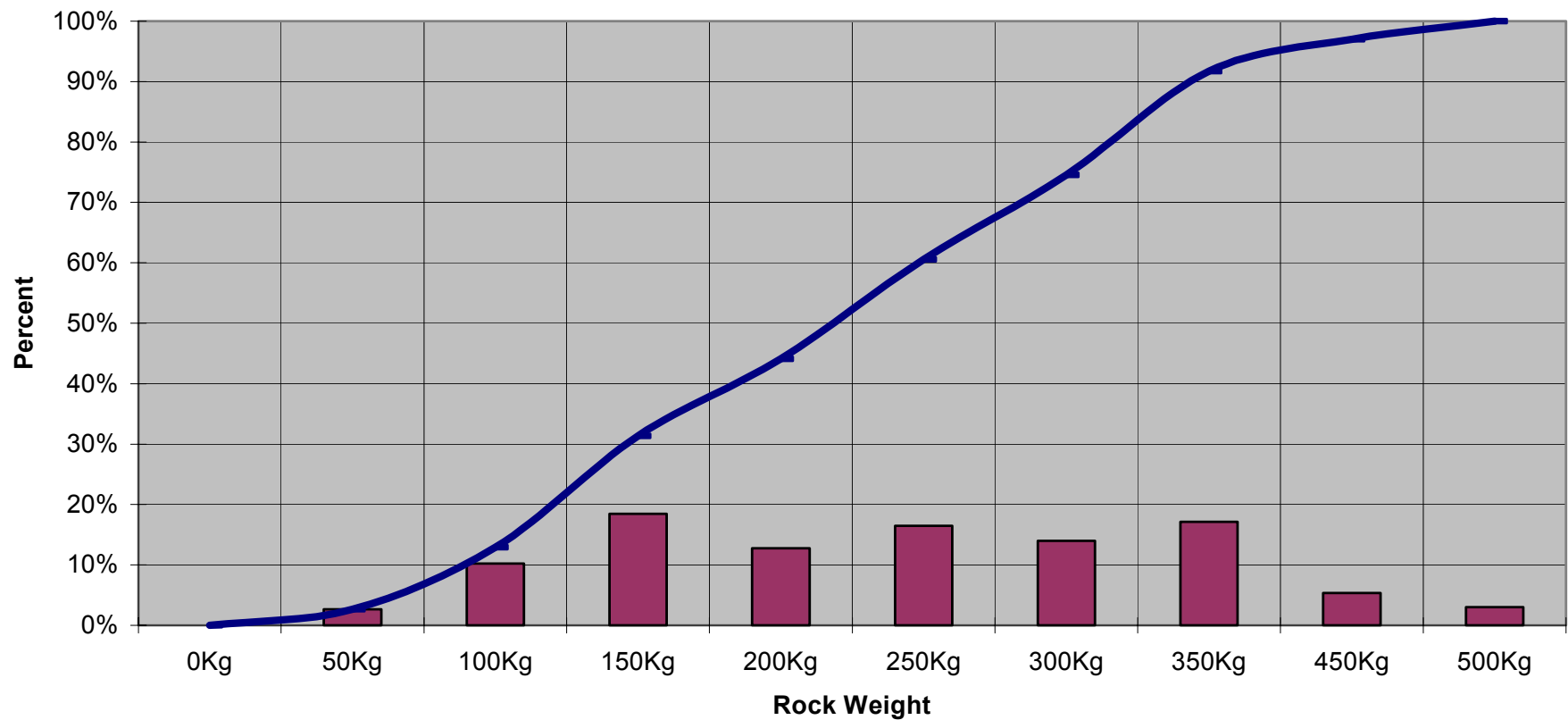


Figure A-4. Pebbly Beach Quarry rock gradation test, 10 July 2008.

Petreros Del Pacifico Quarry - Twinning Lab Rock Gradation Test - July 16, 2008

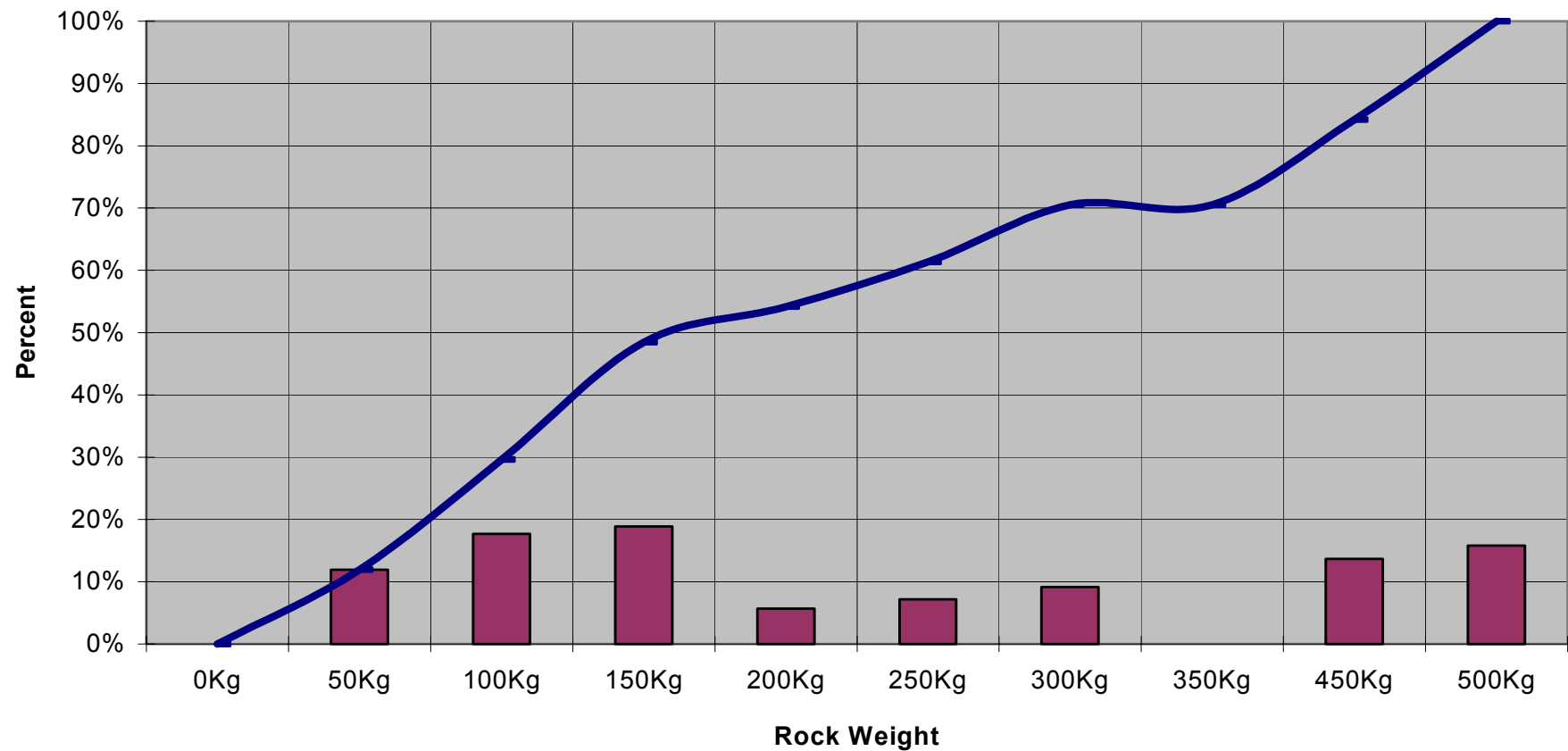


Figure A-5. Petreros Del Pacifico Quarry rock gradation test, 16 July 2008.

Pebbly Beach Quarry - Twinning Lab Rock Gradation Test - August 21, 2008

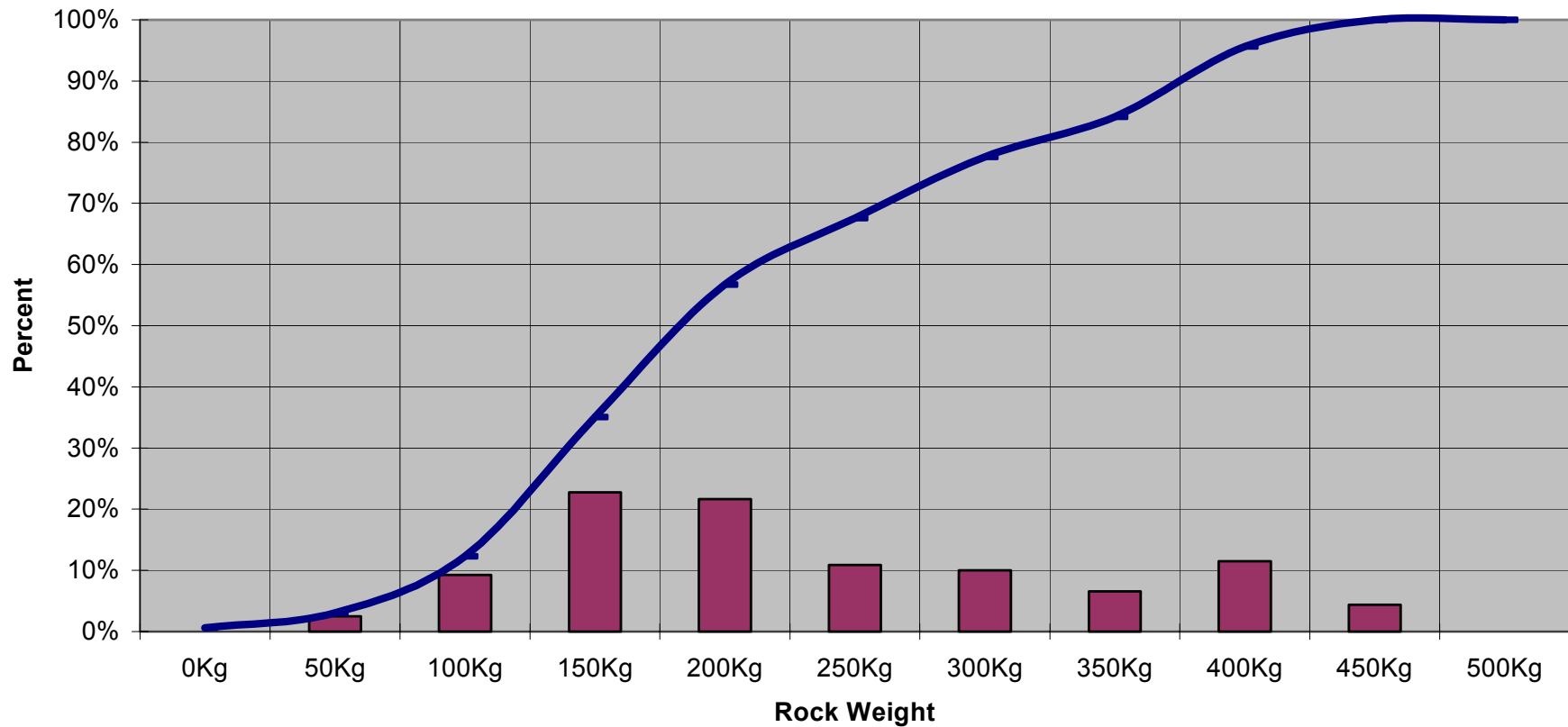


Figure A-6. Pebbly Beach Quarry rock gradation test, 21 August 2008.

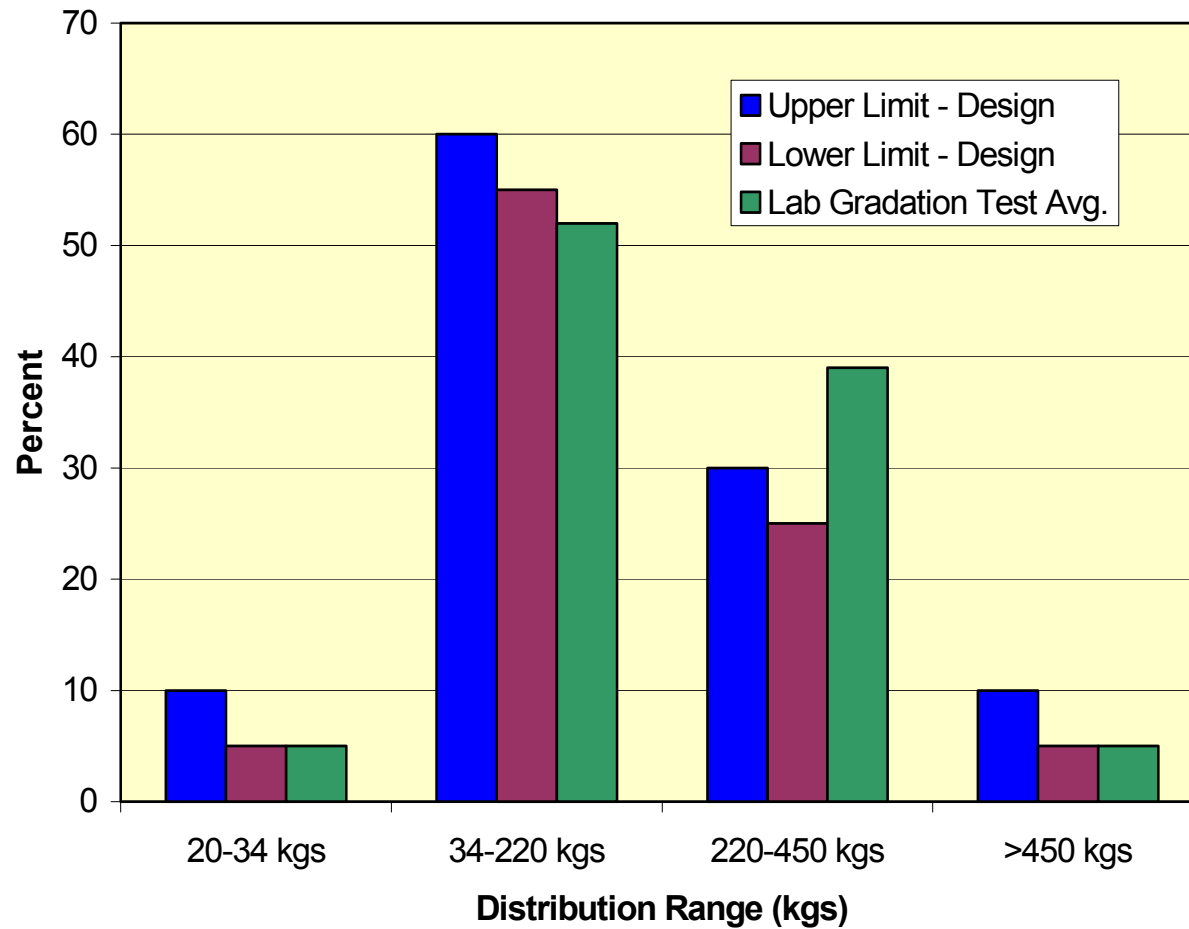


Figure A-7. Rock weight distribution variation by class.

APPENDIX B

ROCK TYPE PLACED PER POLYGON

(9 June 2008 – 11 September 2008)



Figure B-1. Rock quarry type and location of placed rock for all polygons.

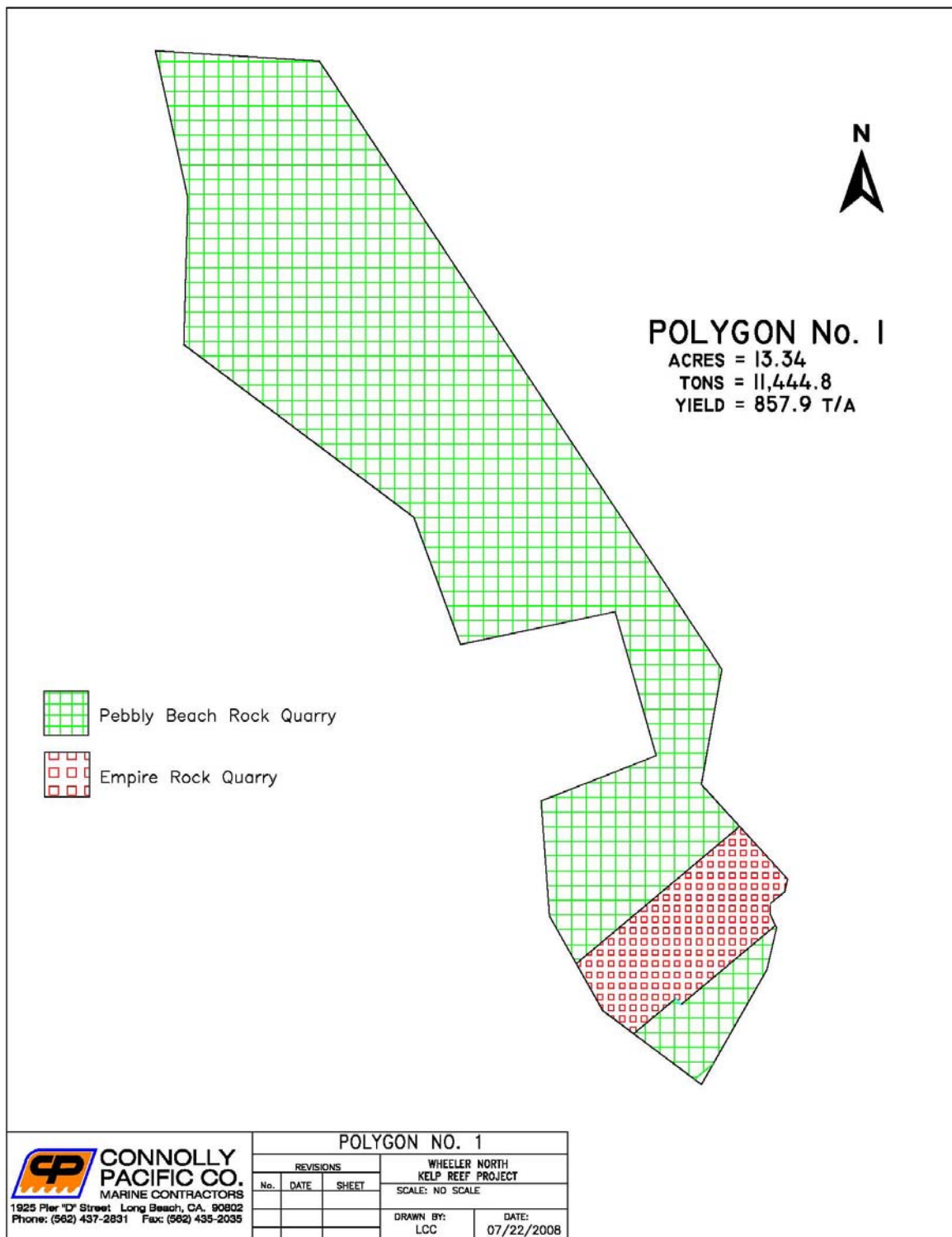


Figure B-2. Rock quarry type and location of placed rock for Polygon 1.

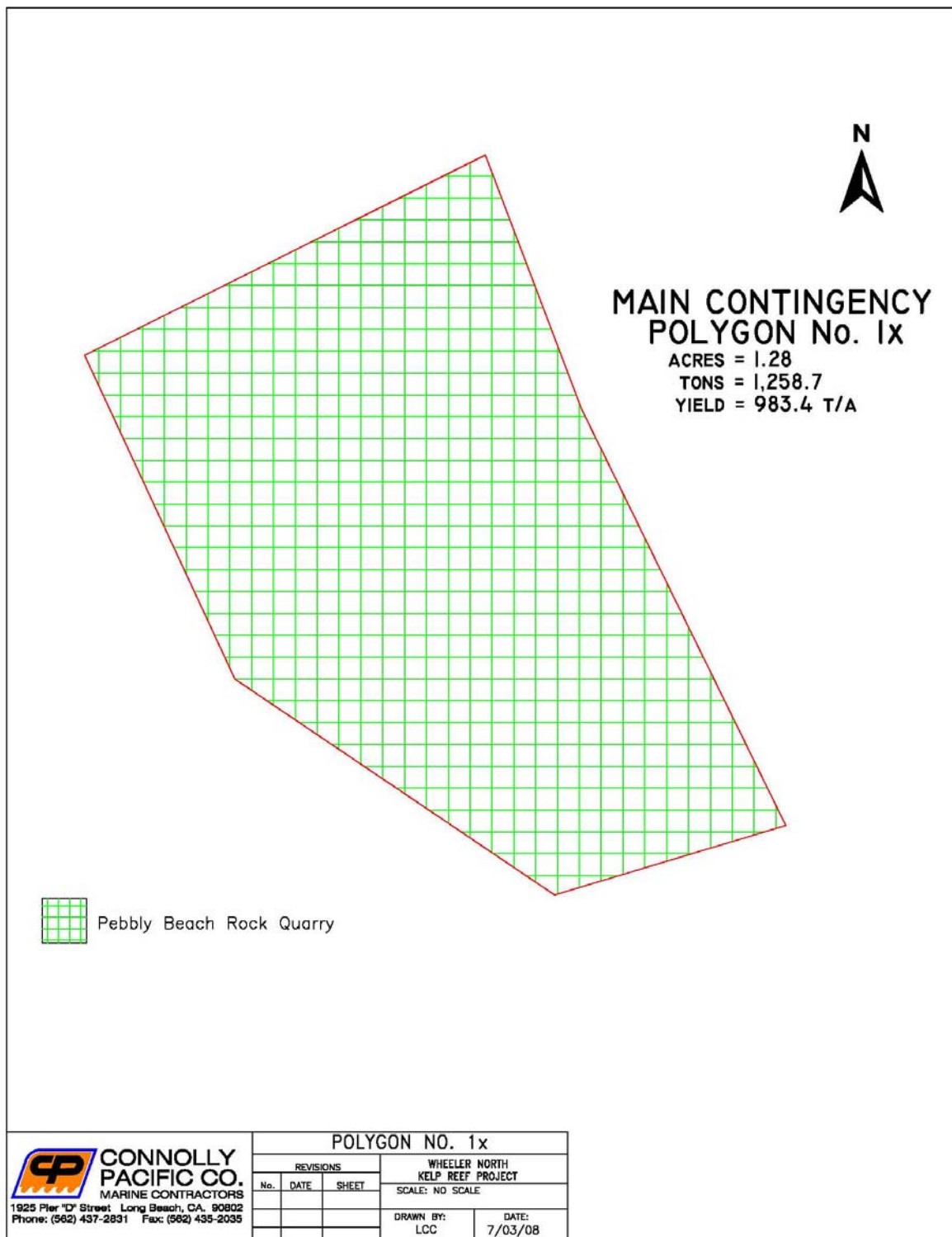


Figure B-3. Rock quarry type and location of placed rock for Polygon 1-x1.

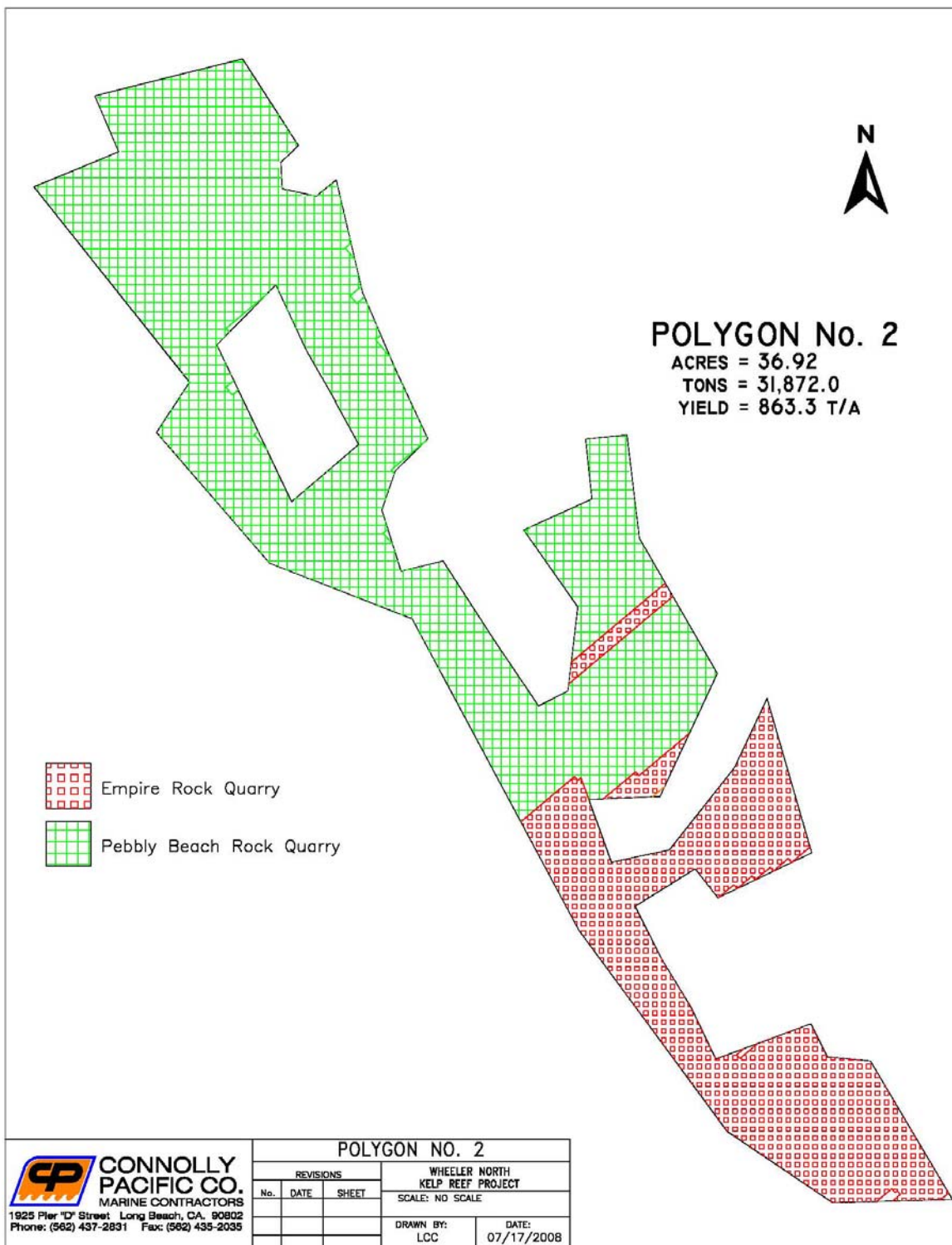


Figure B-4. Rock quarry type and location of placed rock for Polygon 2.

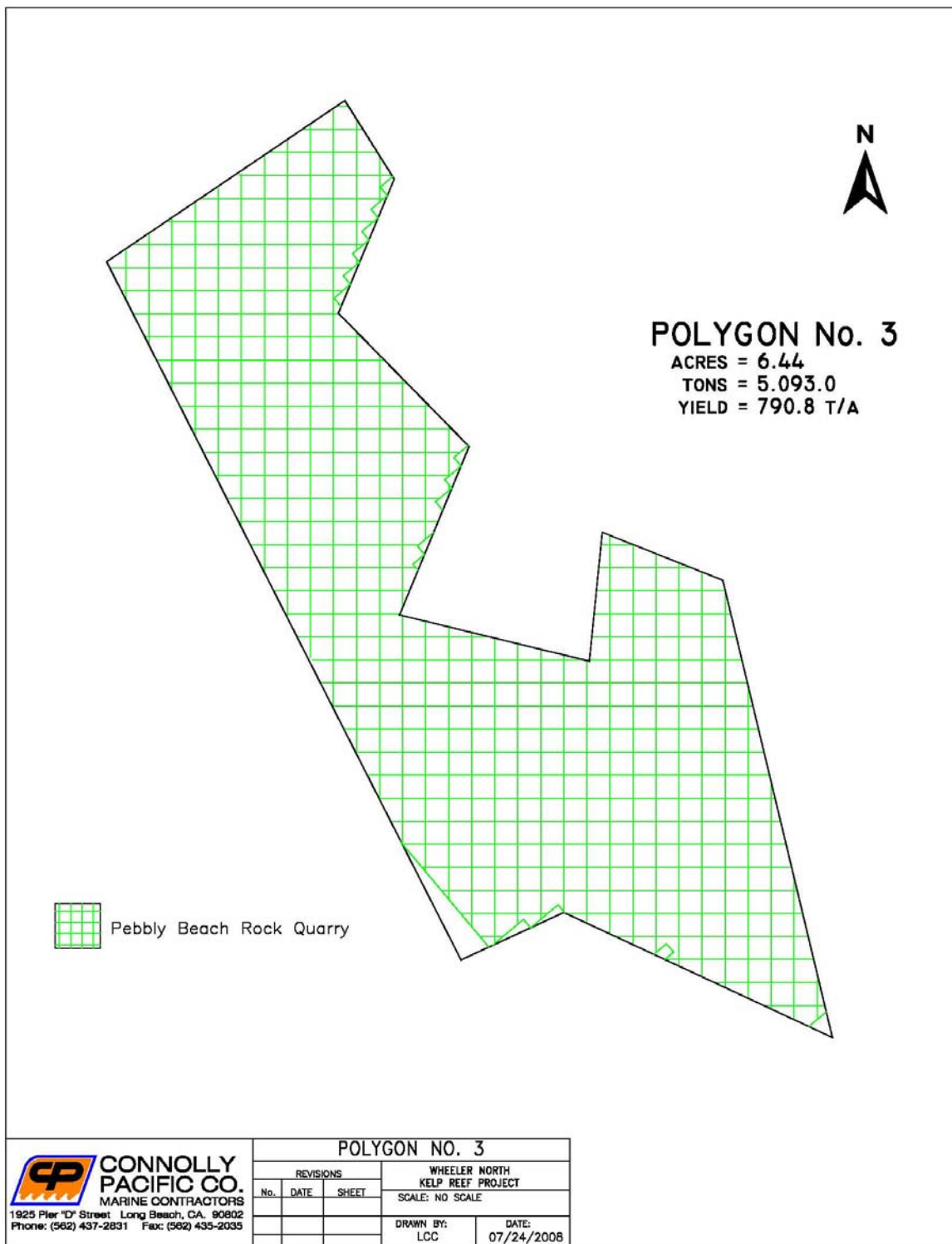


Figure B-5. Rock quarry type and location of placed rock for Polygon 3.

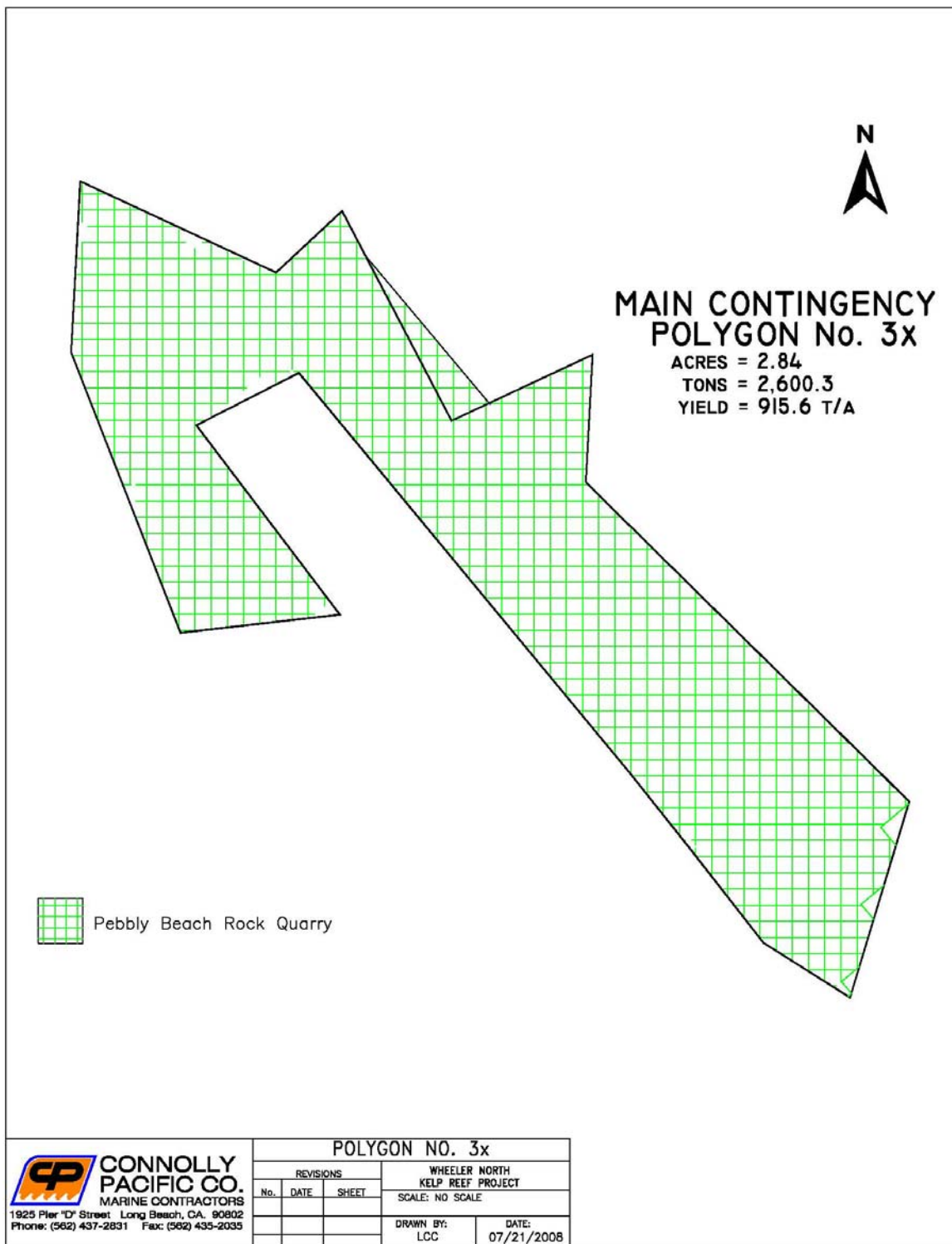


Figure B-6. Rock quarry type and location of placed rock for Polygon 3-x1.

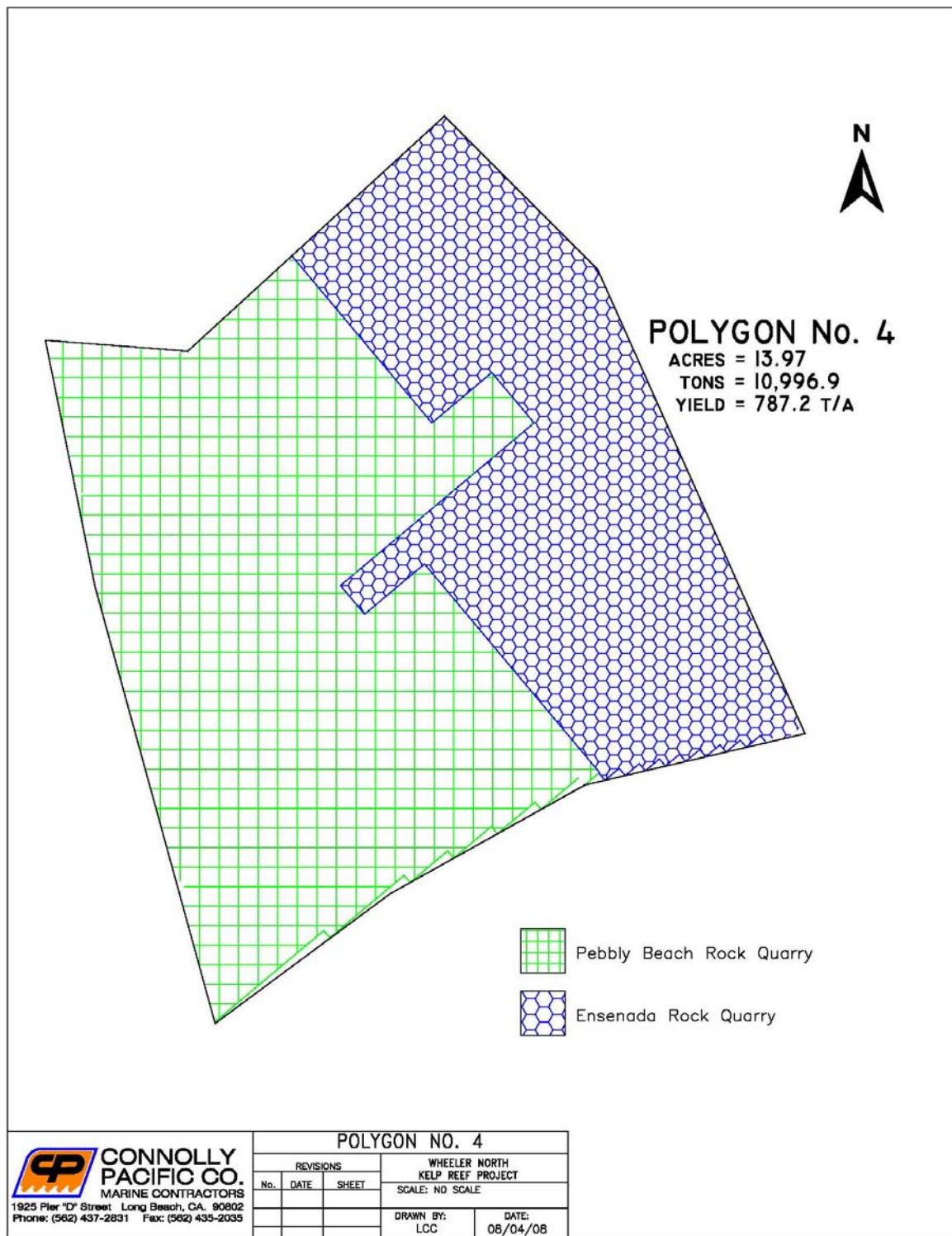


Figure B-7. Rock quarry type and location of placed rock for Polygon 4.

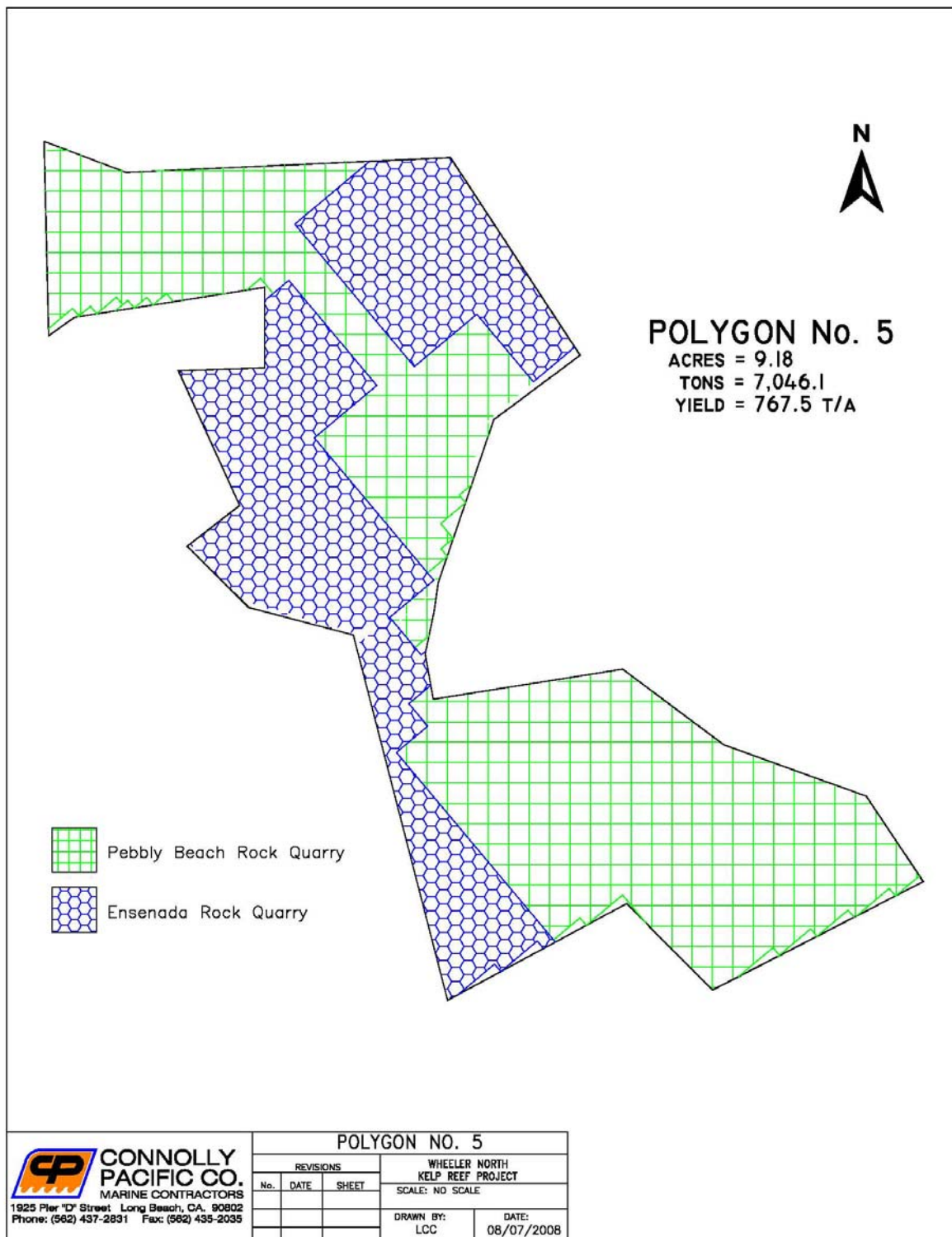


Figure B-8. Rock quarry type and location of placed rock for Polygon 5.

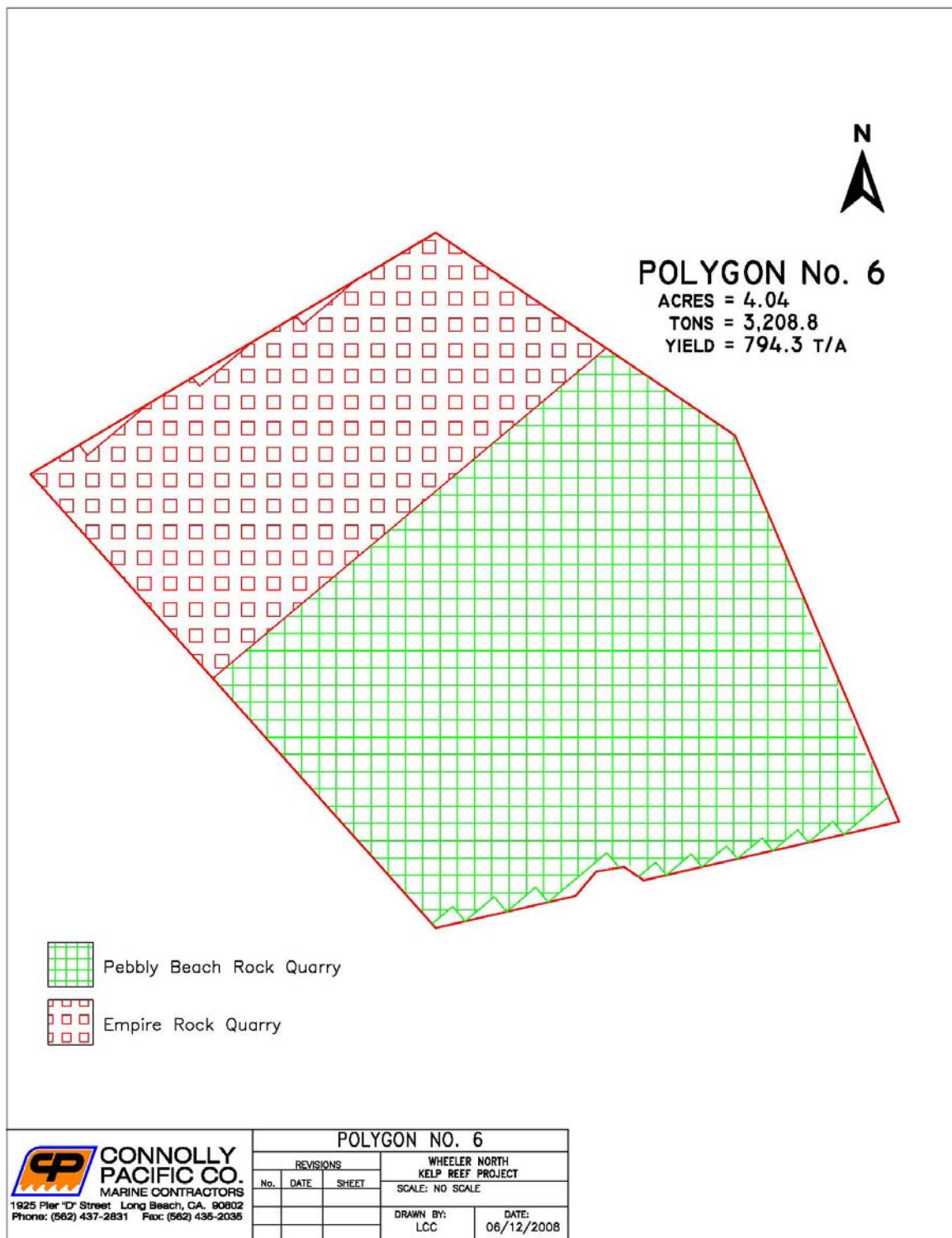


Figure B-9. Rock quarry type and location of placed rock for Polygon 6.

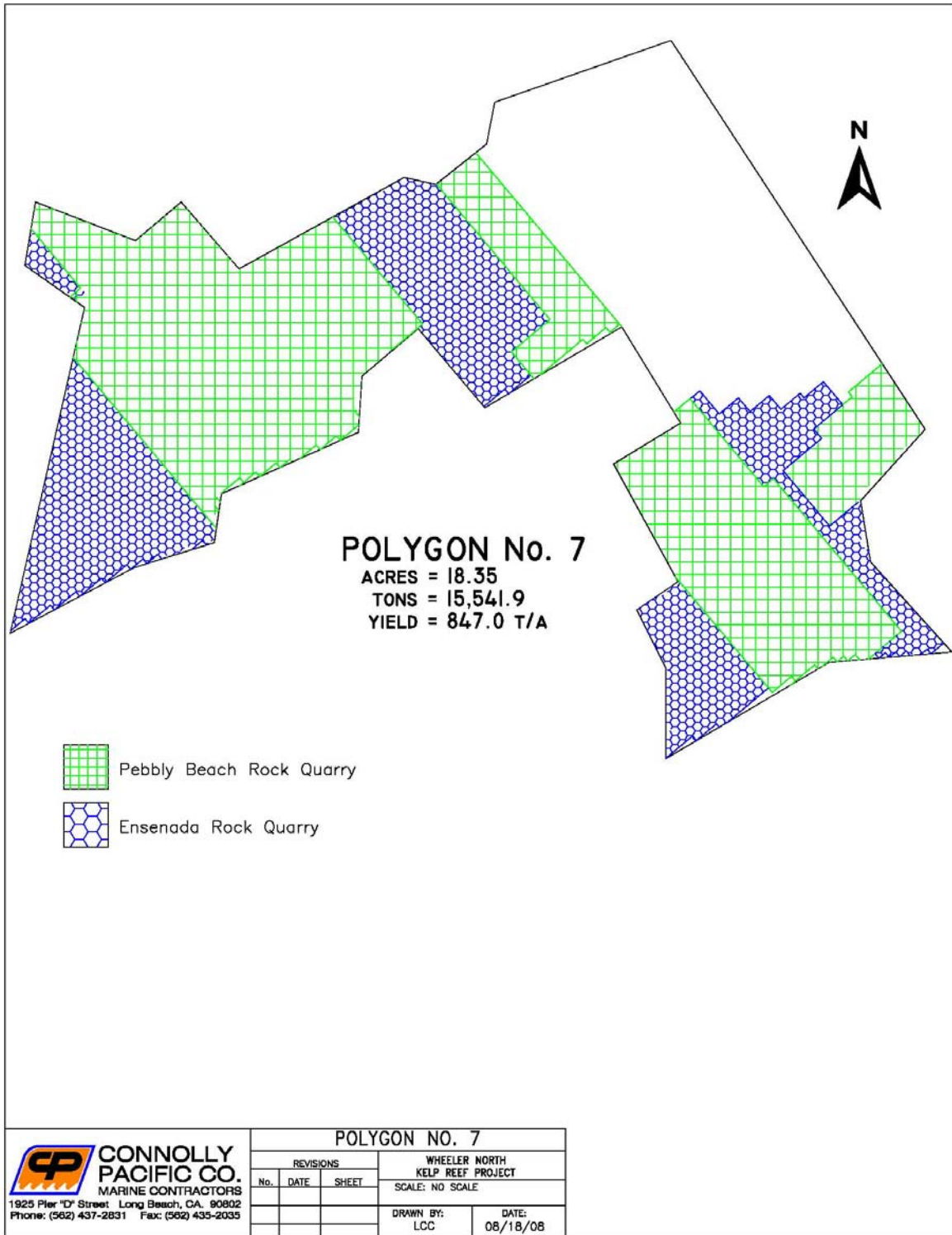


Figure B-10. Rock quarry type and location of placed rock for Polygon 7.

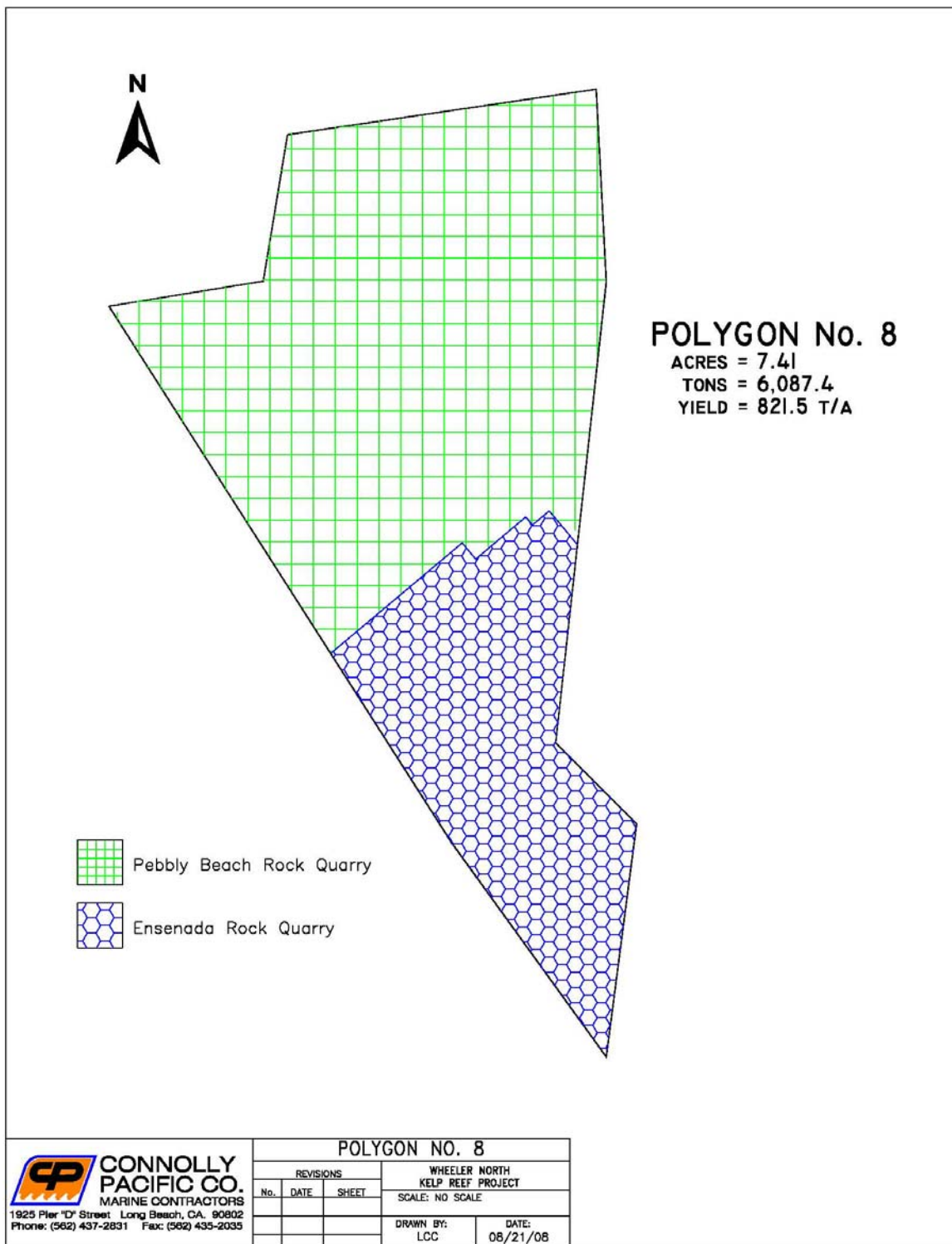


Figure B-11. Rock quarry type and location of placed rock for Polygon 8.

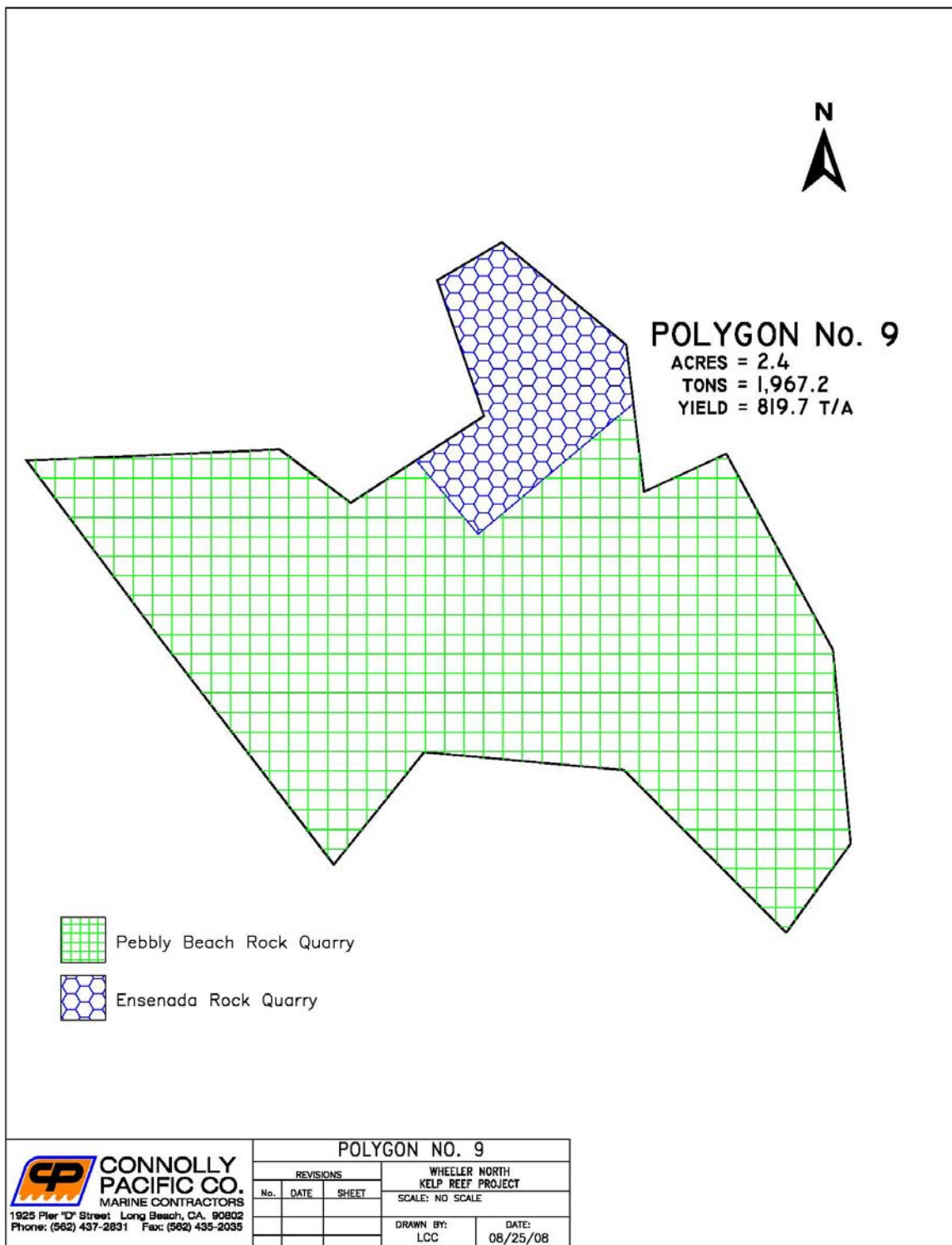


Figure B-12. Rock quarry type and location of placed rock for Polygon 9.

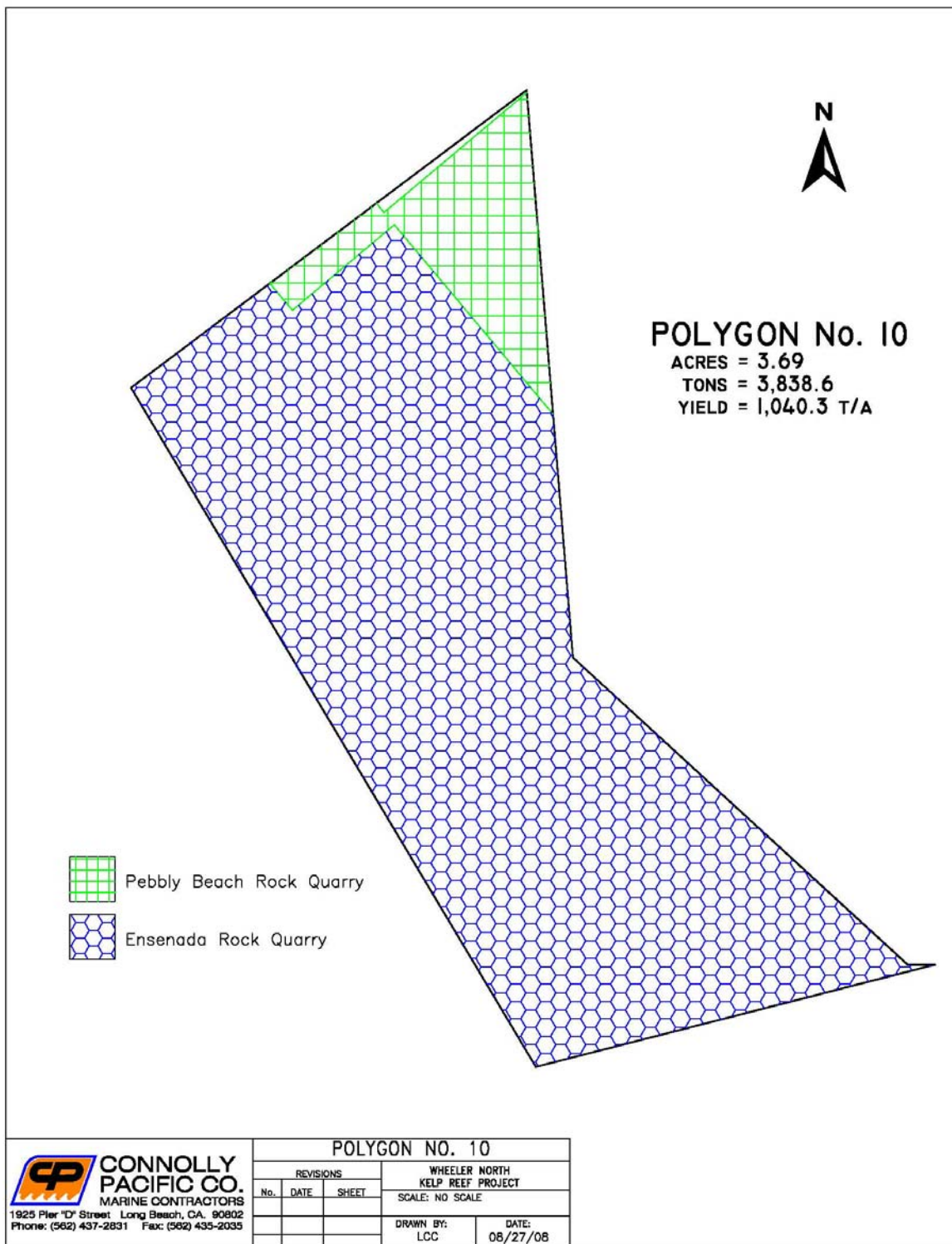


Figure B-13. Rock quarry type and location of placed rock for Polygon 10.

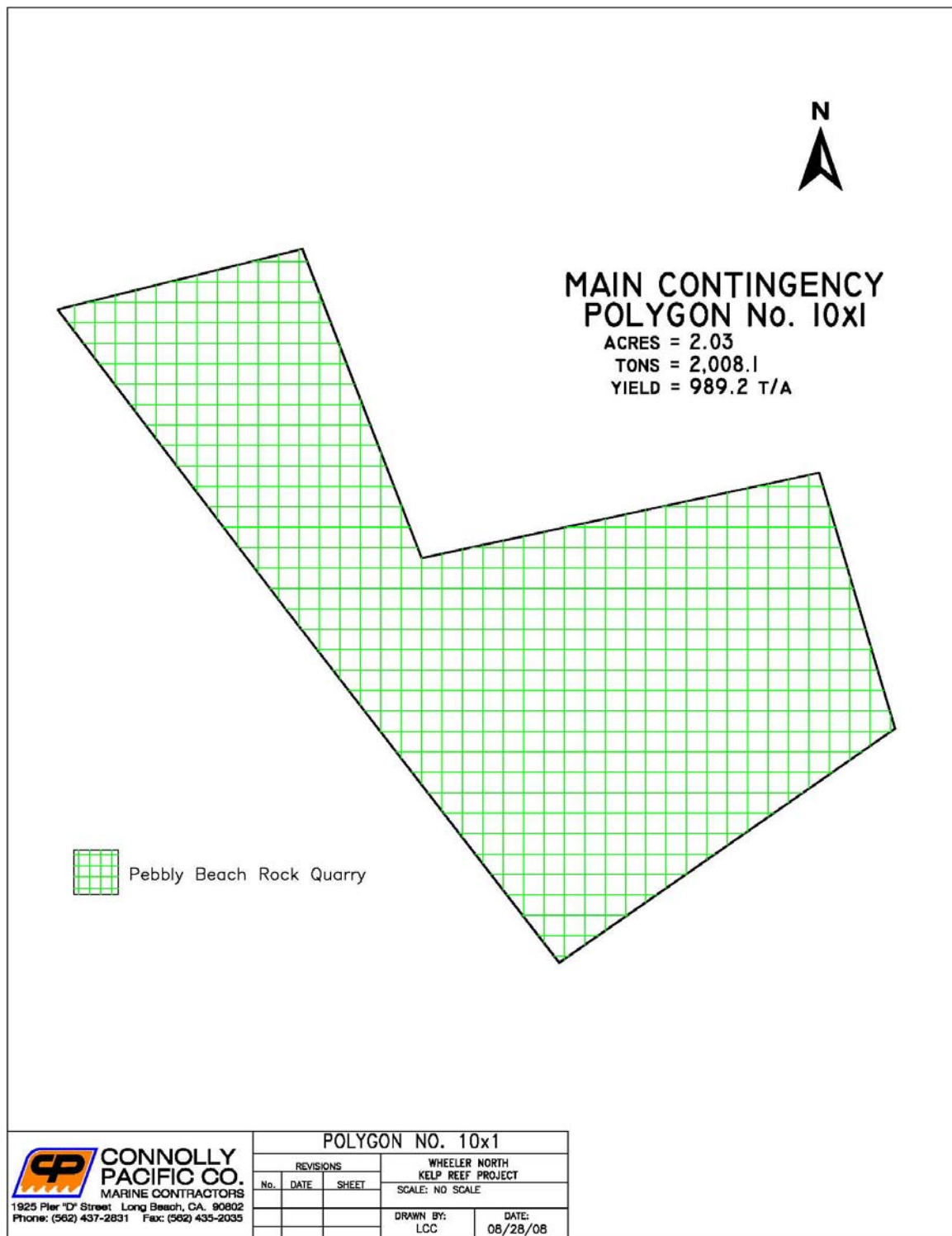


Figure B-14. Rock quarry type and location of placed rock for Polygon 10-x1.

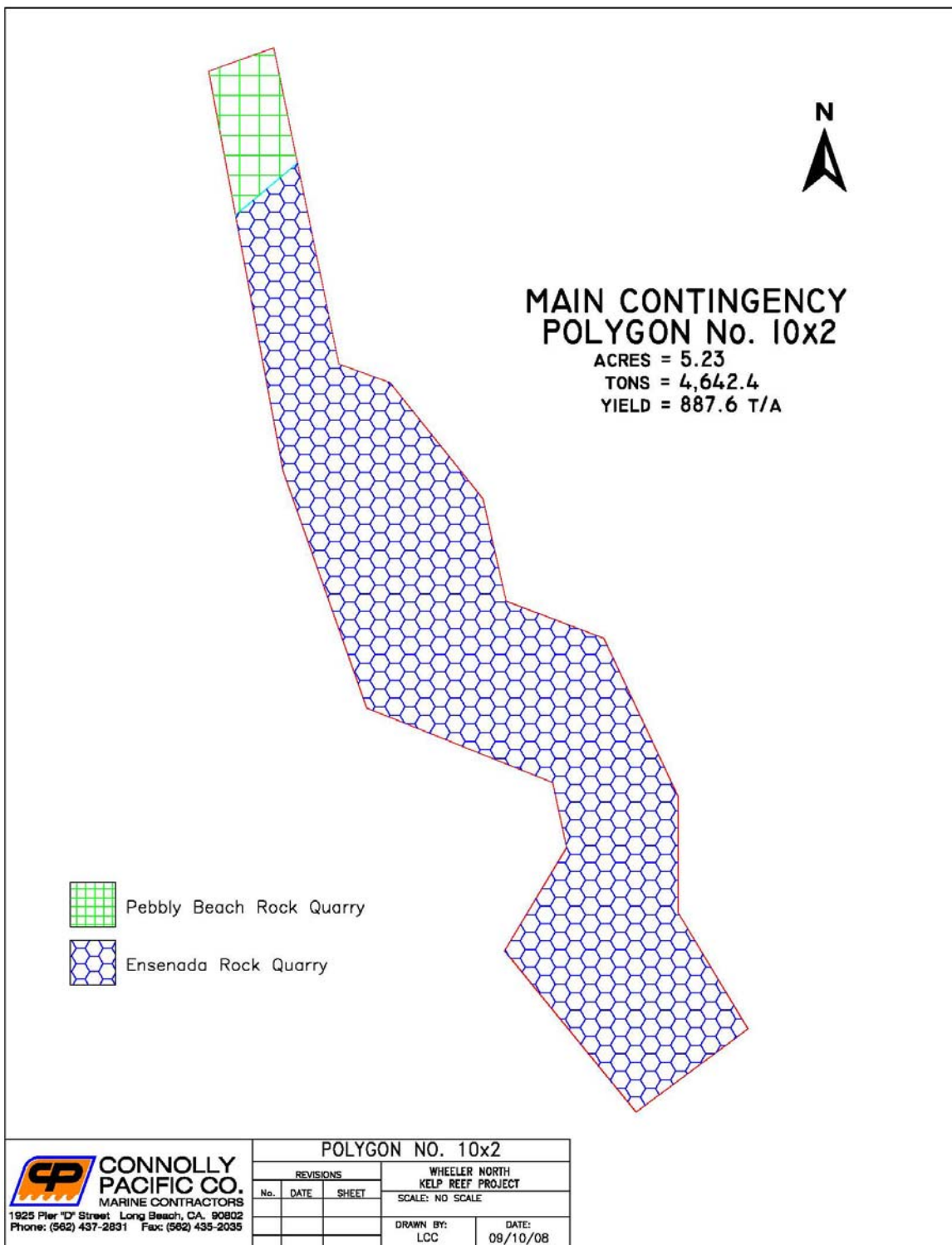


Figure B-15. Rock quarry type and location of placed rock for Polygon 10-x2.

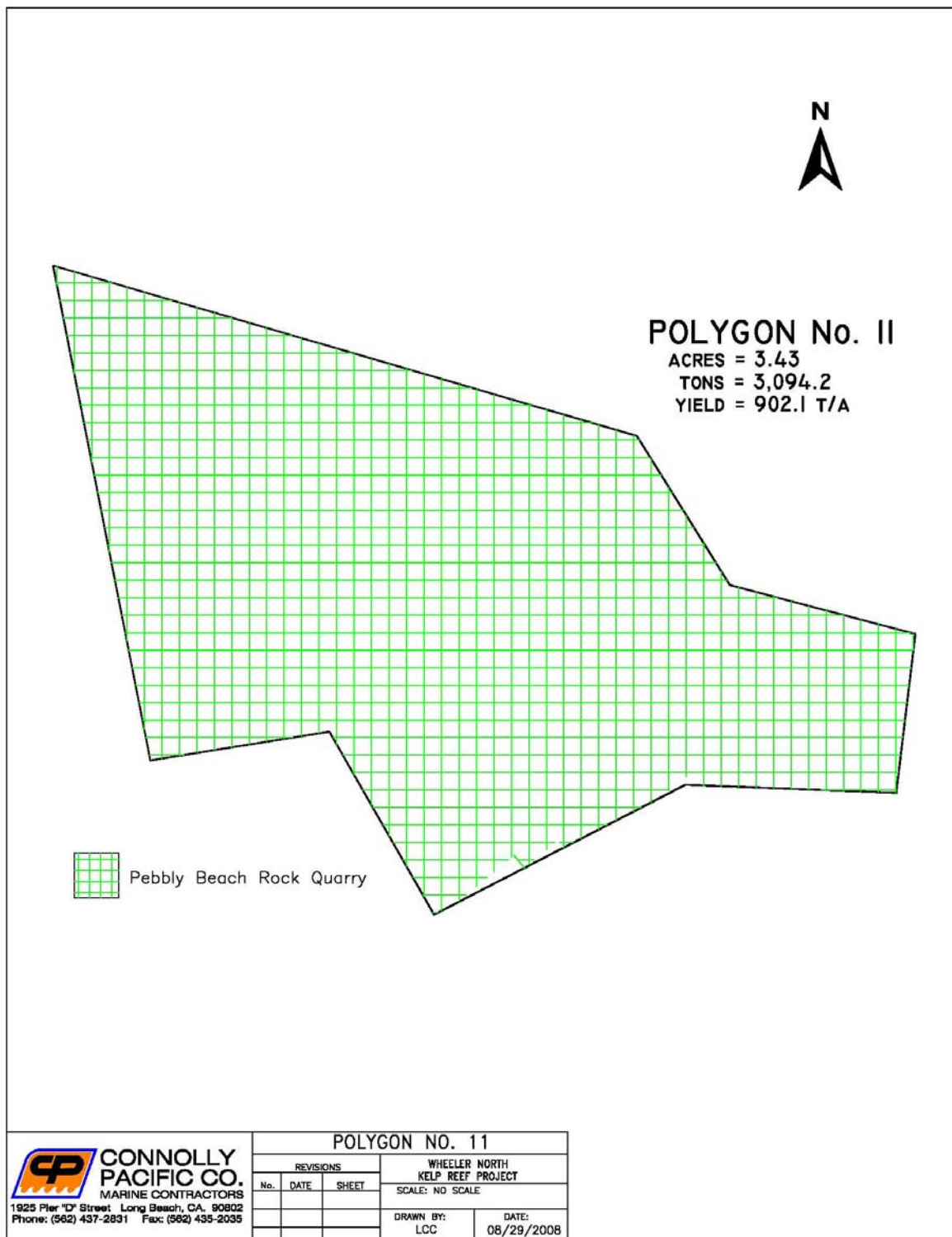


Figure B-16. Rock quarry type and location of placed rock for Polygon 11.

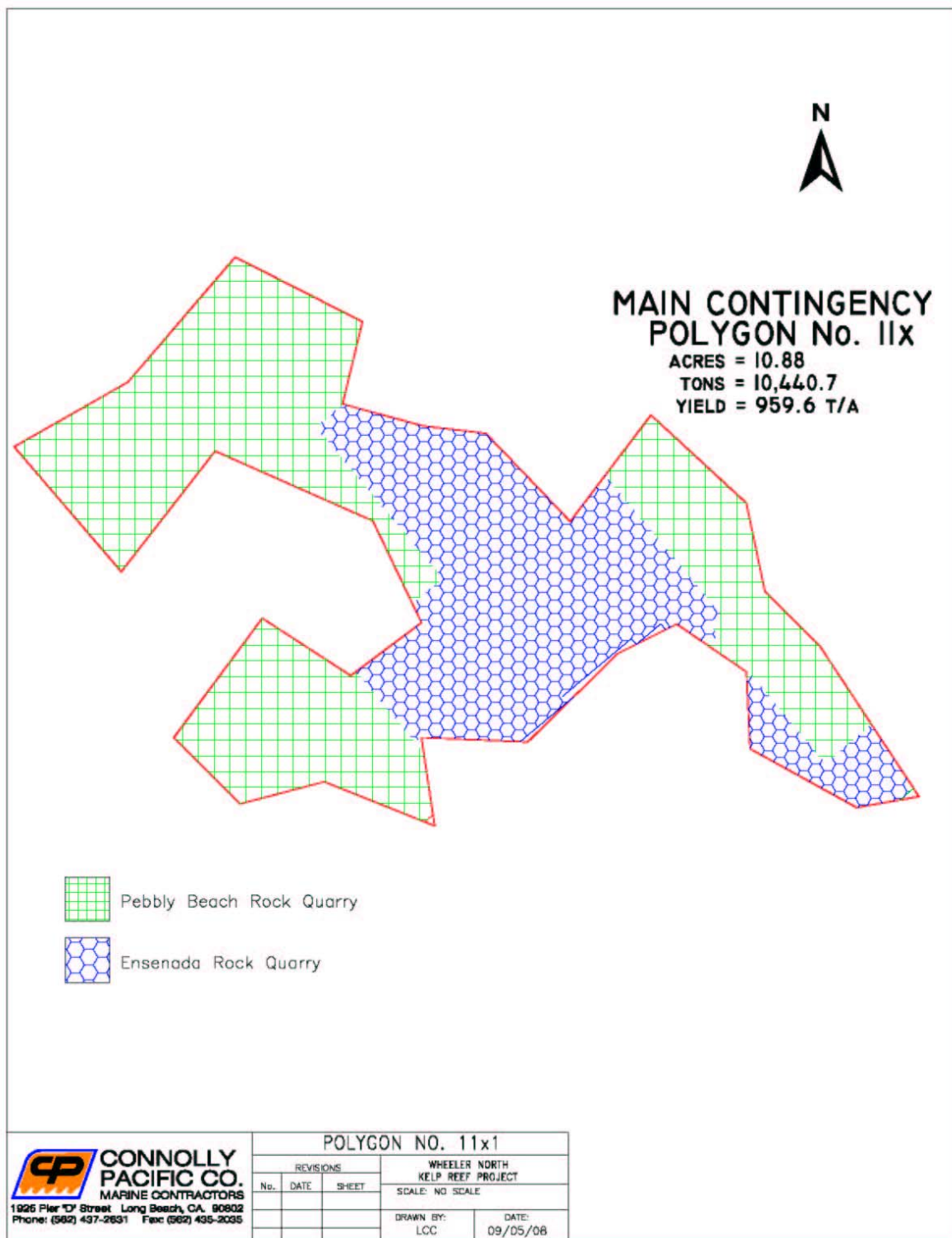


Figure B-17. Rock quarry type and location of placed rock for Polygon 11-x1.

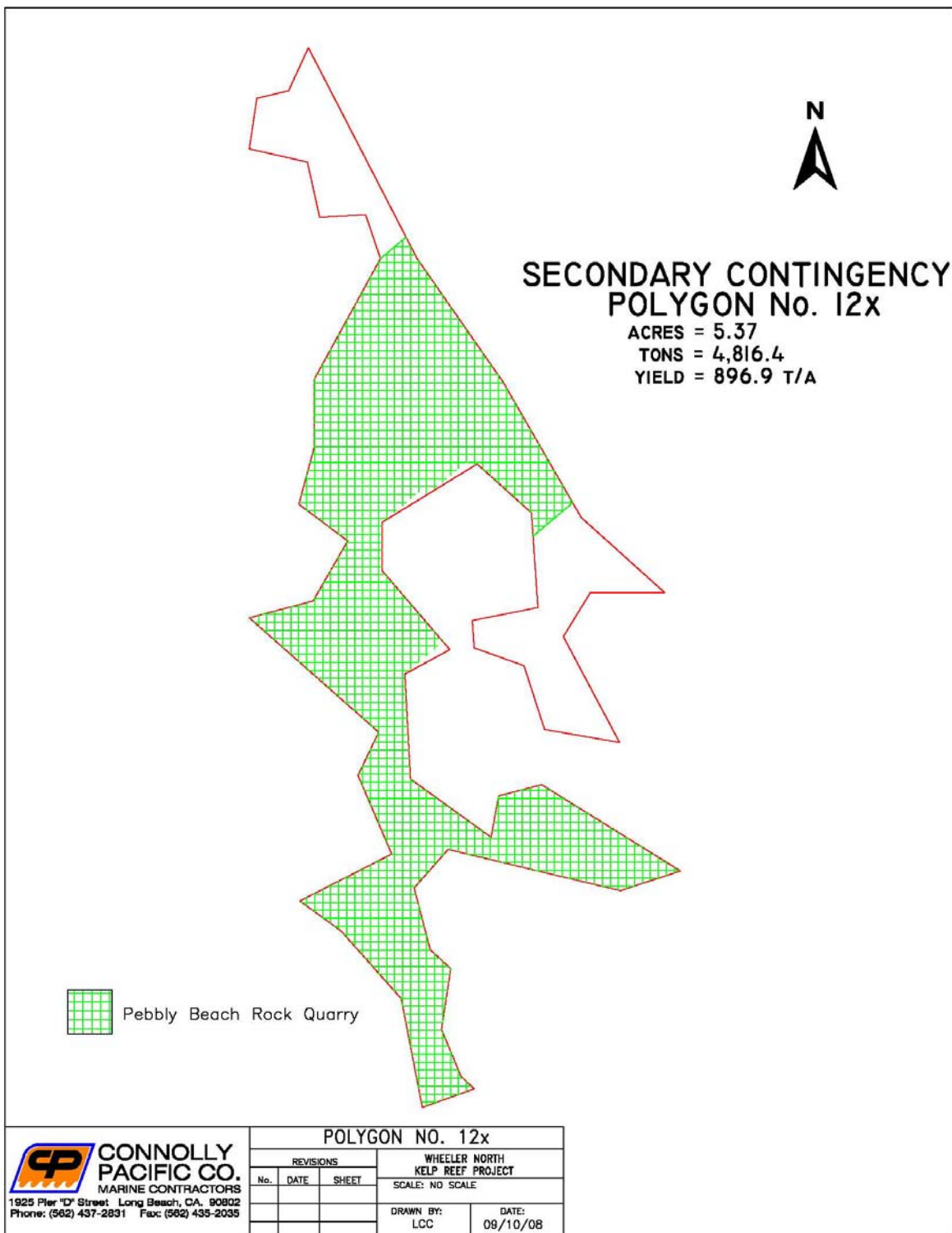


Figure B-18. Rock quarry type and location of placed rock for Polygon 12-x1.

APPENDIX C

ROCK PLACED BY DAY

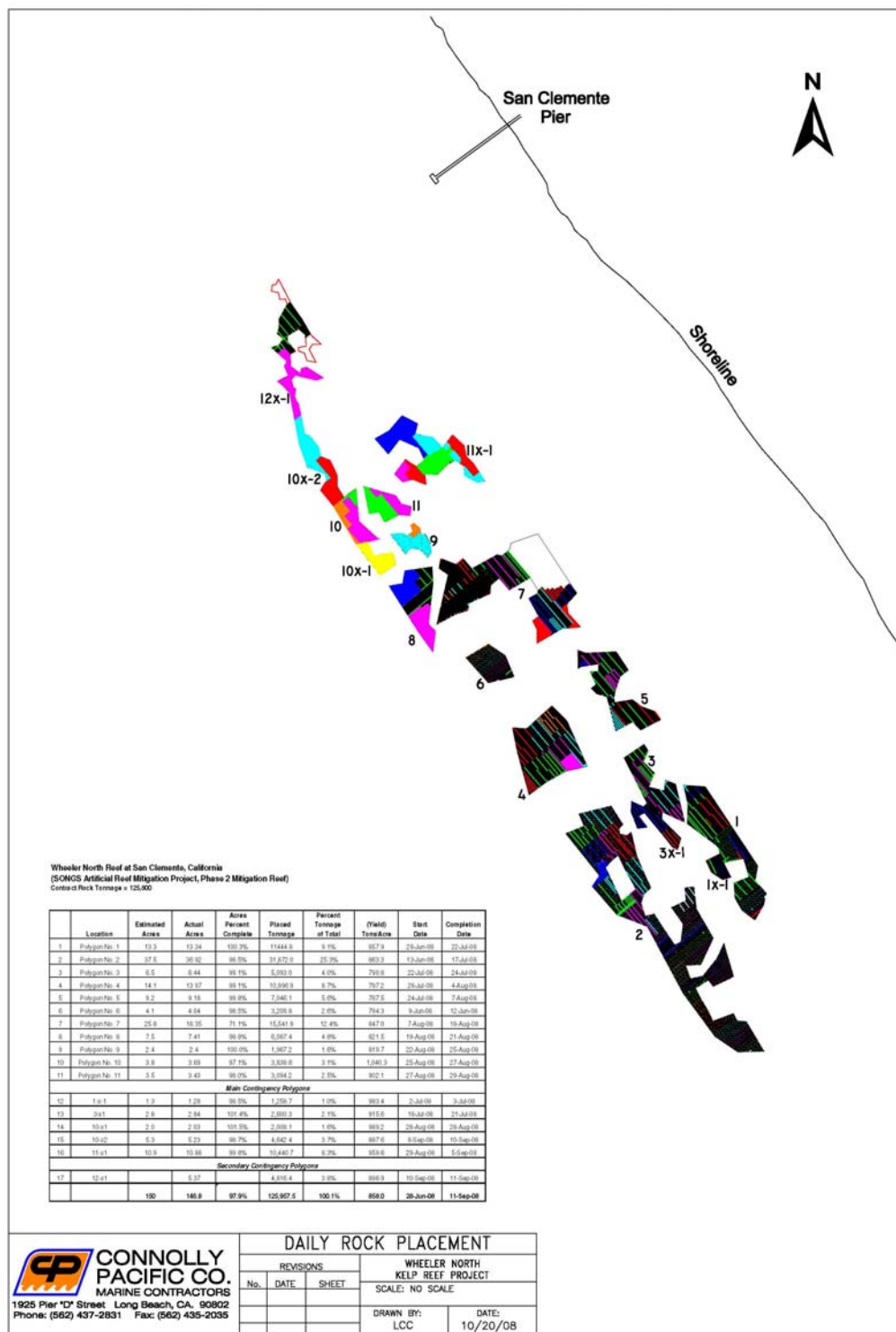


Figure C-1. Daily rock placement for all polygons.

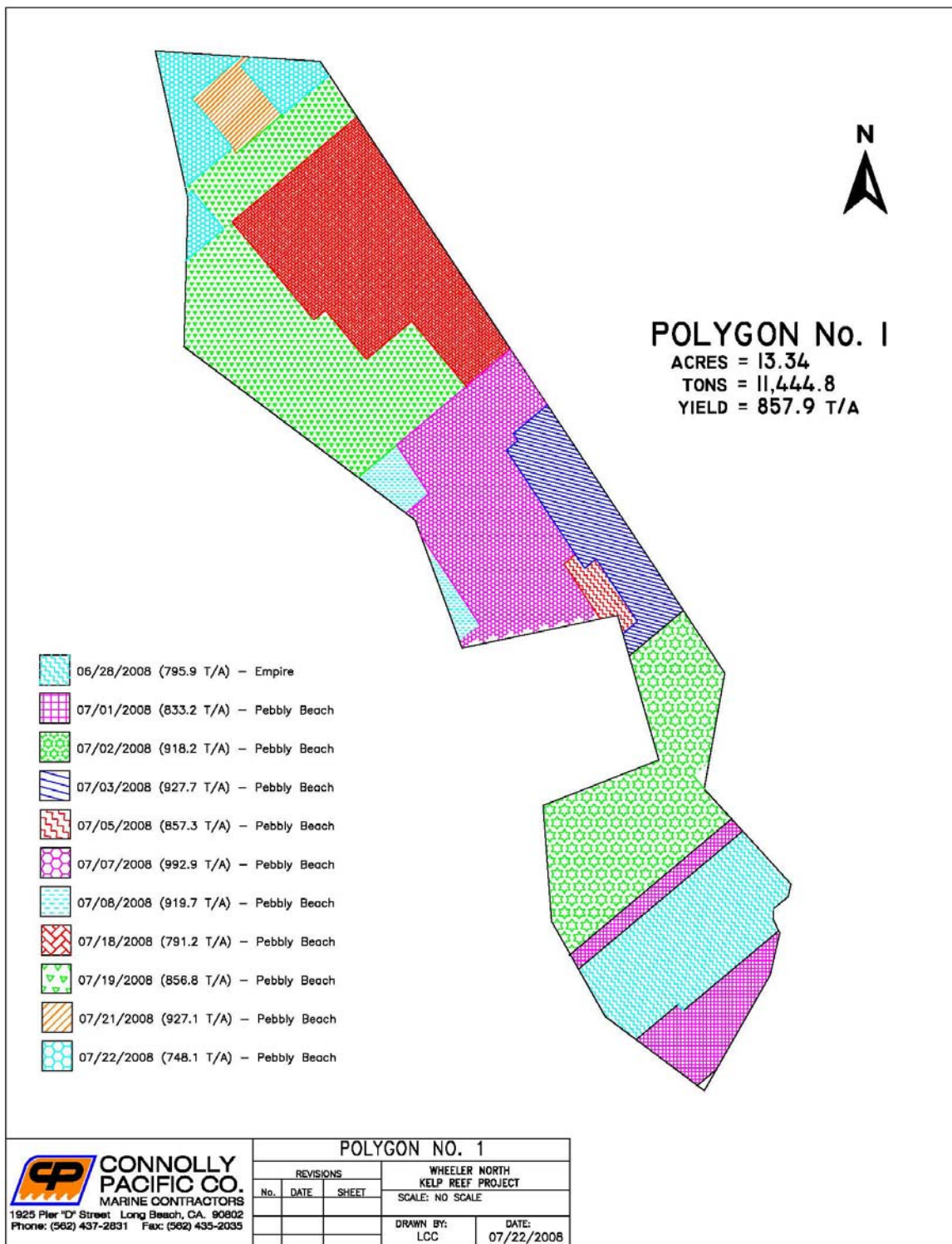


Figure C-2. Daily rock placement for Polygon 1.

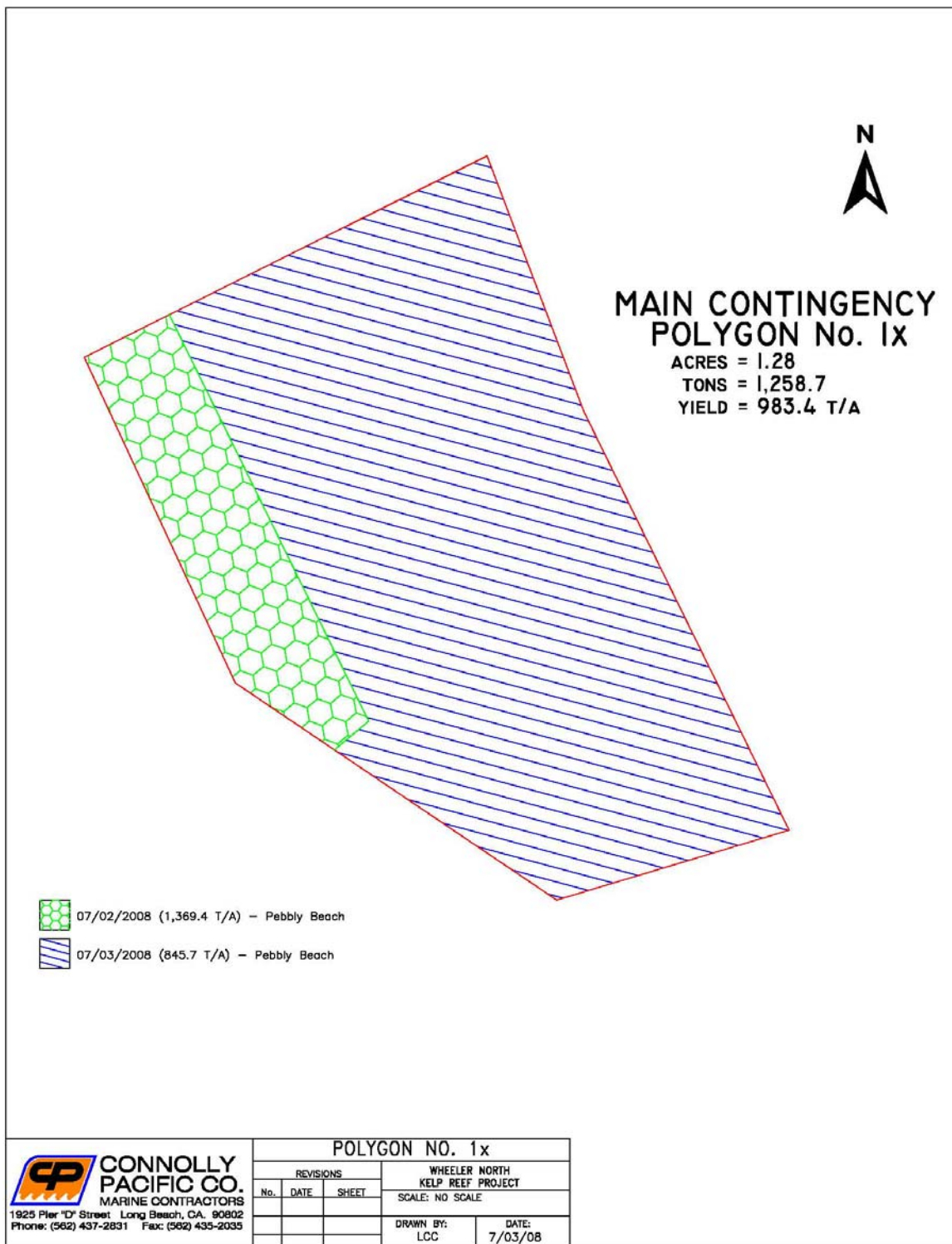


Figure C-3. Daily rock placement for Polygon 1-x1.

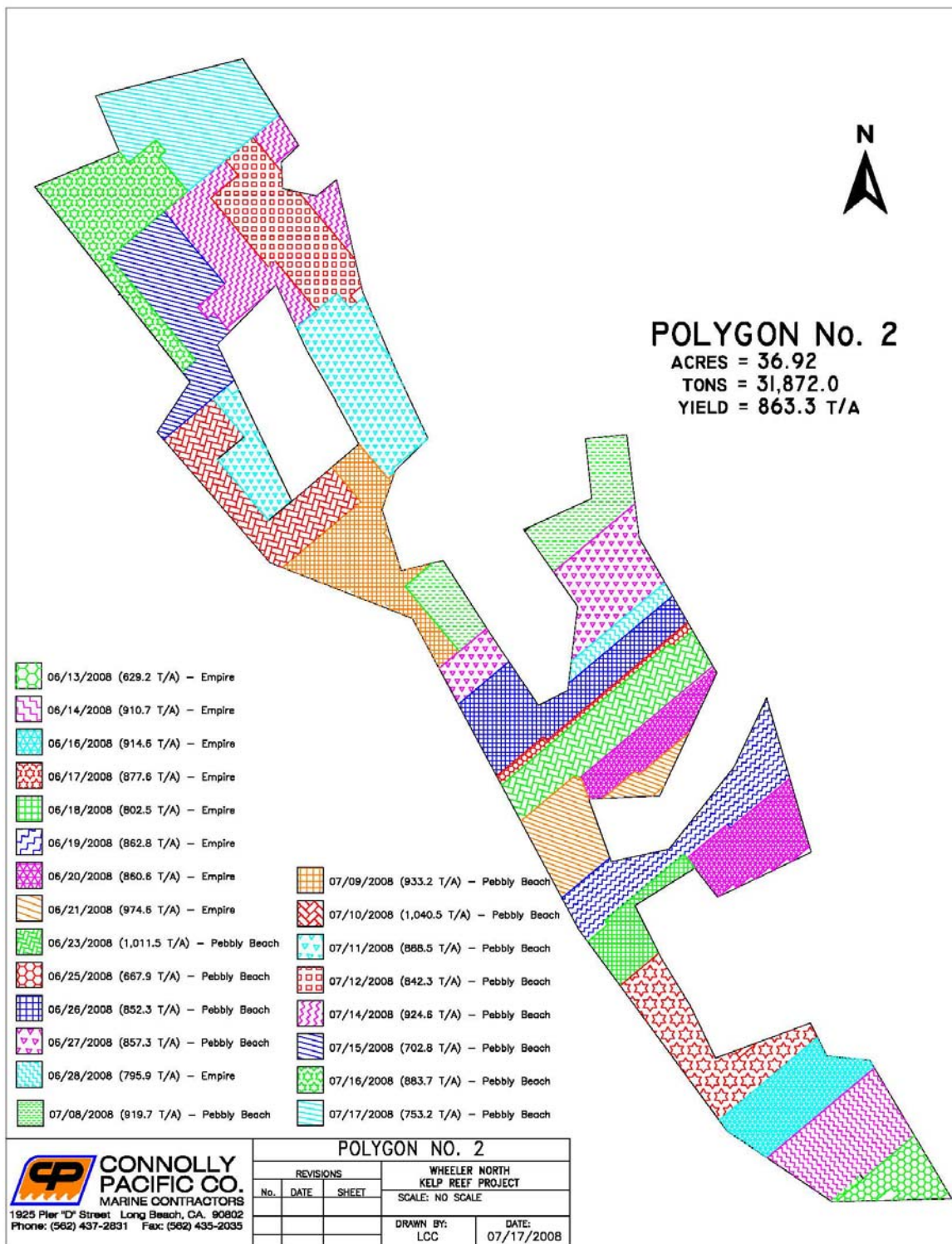


Figure C-4. Daily rock placement for Polygon 2.

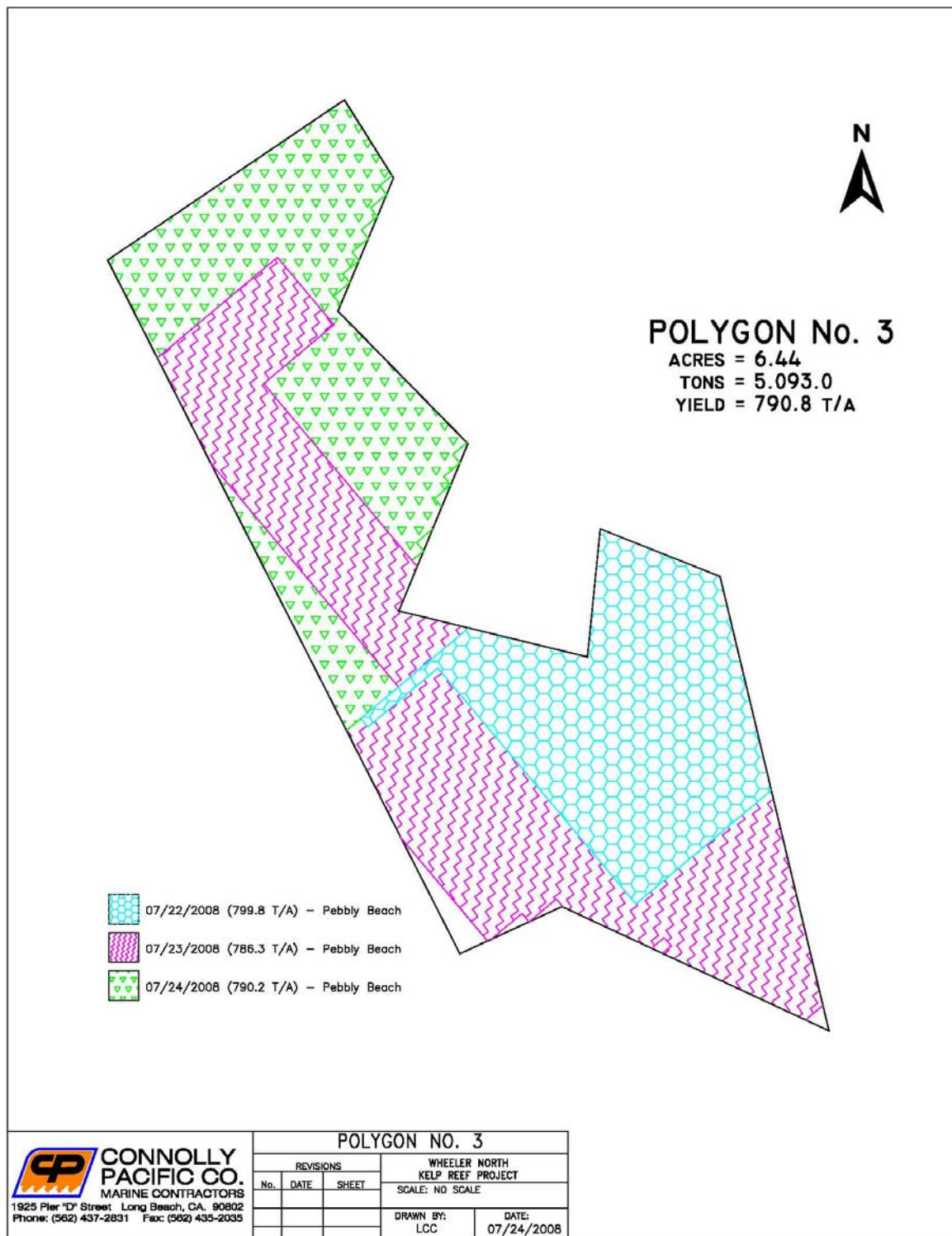


Figure C-5. Daily rock placement for Polygon 3.

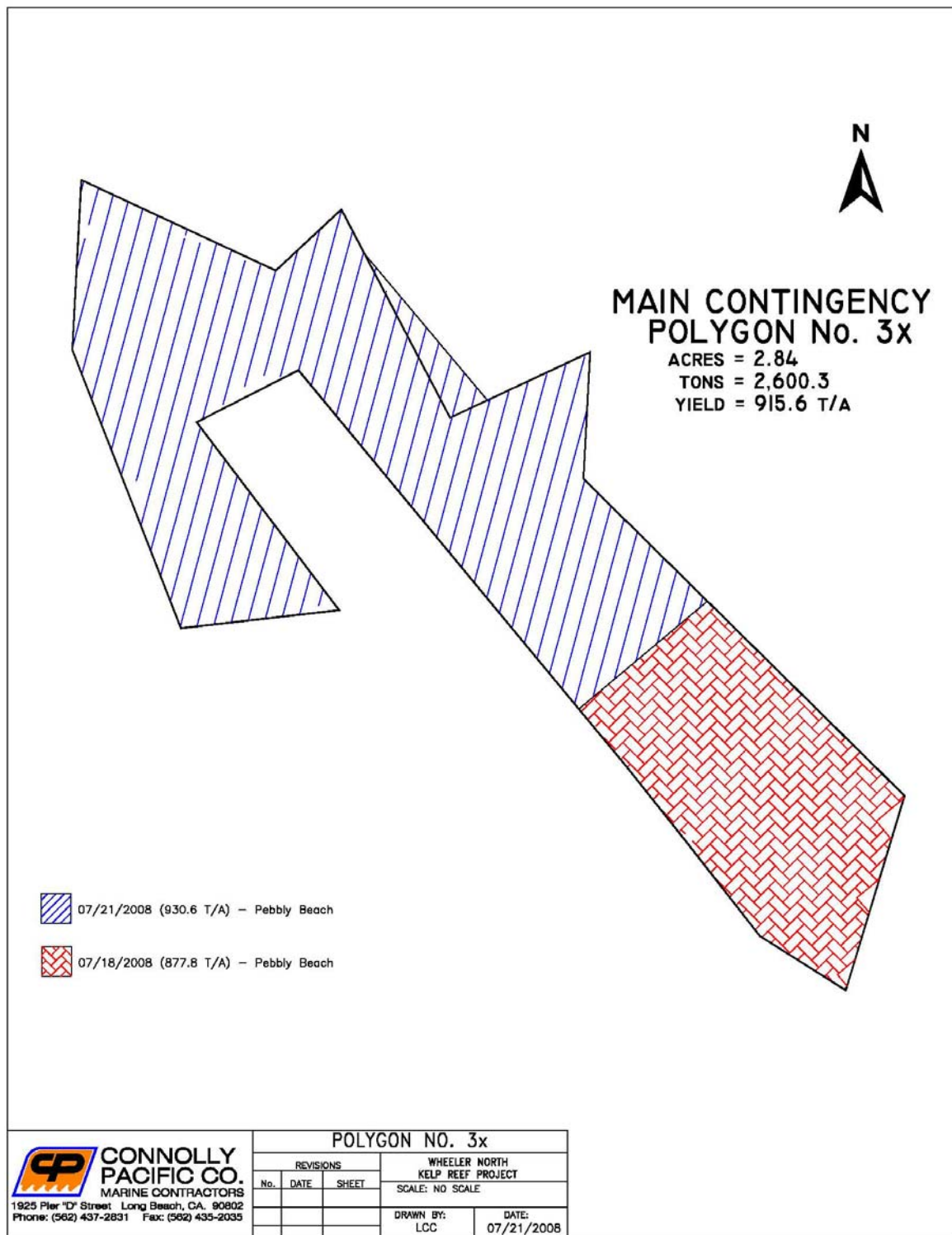


Figure C-6. Daily rock placement for Polygon 3-x1.

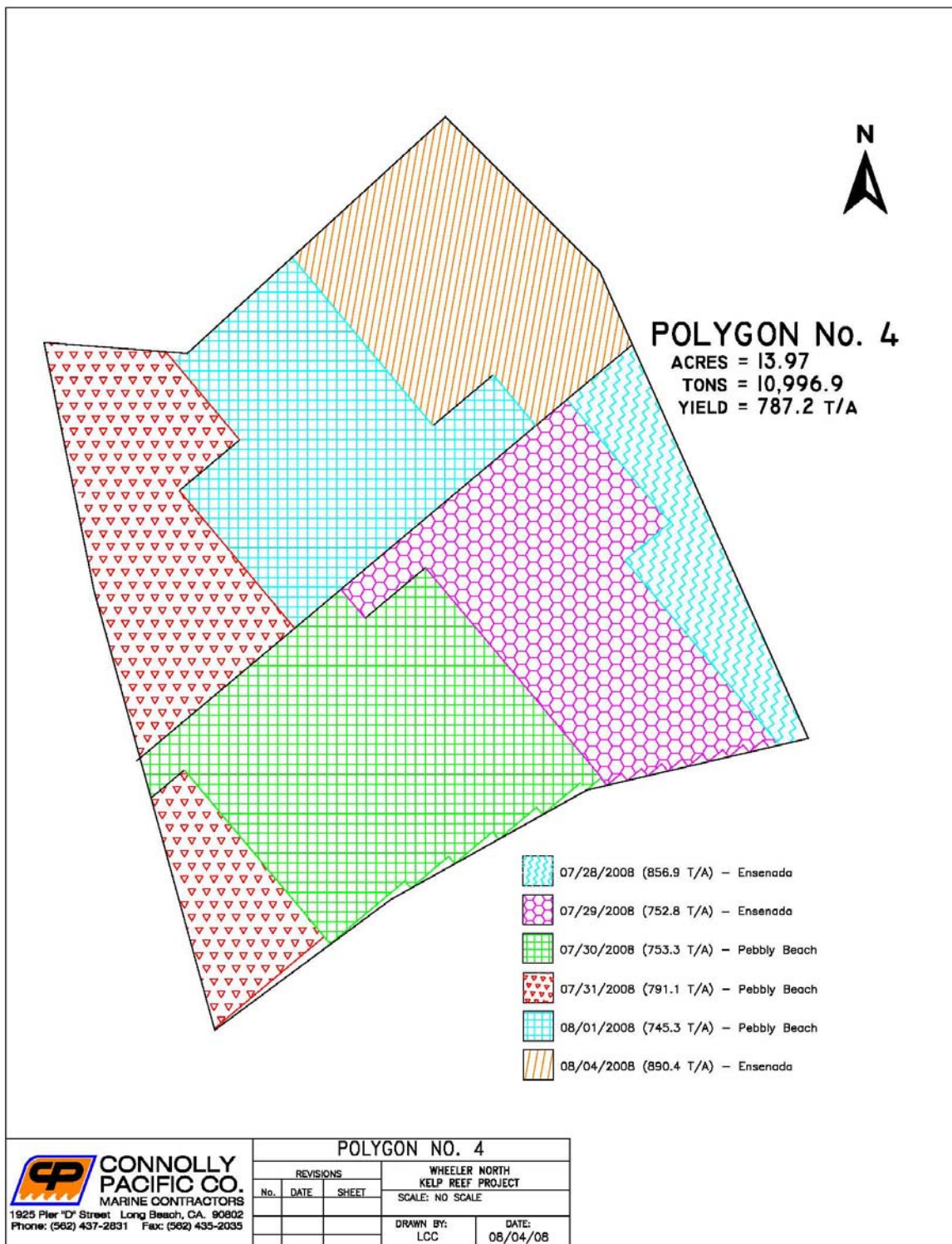


Figure C-7. Daily rock placement for Polygon 4.

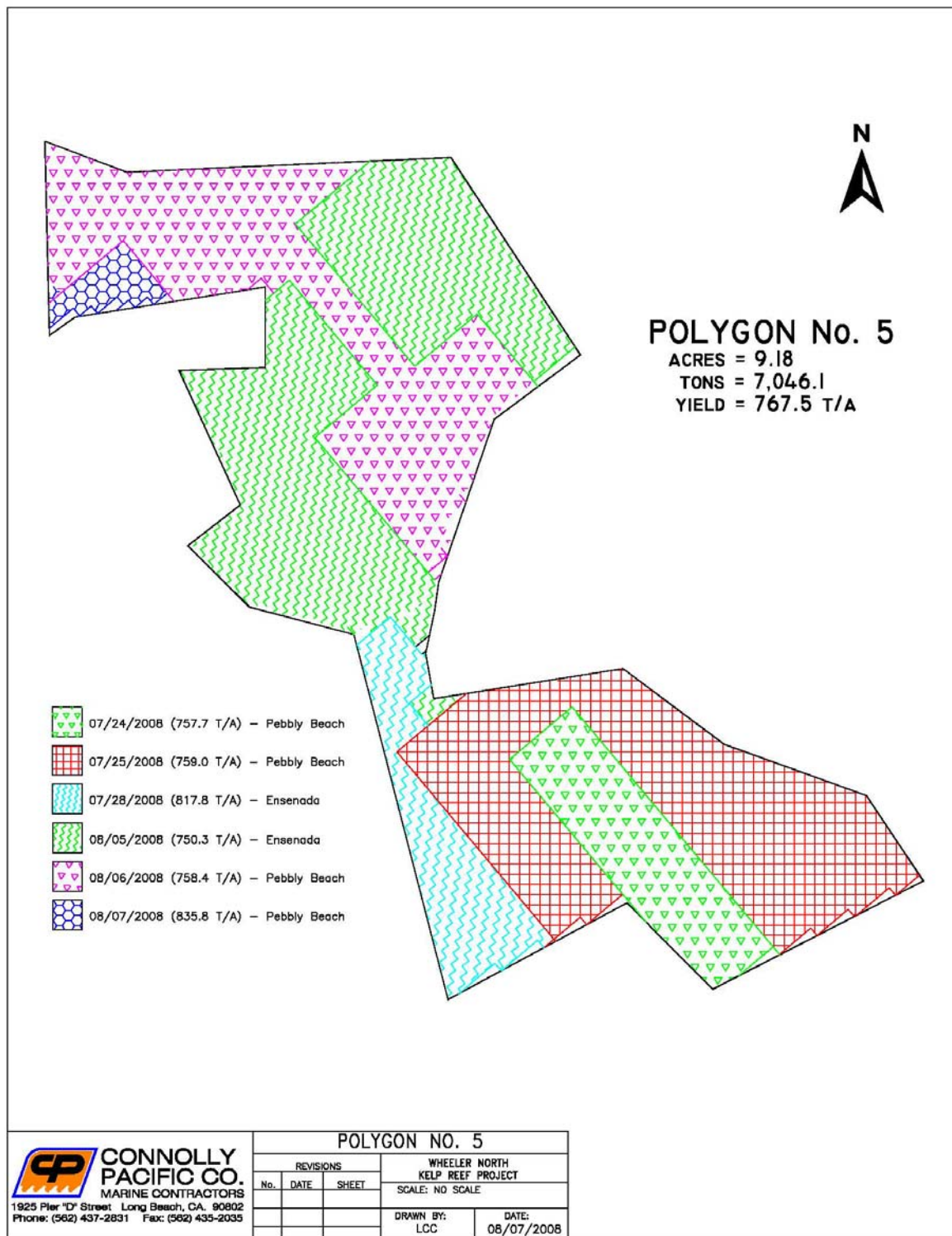


Figure C-8. Daily rock placement for Polygon 5.

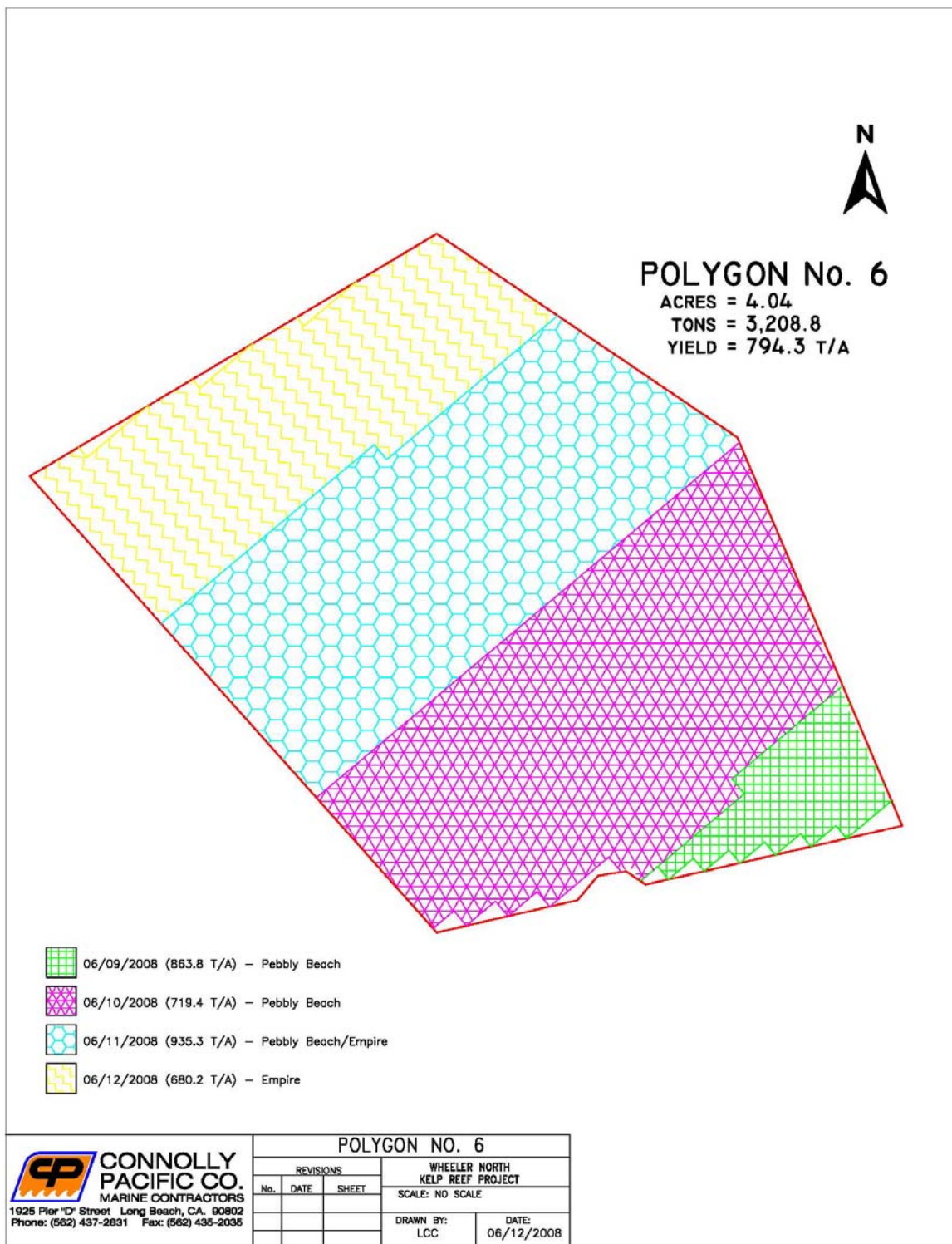


Figure C-9. Daily rock placement for Polygon 6.

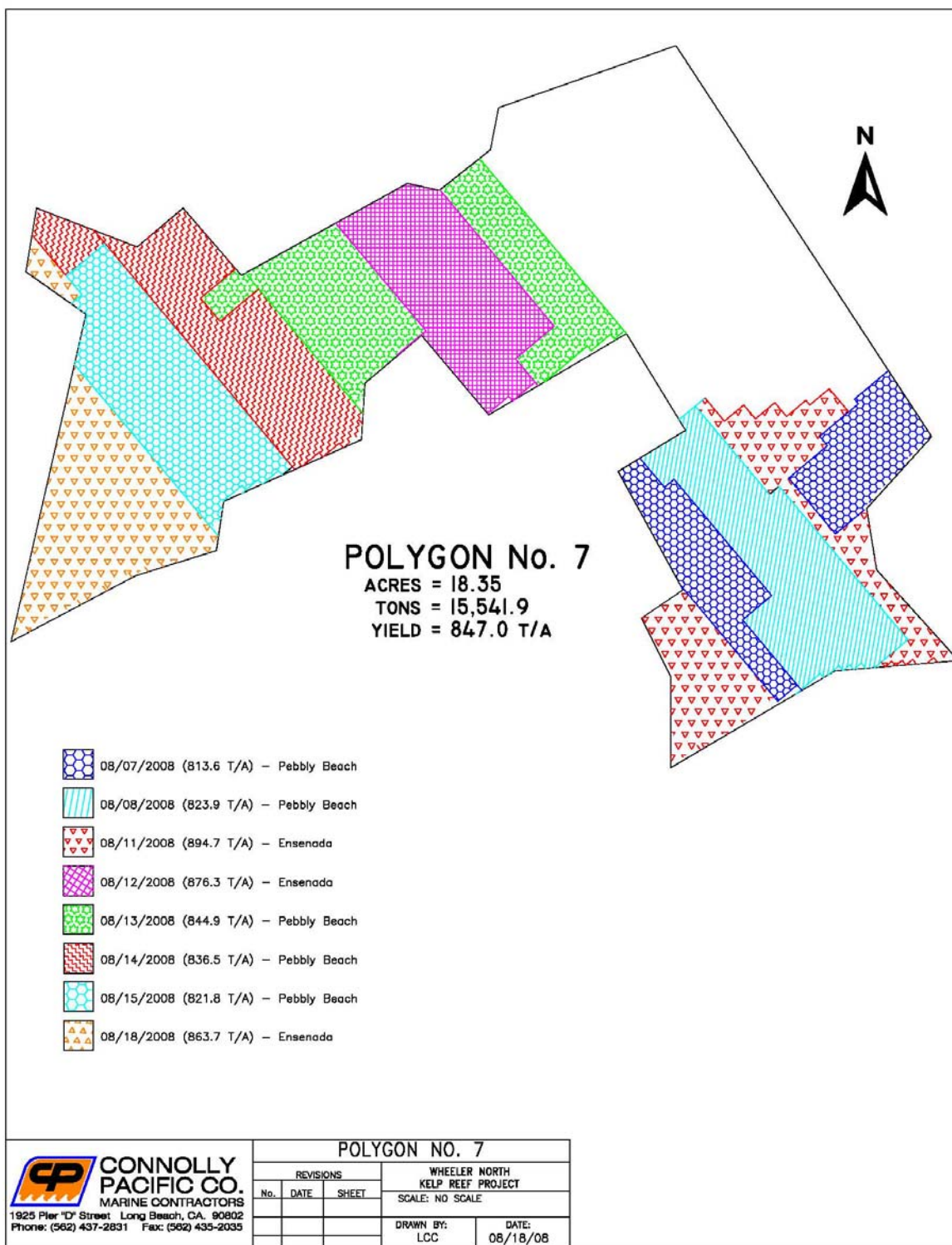


Figure C-10. Daily rock placement for Polygon 7.

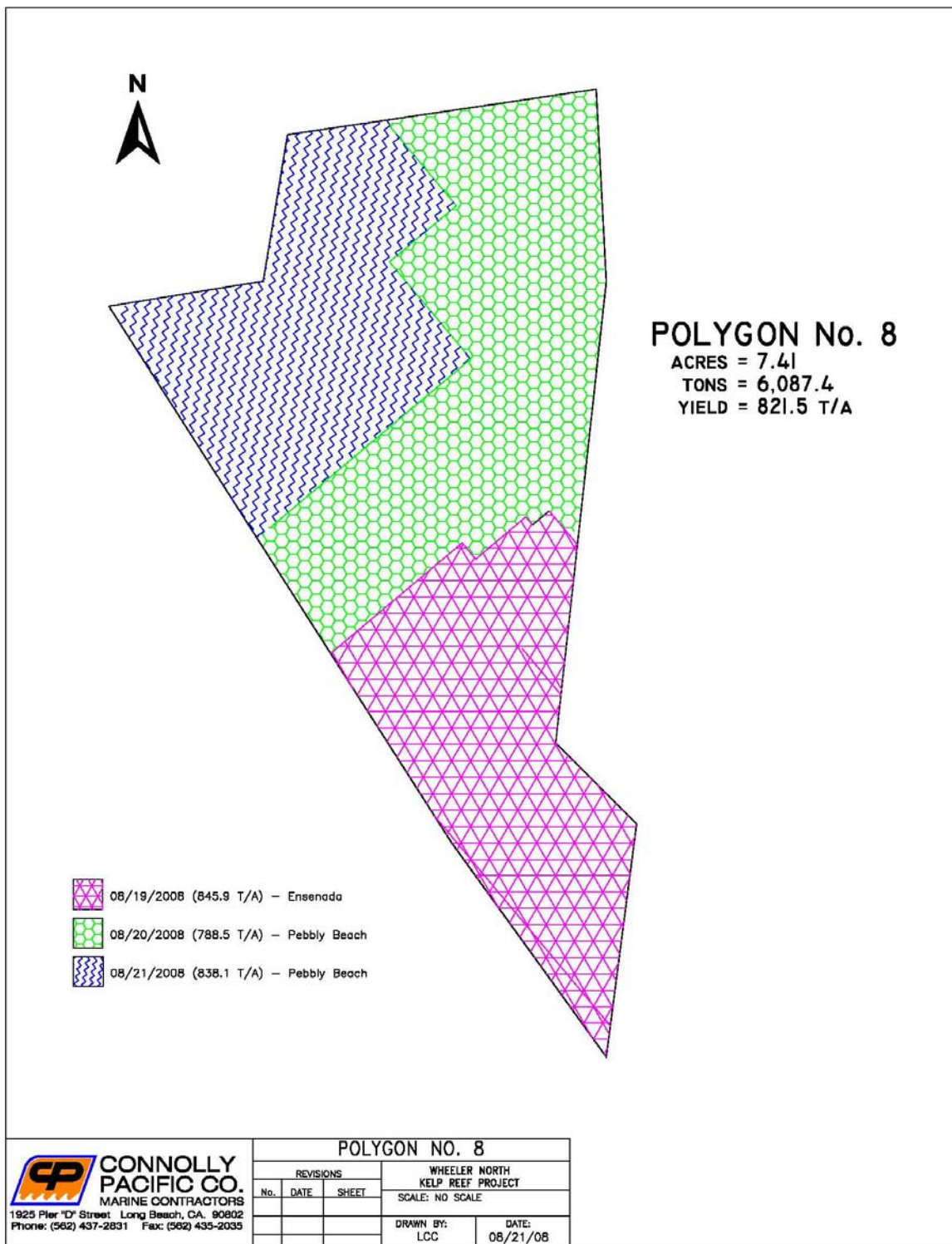


Figure C-11. Daily rock placement for Polygon 8.

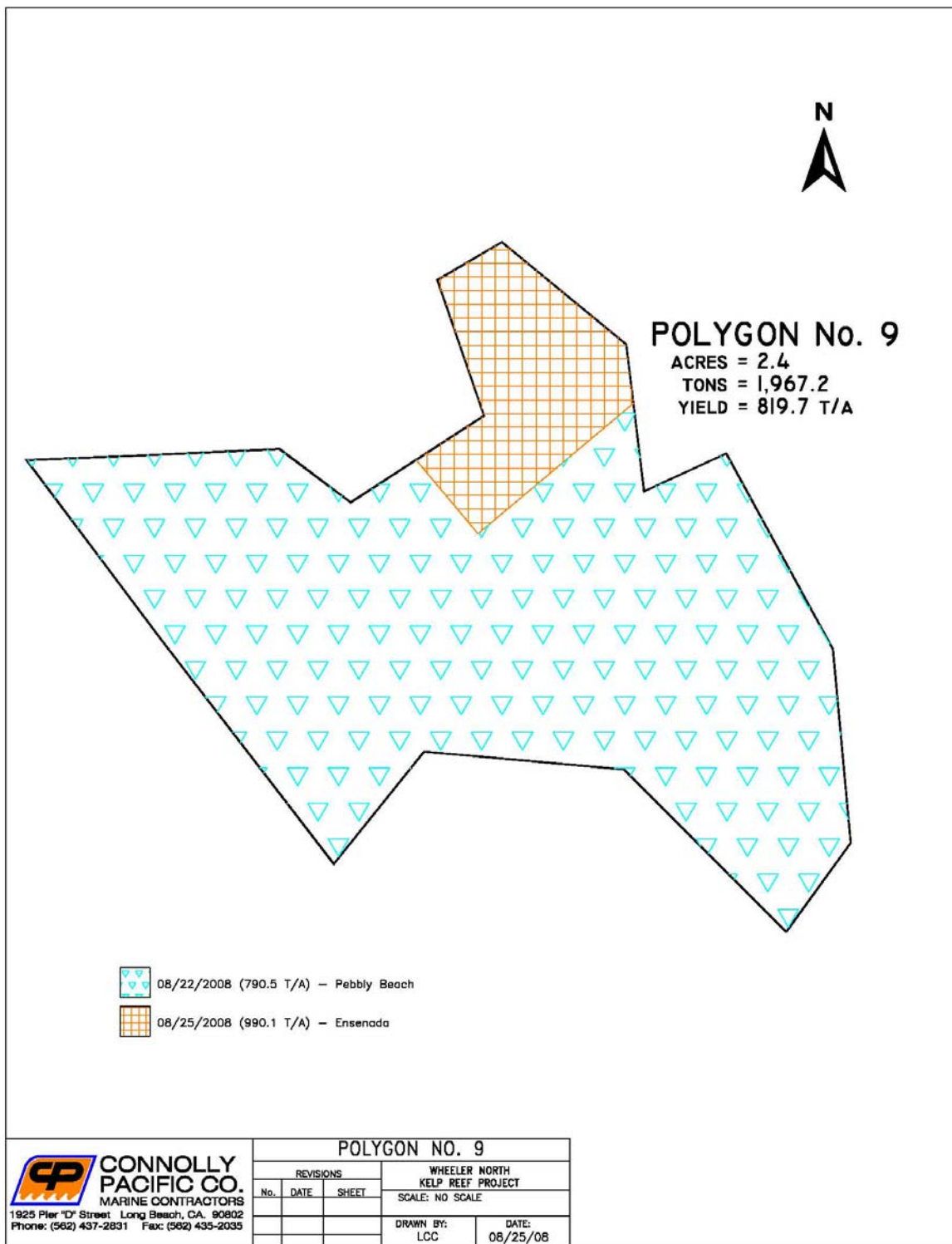


Figure C-12. Daily rock placement for Polygon 9.

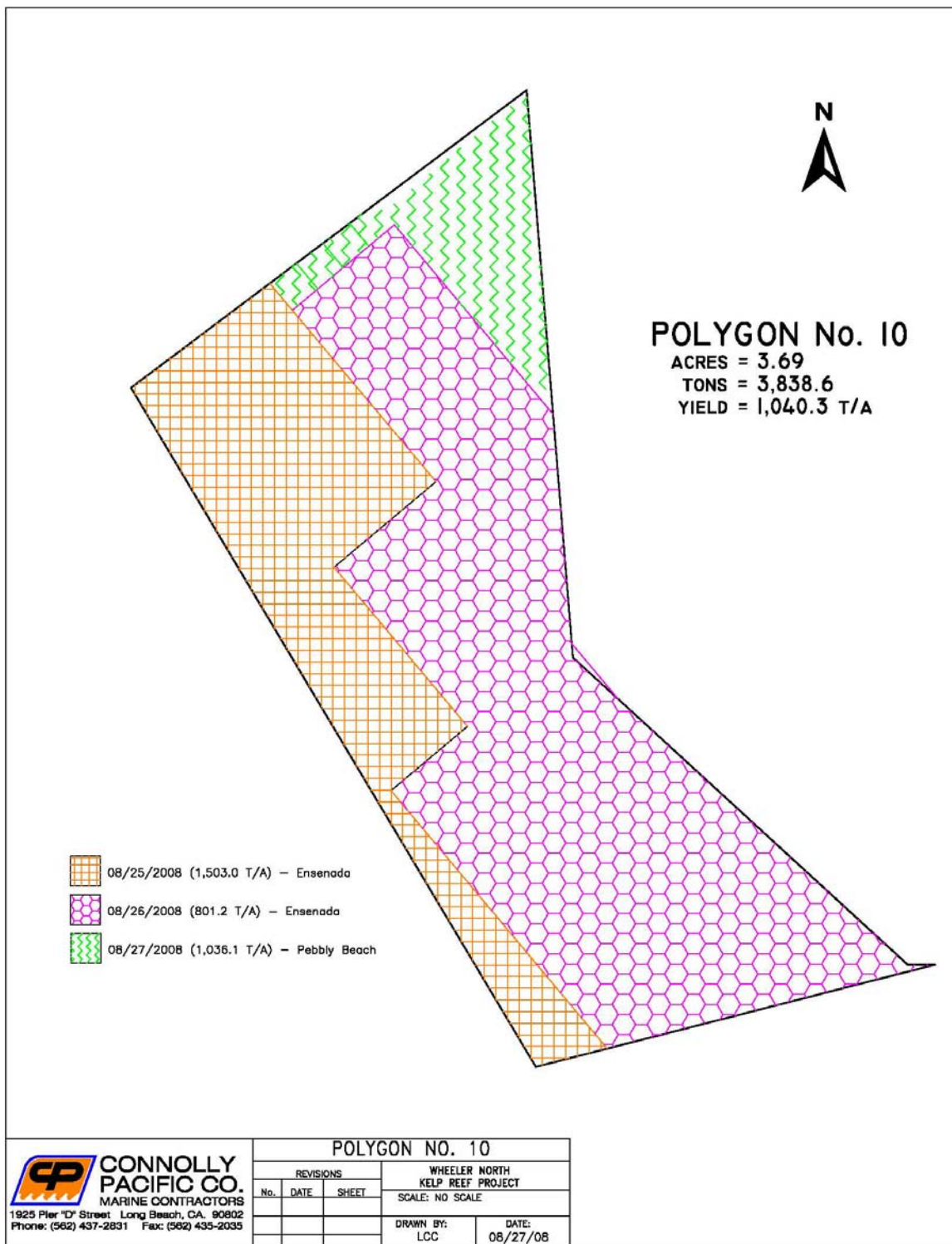


Figure C-13. Daily rock placement for Polygon 10.

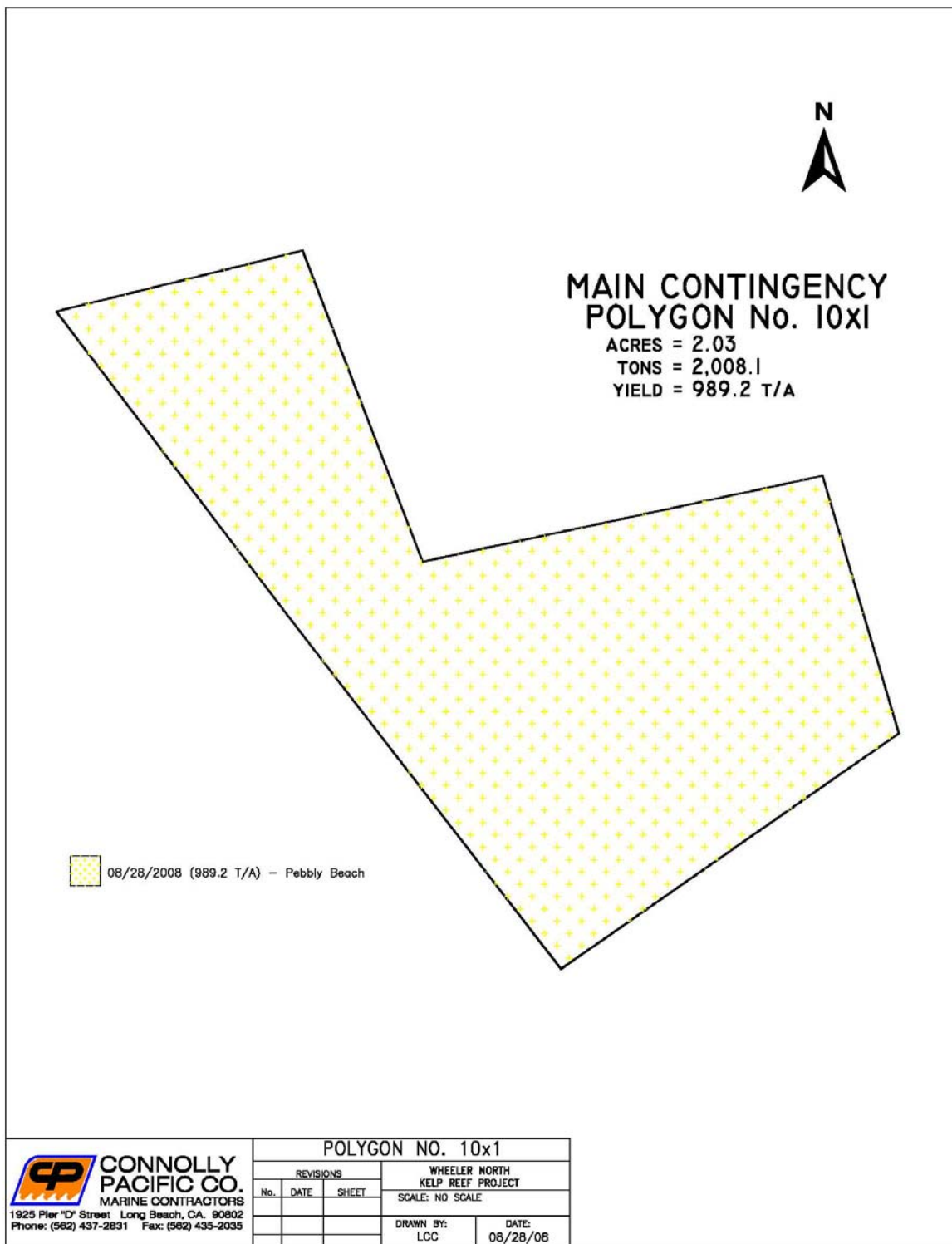


Figure C-14. Daily rock placement for Polygon 10-x1.

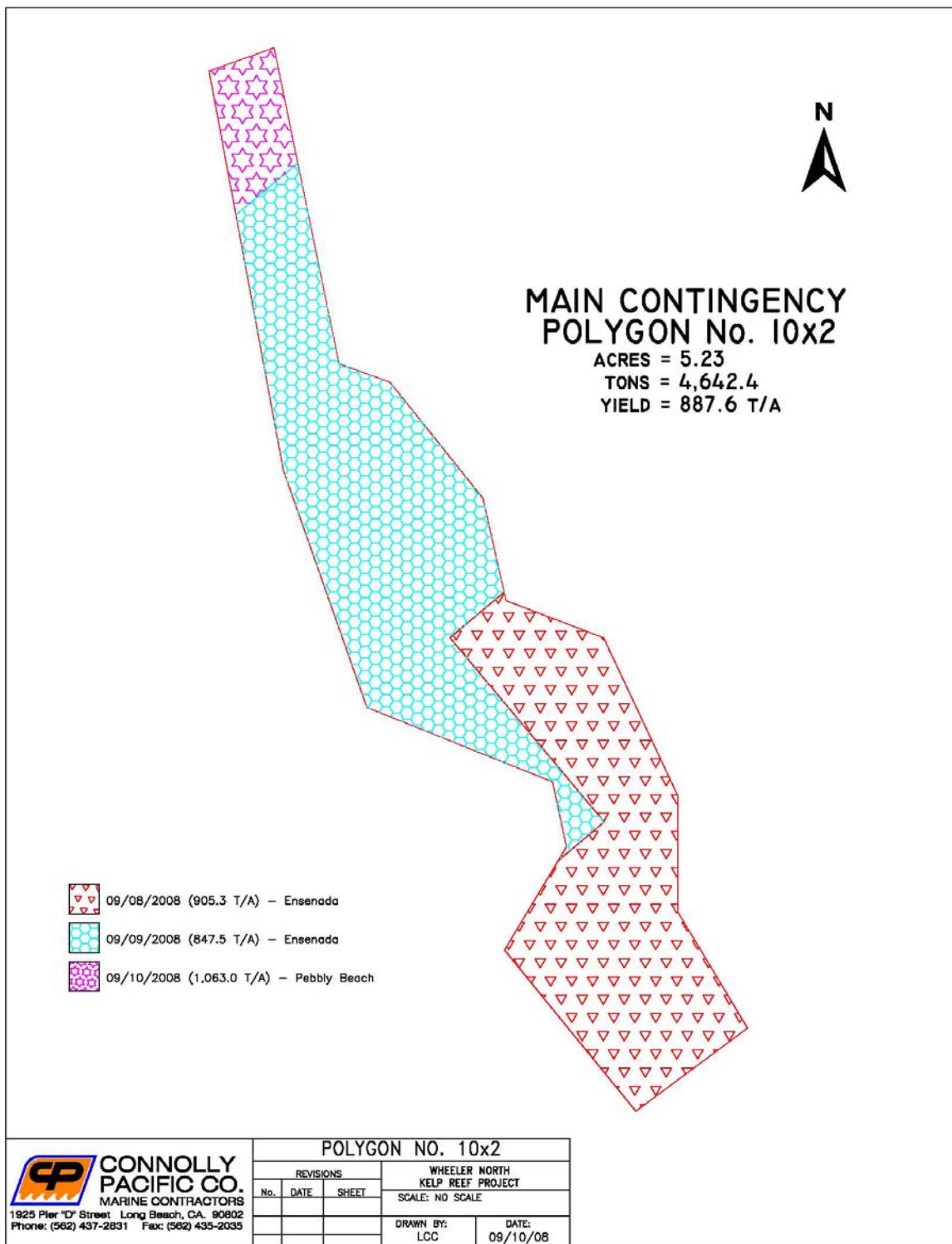


Figure C-15. Daily rock placement for Polygon 10-x2.

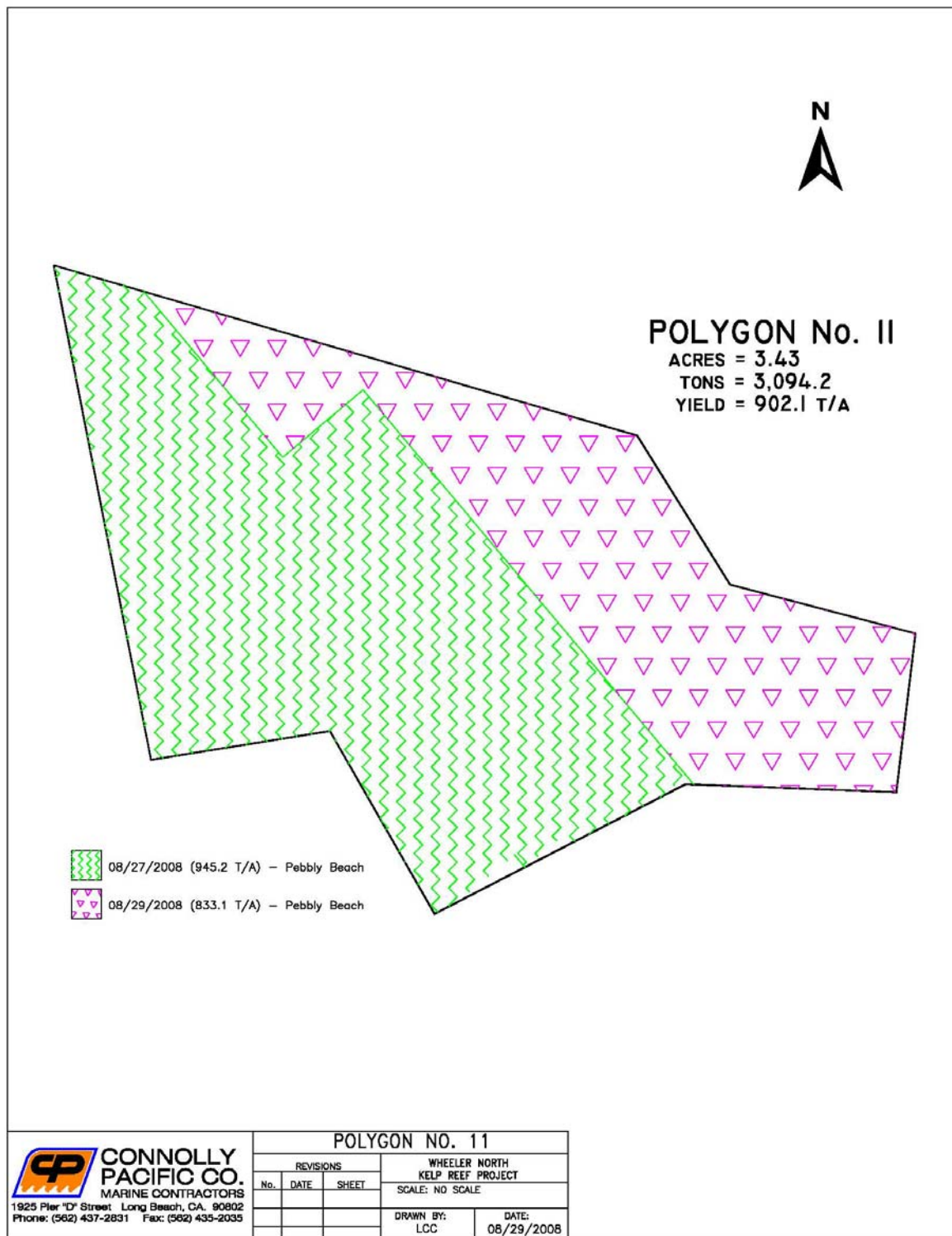


Figure C-16. Daily rock placement for Polygon 11.

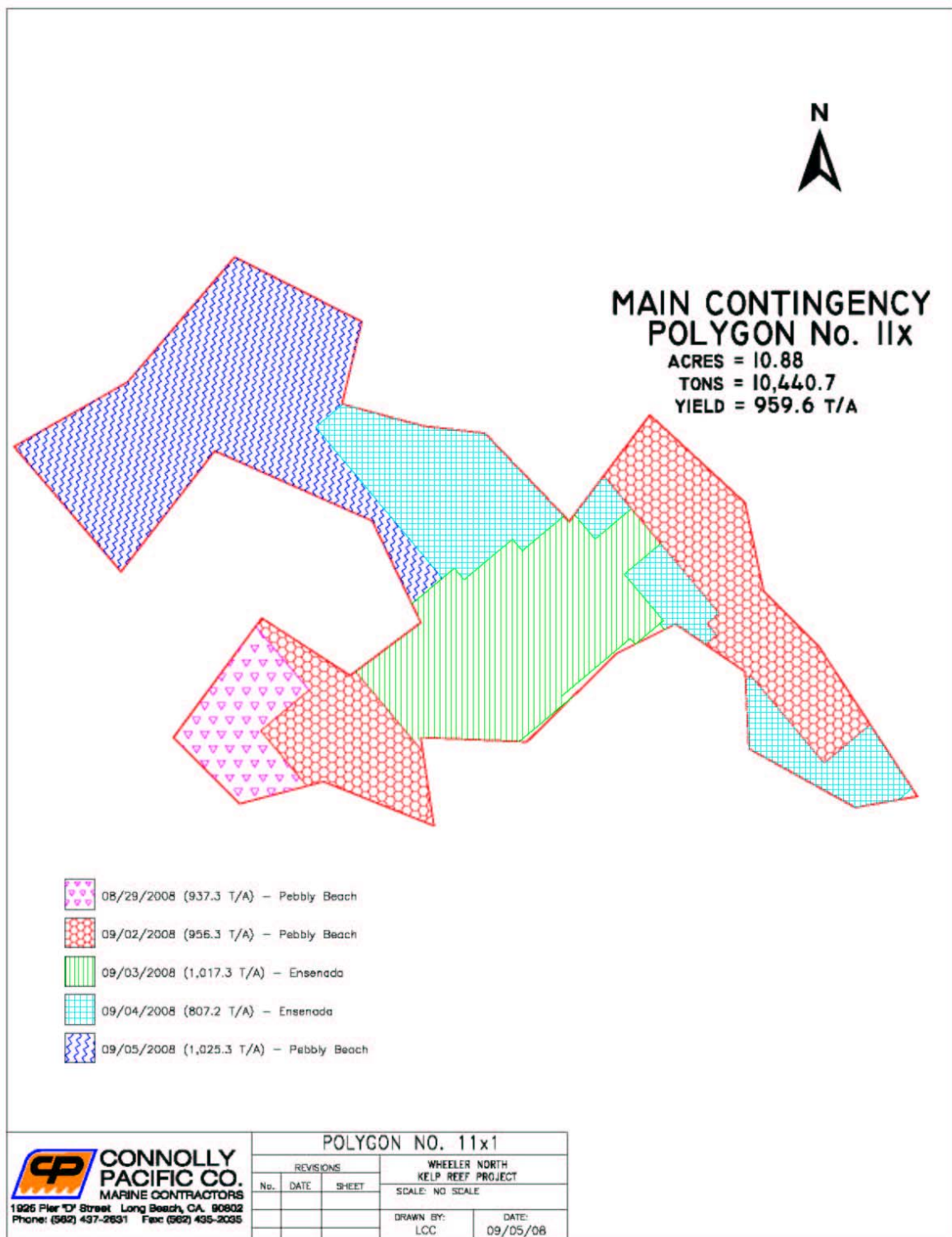


Figure C-17. Daily rock placement for Polygon 11-x1.

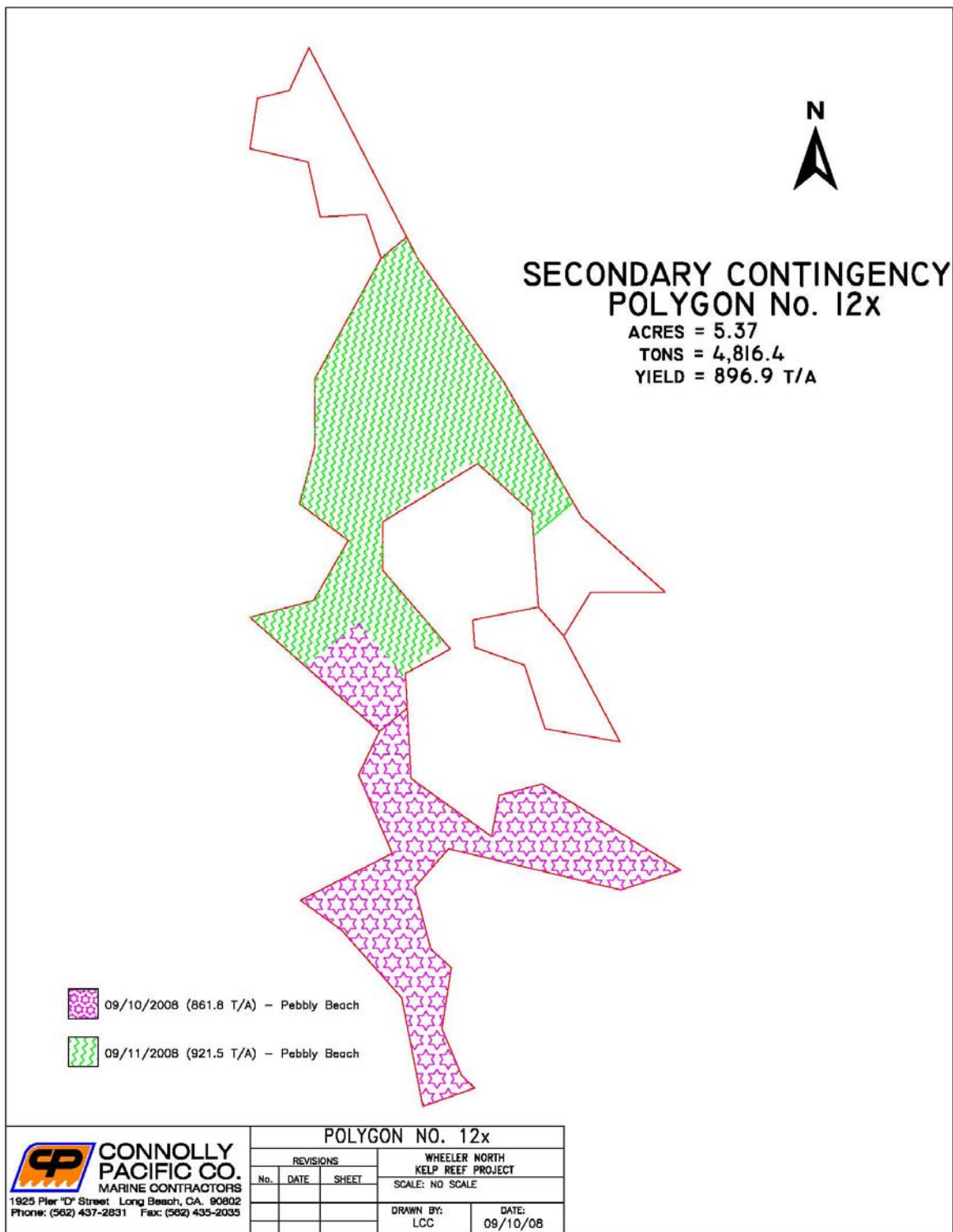


Figure C-18. Daily rock placement for Polygon 12-x1.

APPENDIX D

DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS)
SURVEY RESULTS

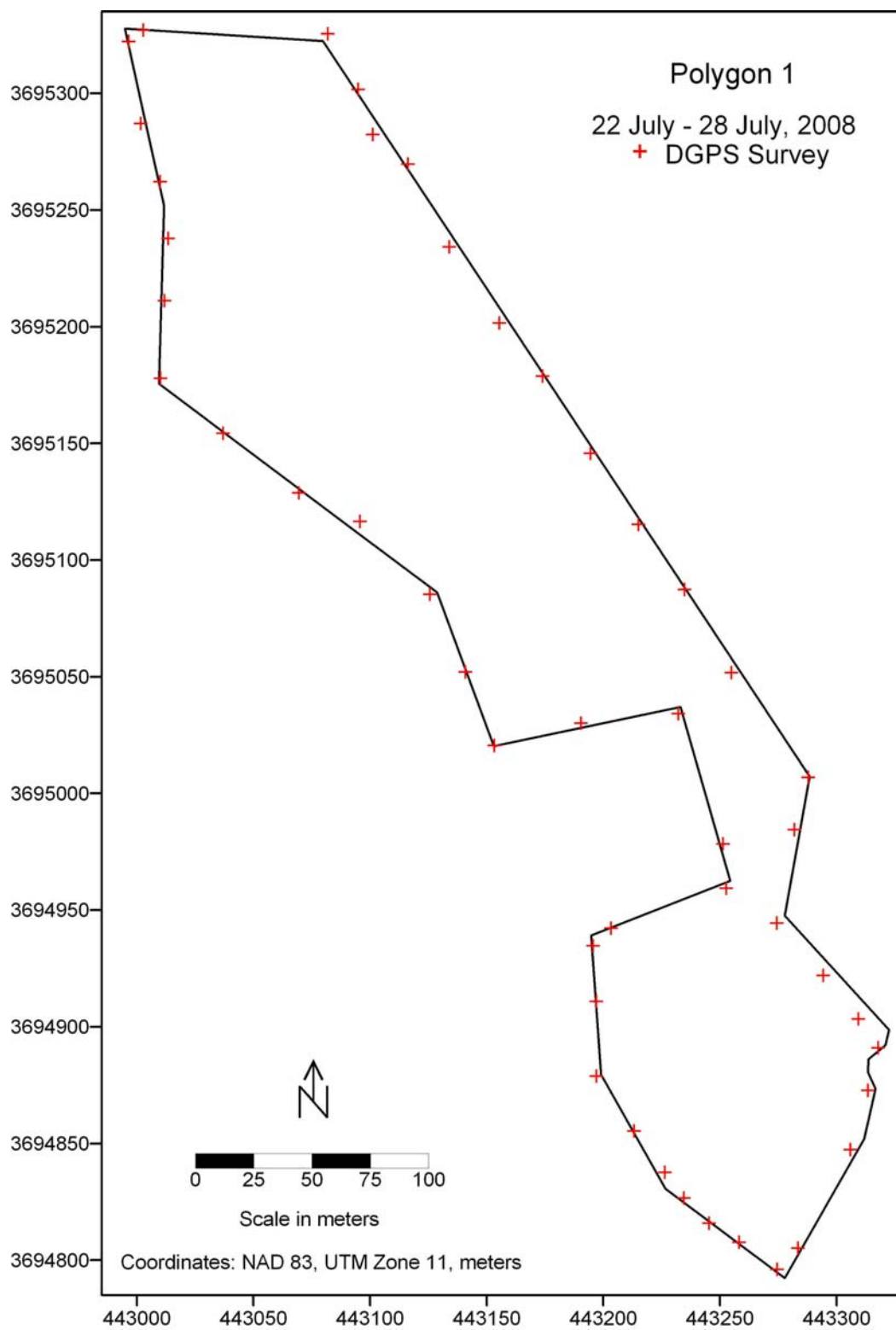


Figure D-1. DGPS survey for Polygon 1 taken on 22-28 July 2008.

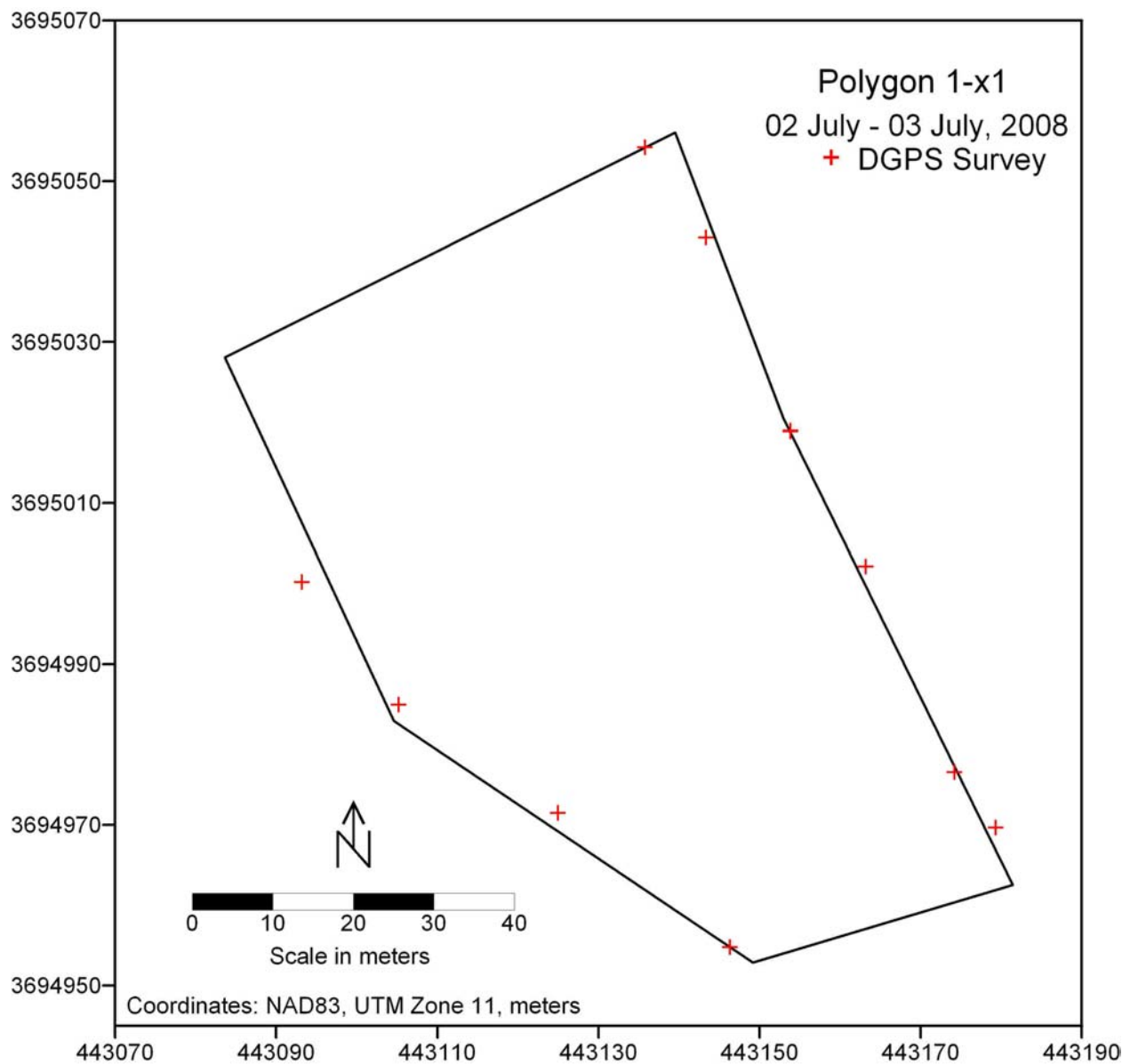


Figure D-2. DGPS survey for Polygon 1x-1 taken on 2-3 July 2008.

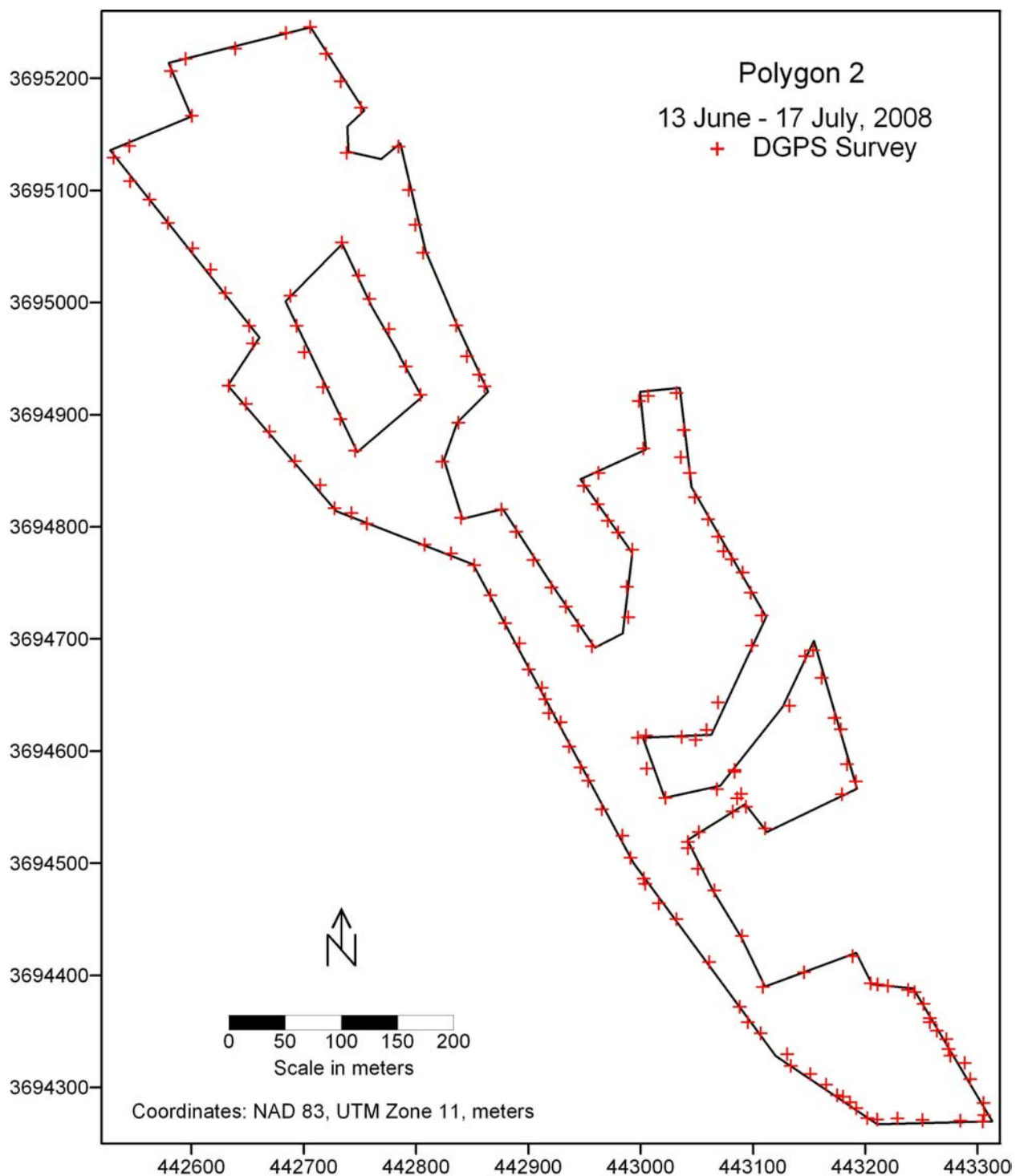


Figure D-3. DGPS survey for Polygon 2 taken on 13 June-17 July 2008.

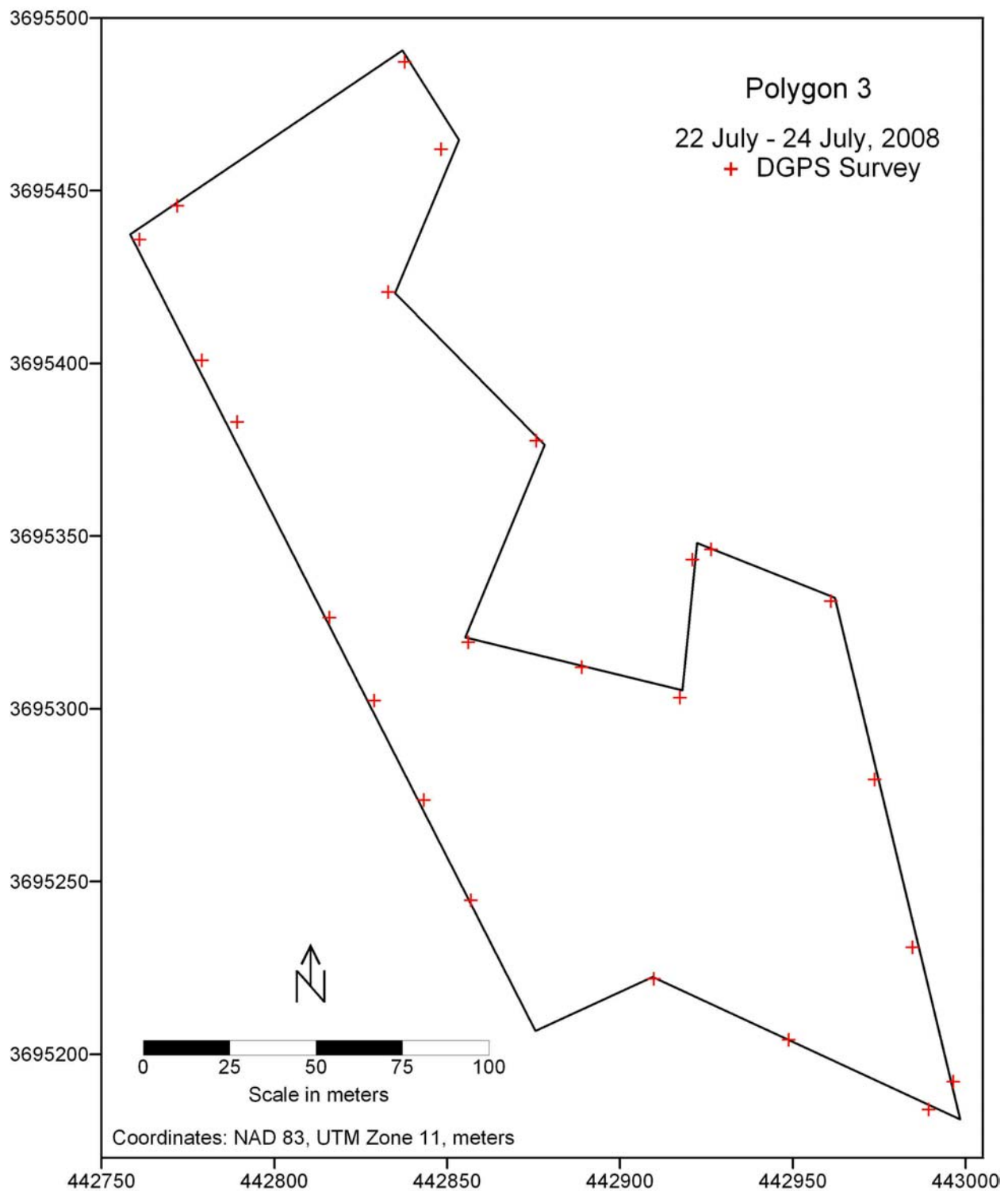


Figure D-4. DGPS survey for Polygon 3 taken on 22-24 July 2008.

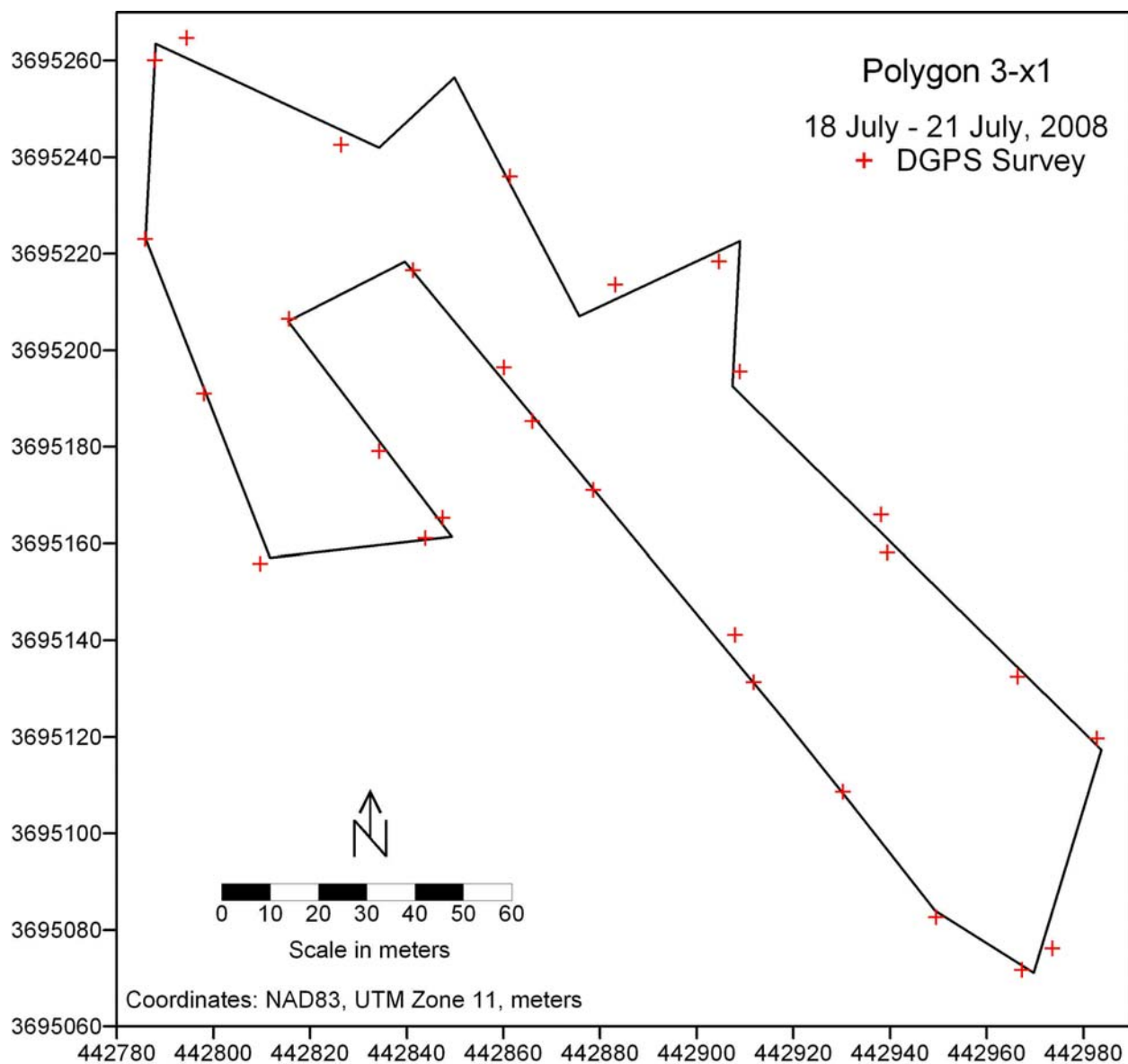


Figure D-5. DGPS survey for Polygon 3-x1 taken on 18-21 July 2008.

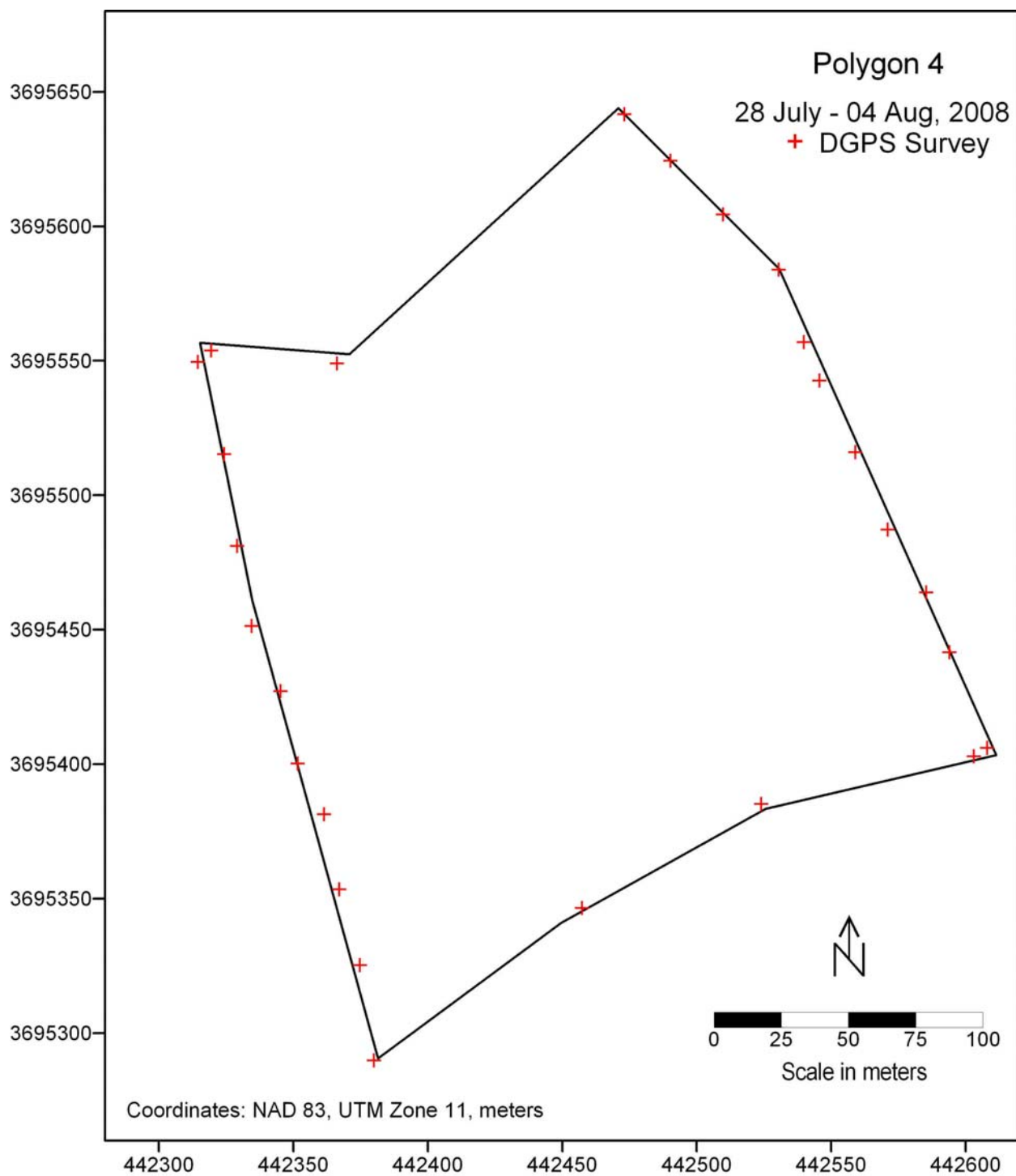


Figure D-6. DGPS survey for Polygon 4 taken on 28 July-4 August 2008.

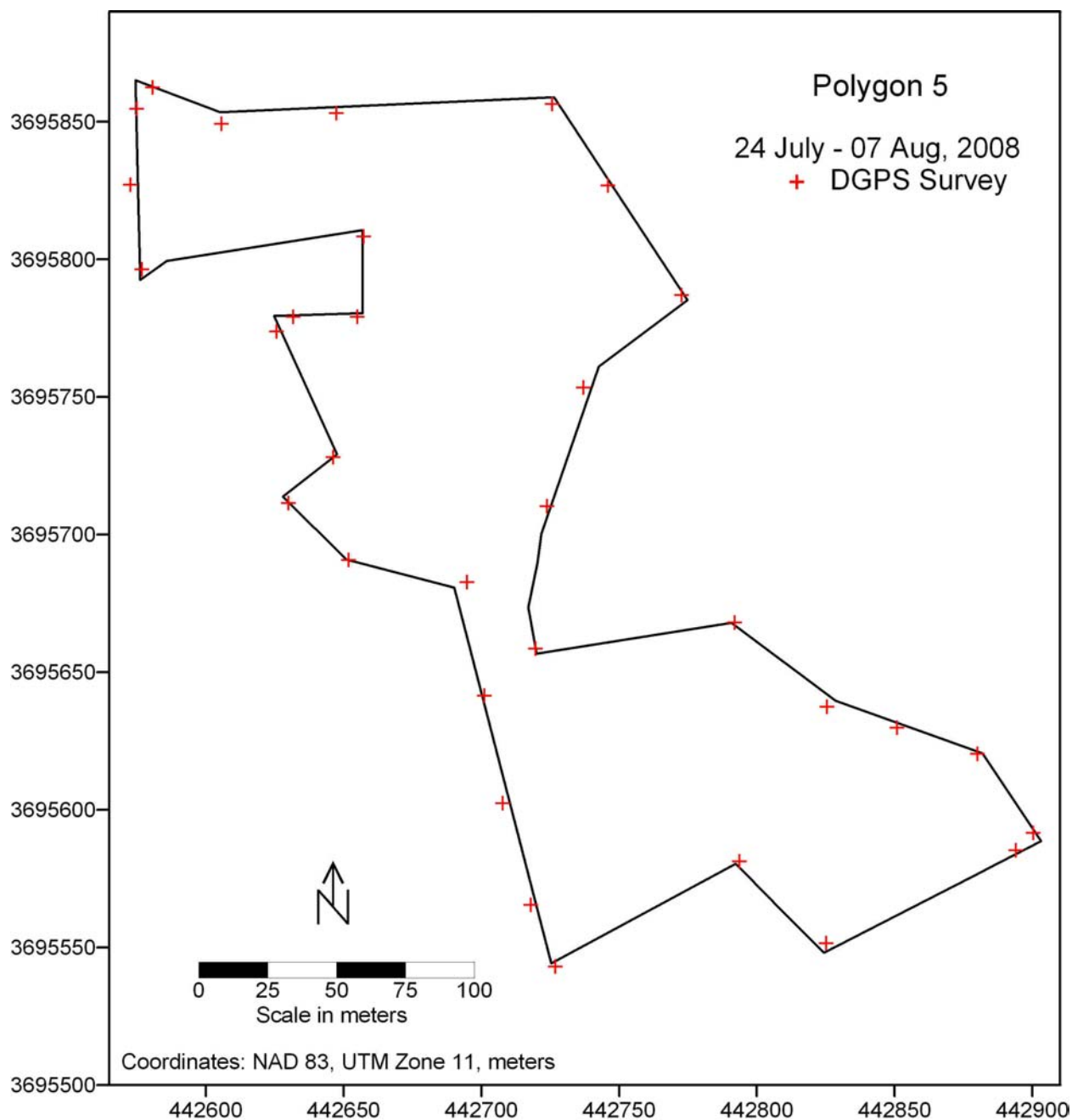


Figure D-7. DGPS survey for Polygon 5 taken on 24 July-7 August 2008.

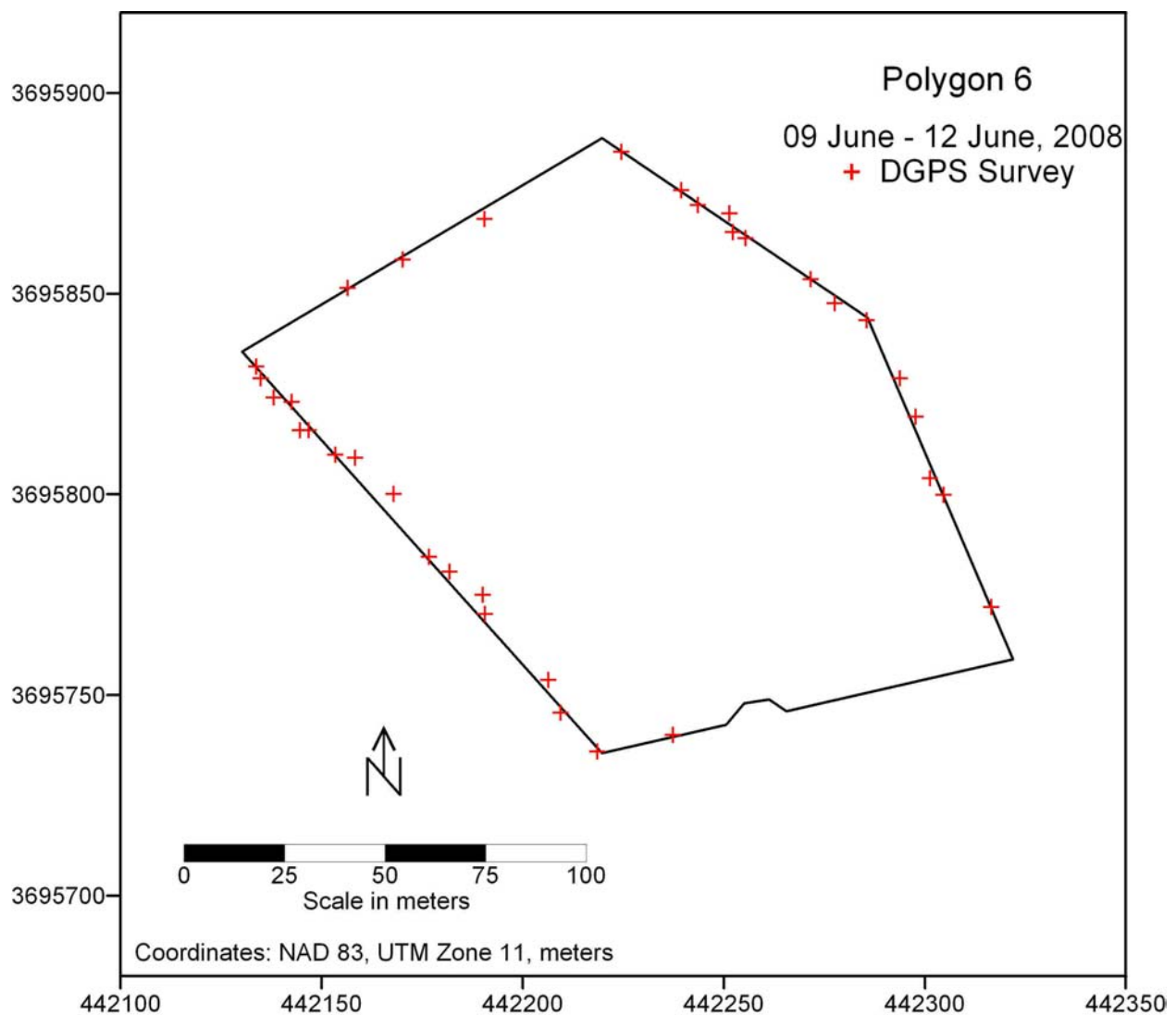


Figure D-8. DGPS survey for Polygon 6 taken on 9-12 June 2008.

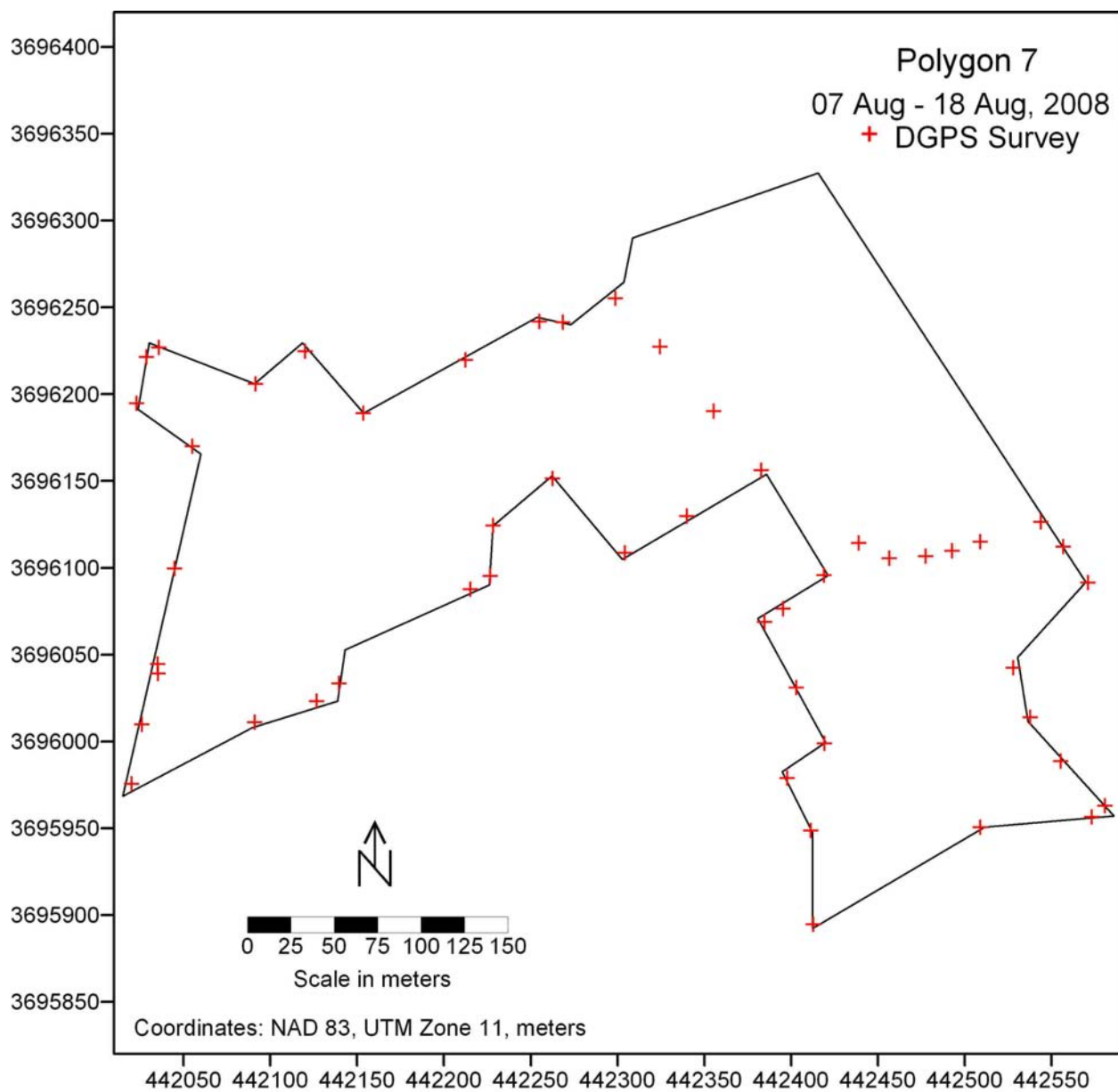


Figure D-9. DGPS survey for Polygon 7 taken on 7-18 August 2008.

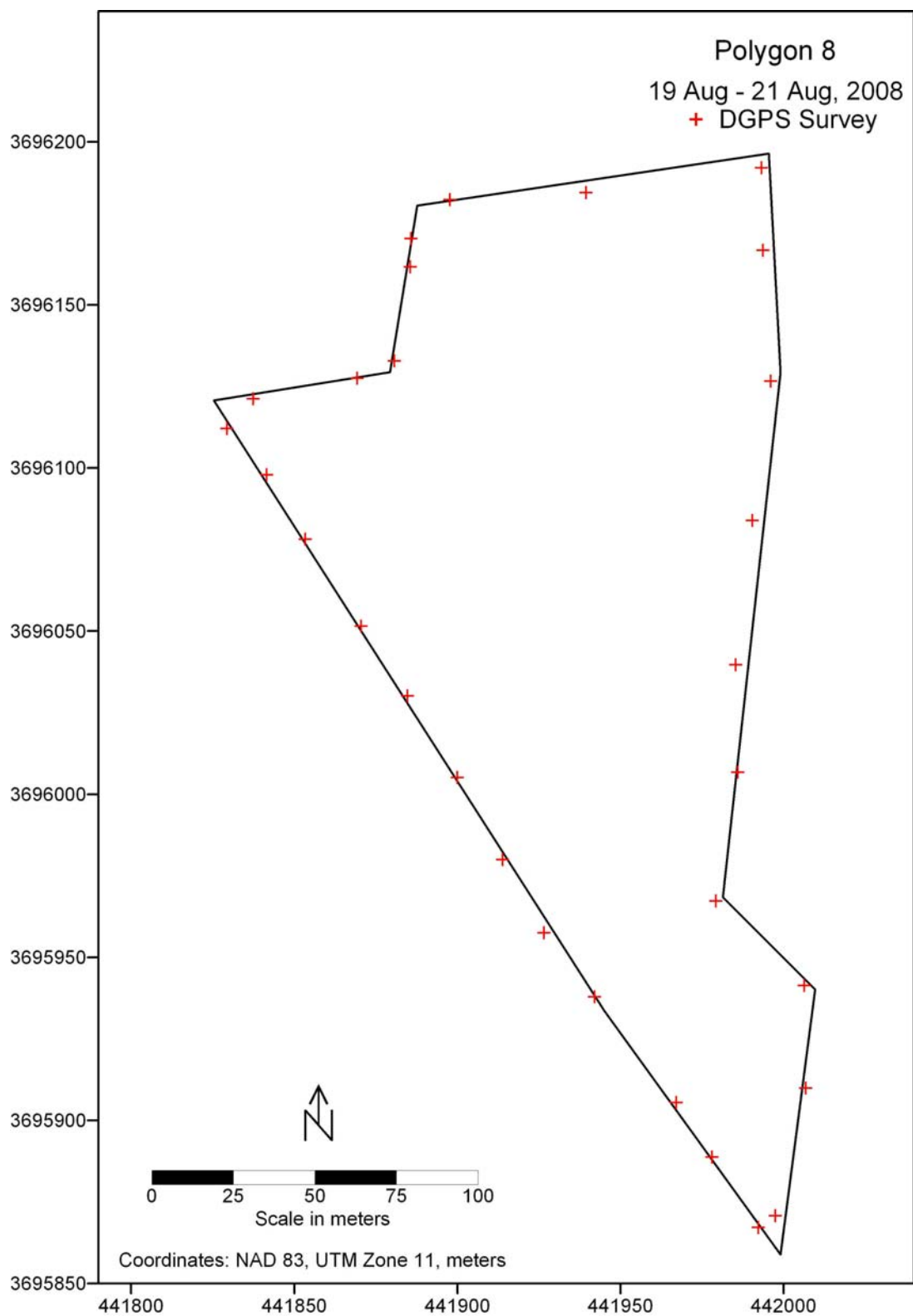


Figure D-10. DGPS survey for Polygon 8 taken on 19-21 August 2008.

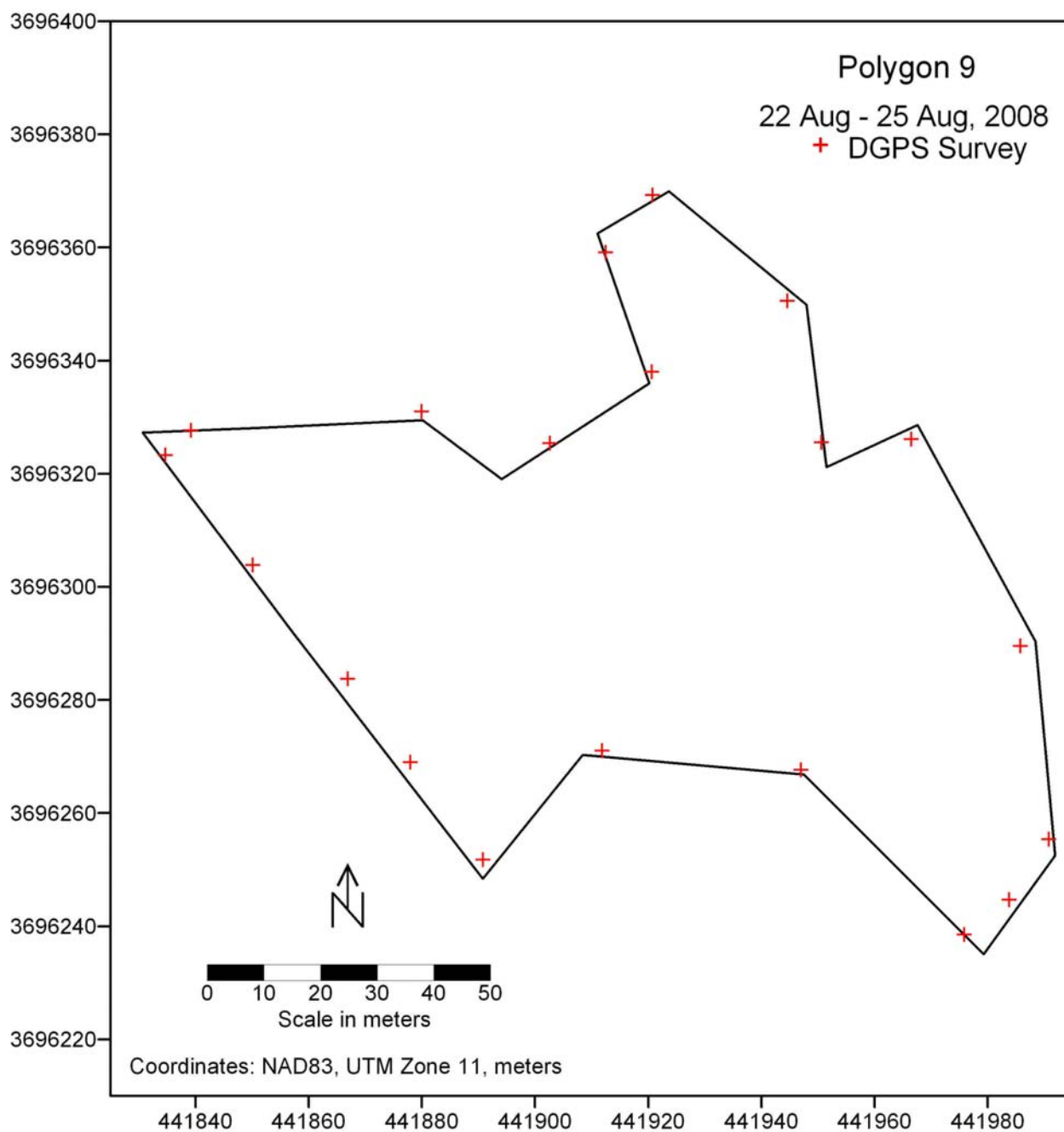


Figure D-11. DGPS survey for Polygon 9 taken on 22-25 August 2008.

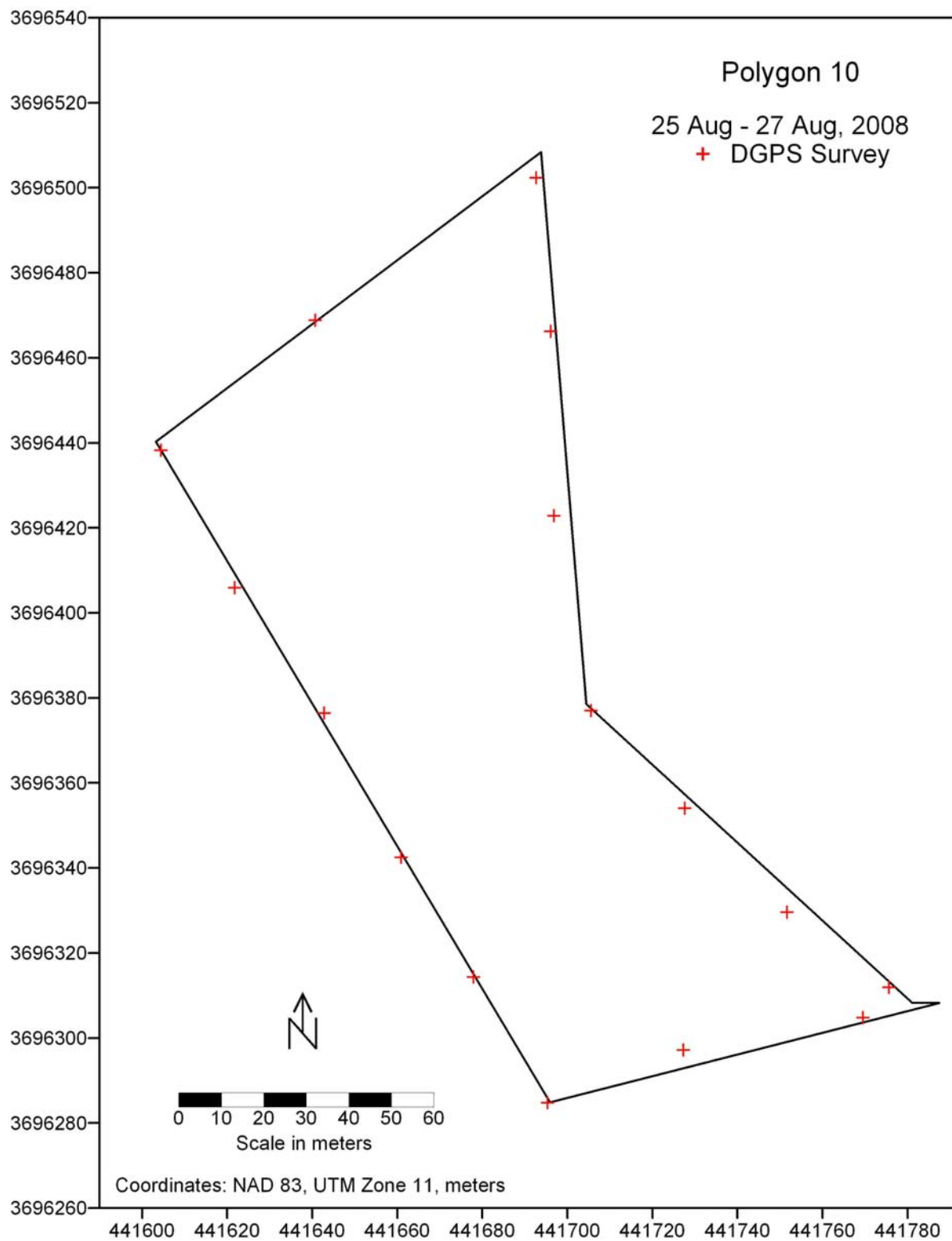


Figure D-12. DGPS survey for Polygon 10 taken on 25-27 August 2008.

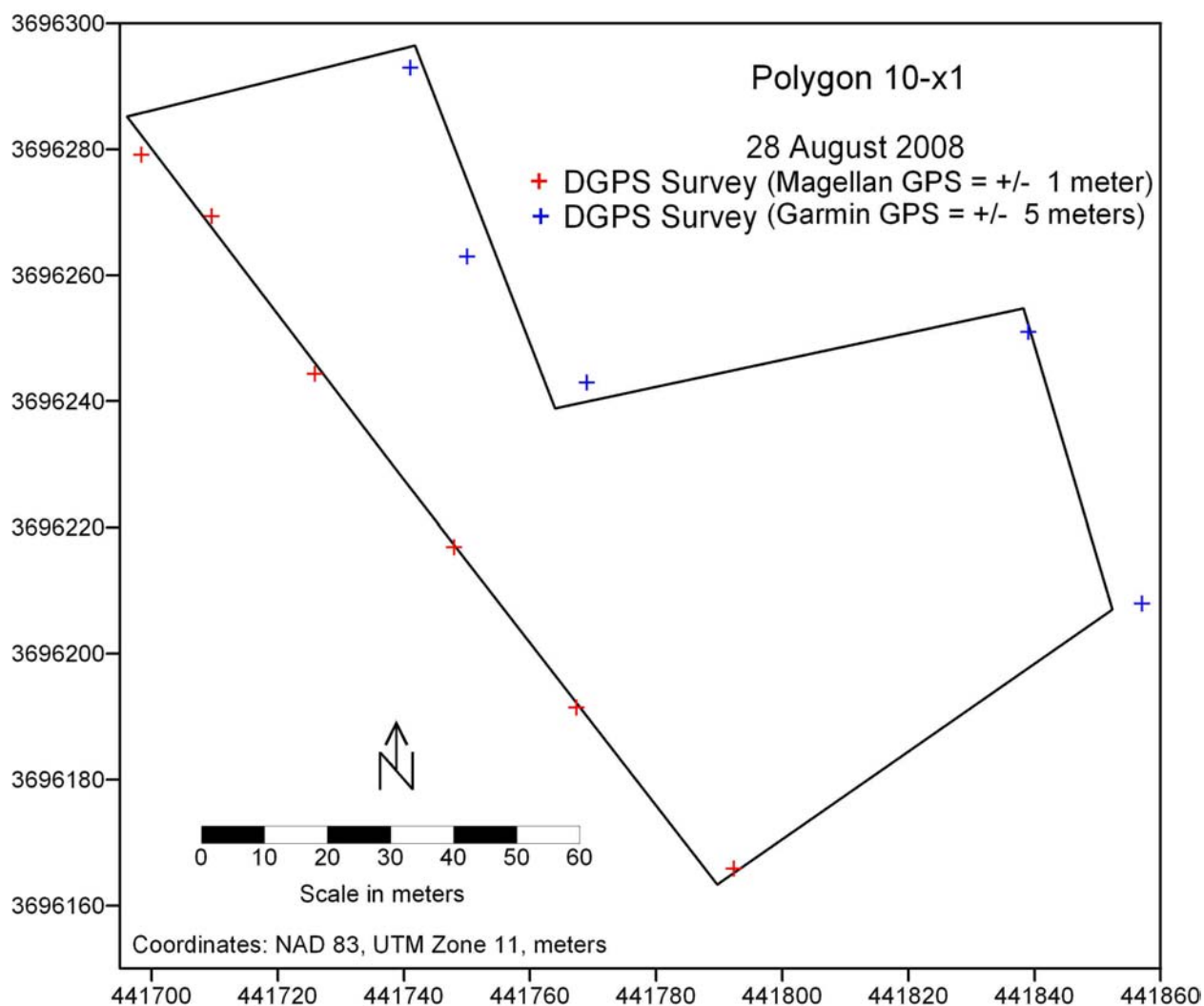


Figure D-13. DGPS survey for Polygon 10-x1 taken on 28 August 2008.

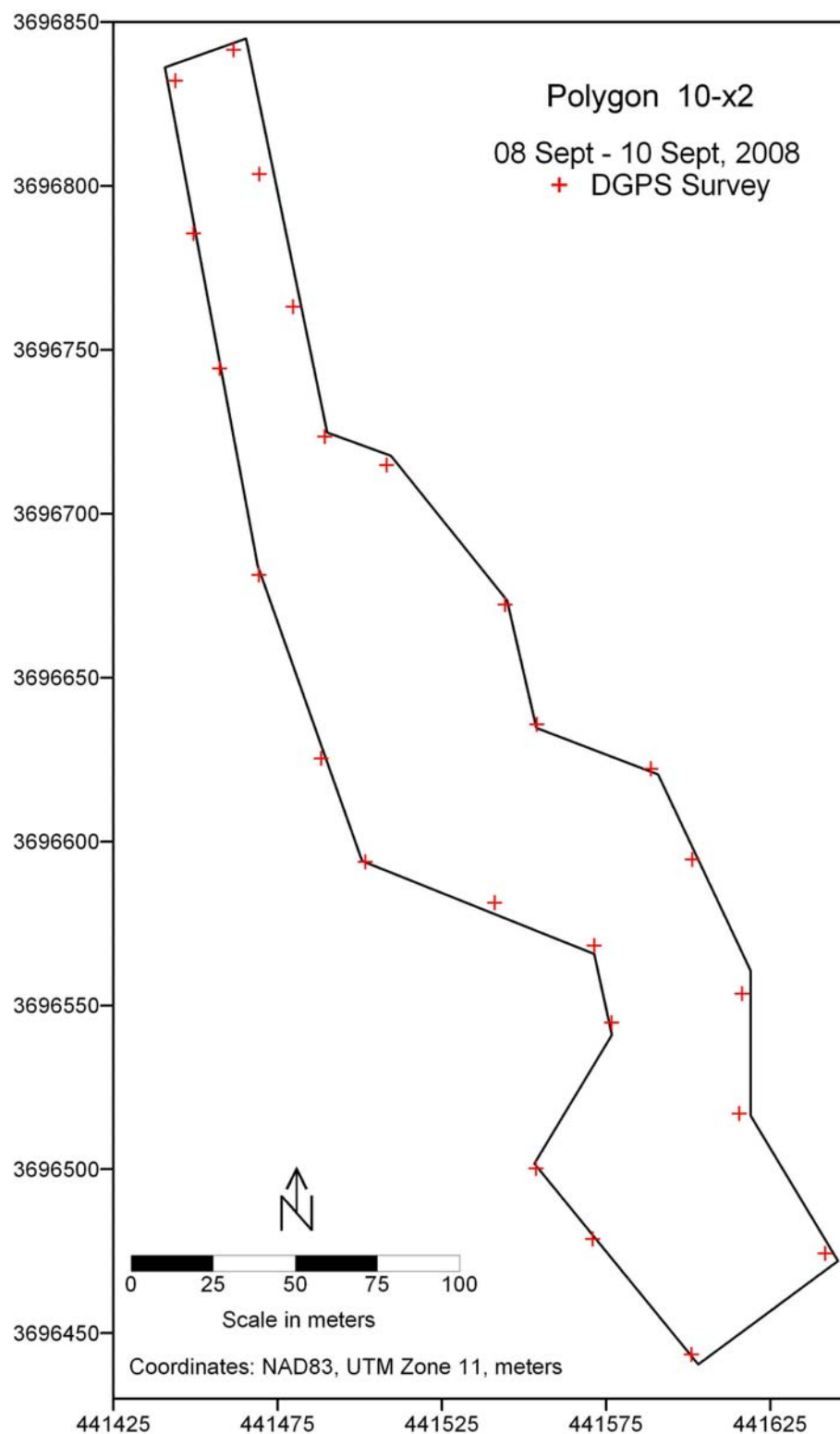


Figure D-14. DGPS survey for Polygon 10-x2 taken on 8-10 September 2008.

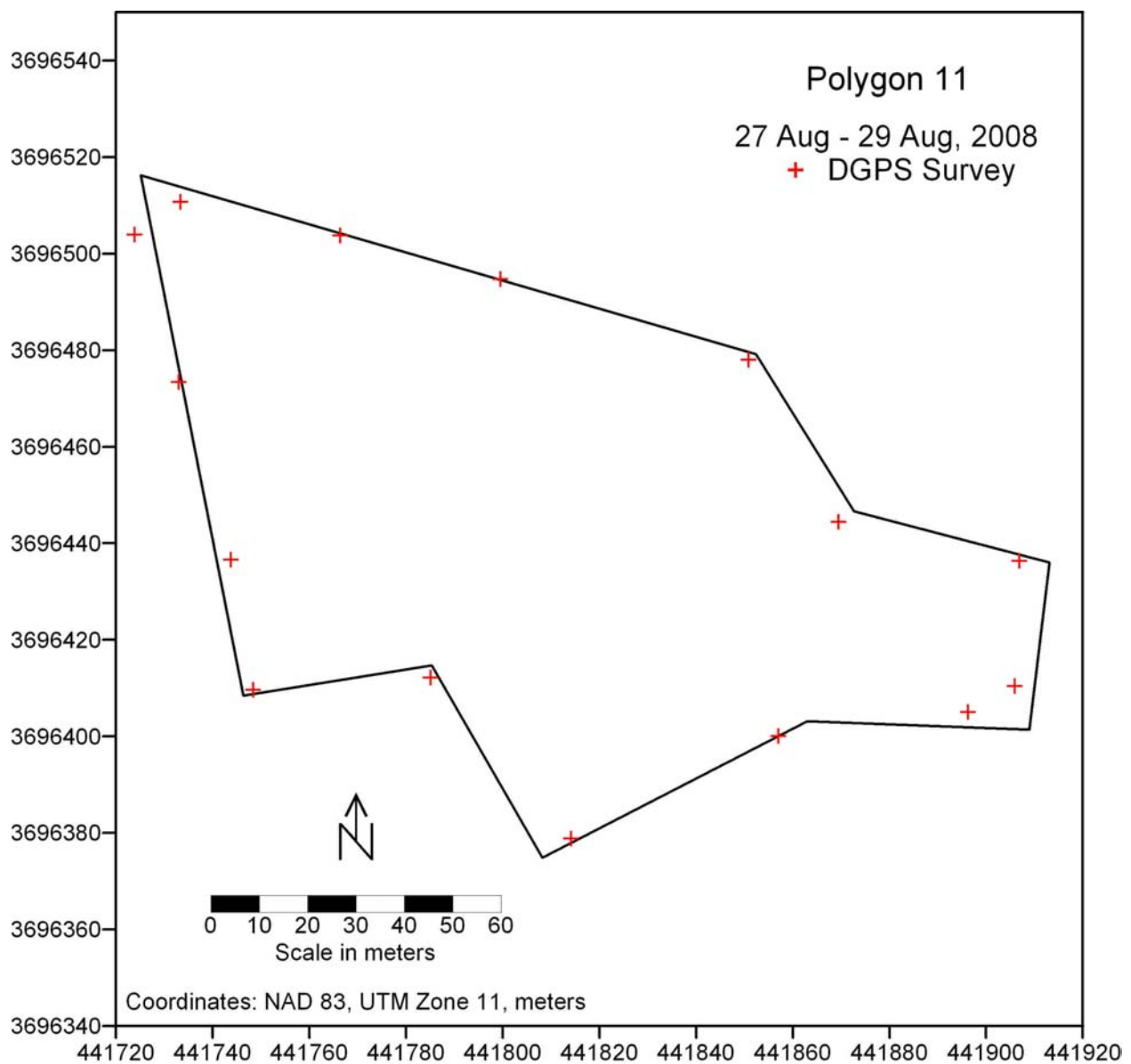


Figure D-15. DGPS survey for Polygon 11 taken on 27-29 August 2008.

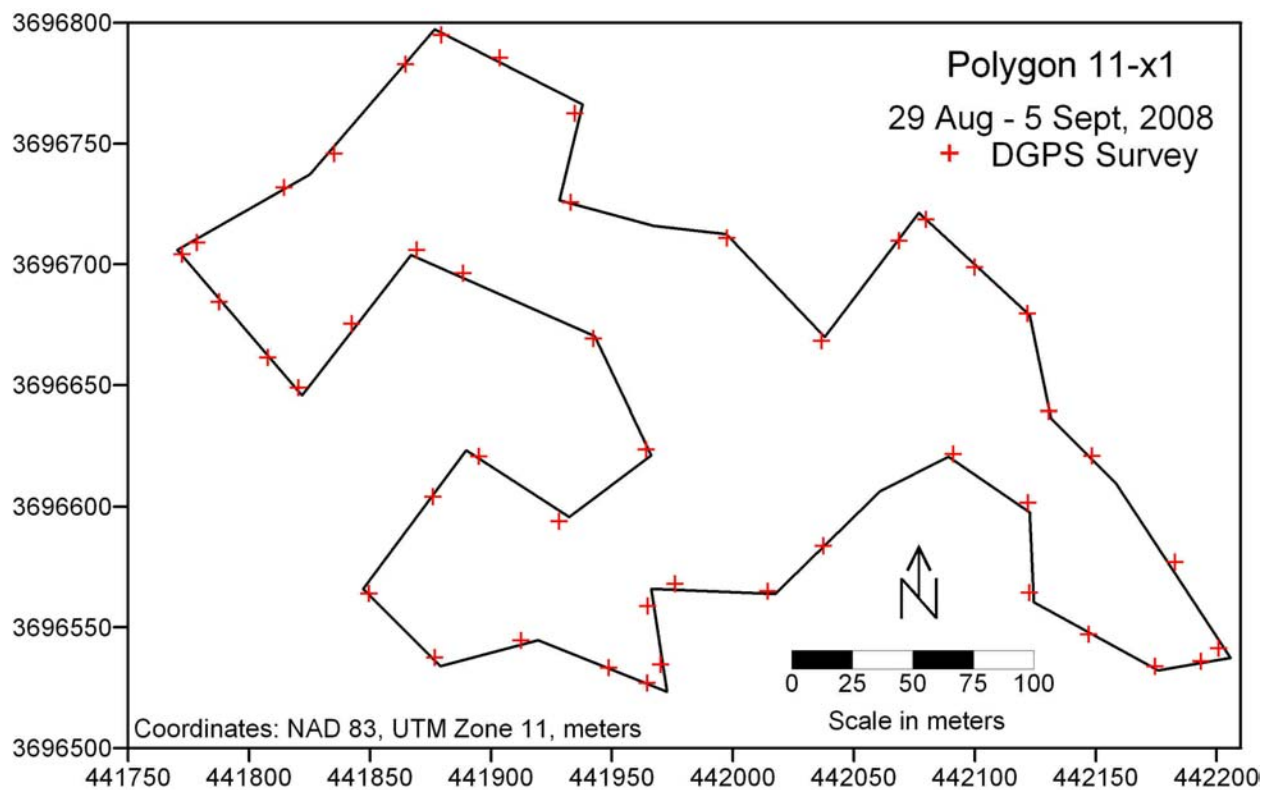


Figure D-16. DGPS survey for Polygon 11-x1 taken on 29 August-5 September 2008.

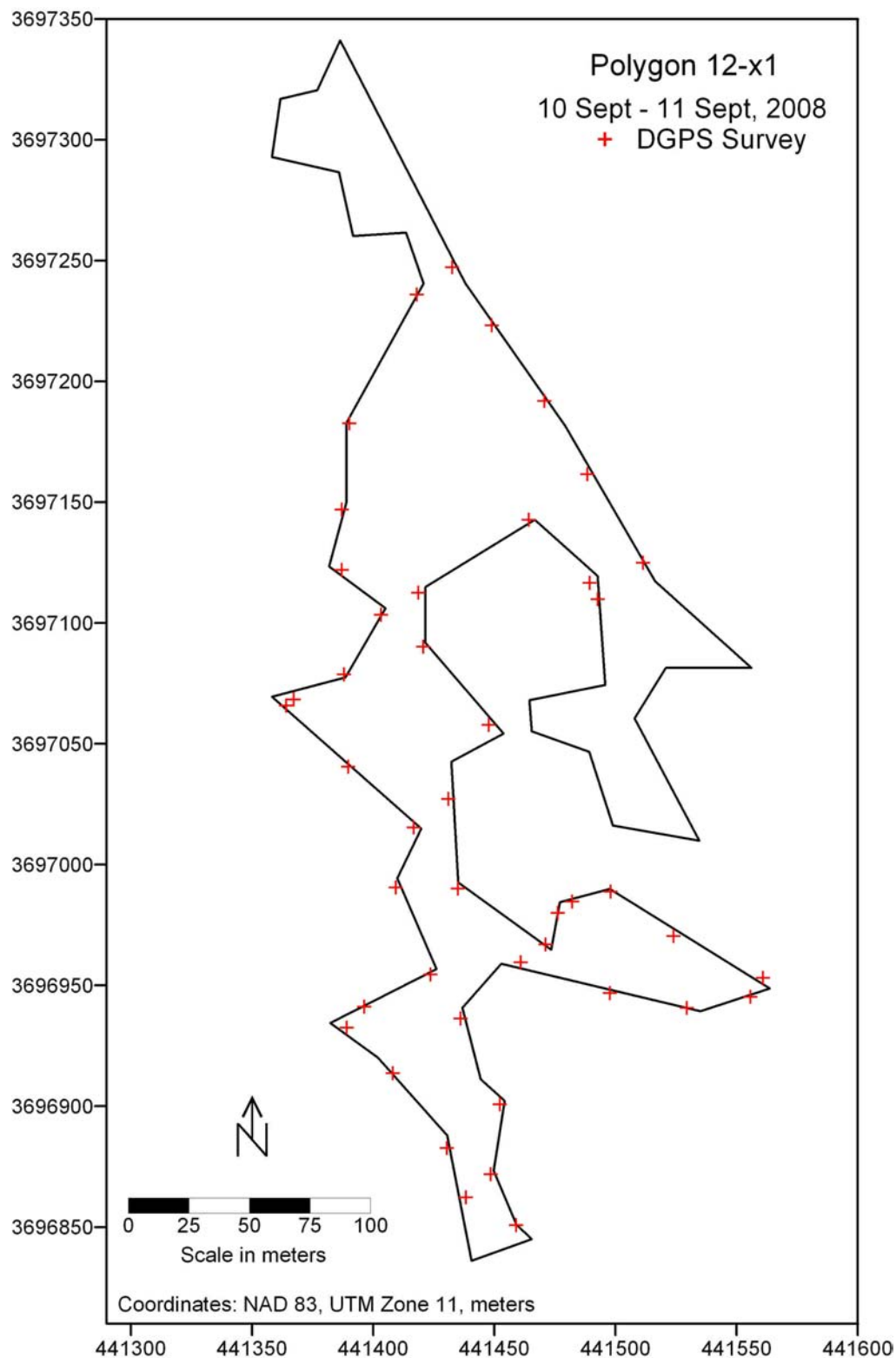


Figure D-17. DGPS survey for Polygon 12-x1 taken on 10-11 September 2008.

APPENDIX E

**MULTIBEAM SONAR SURVEY RESULTS
(POLYGON BOUNDARY DETERMINATION)**

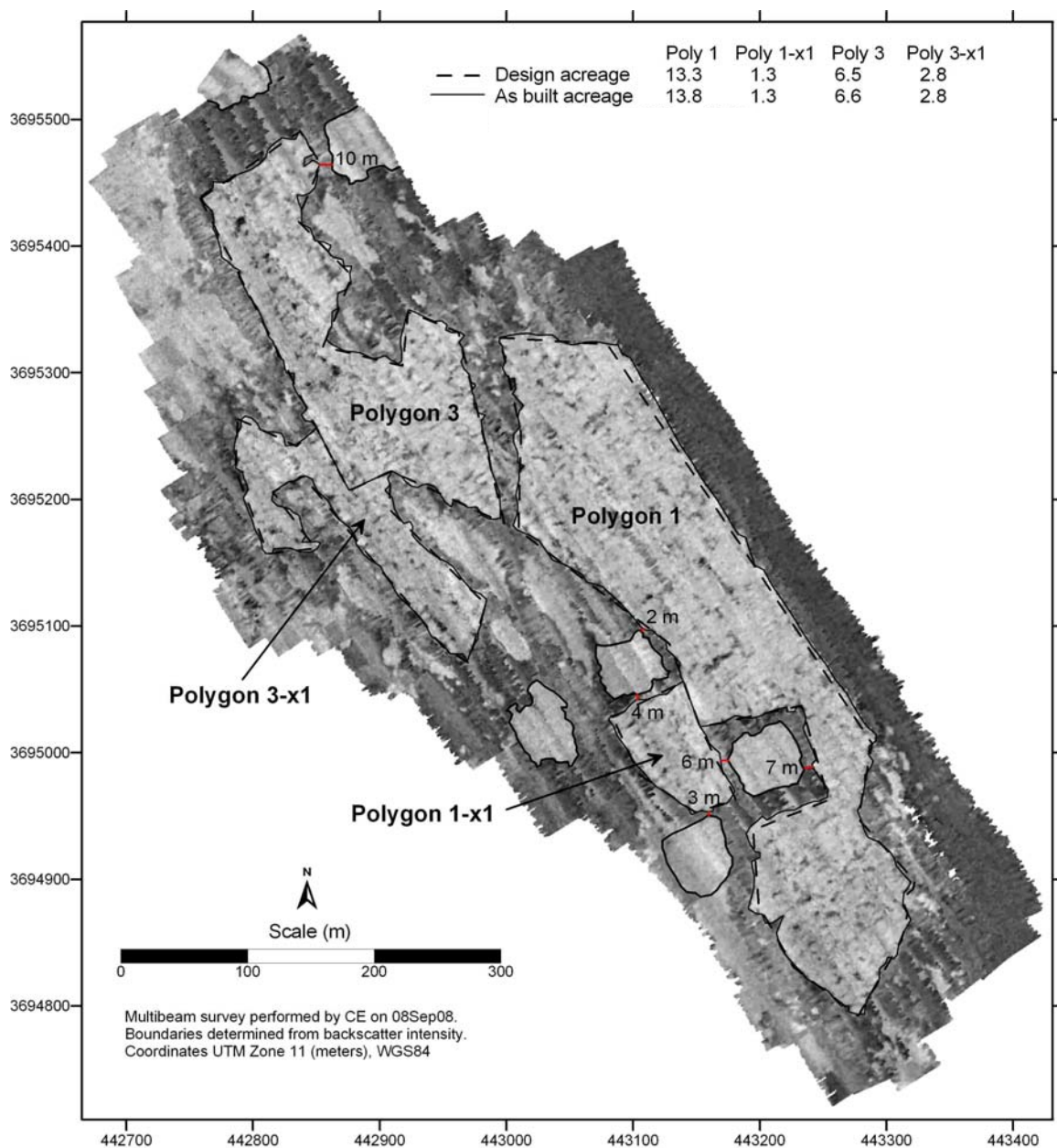


Figure E-1. Polygons 1, 1-x1, 3, and 3-x1 boundaries. From CE multibeam survey using backscatter data.

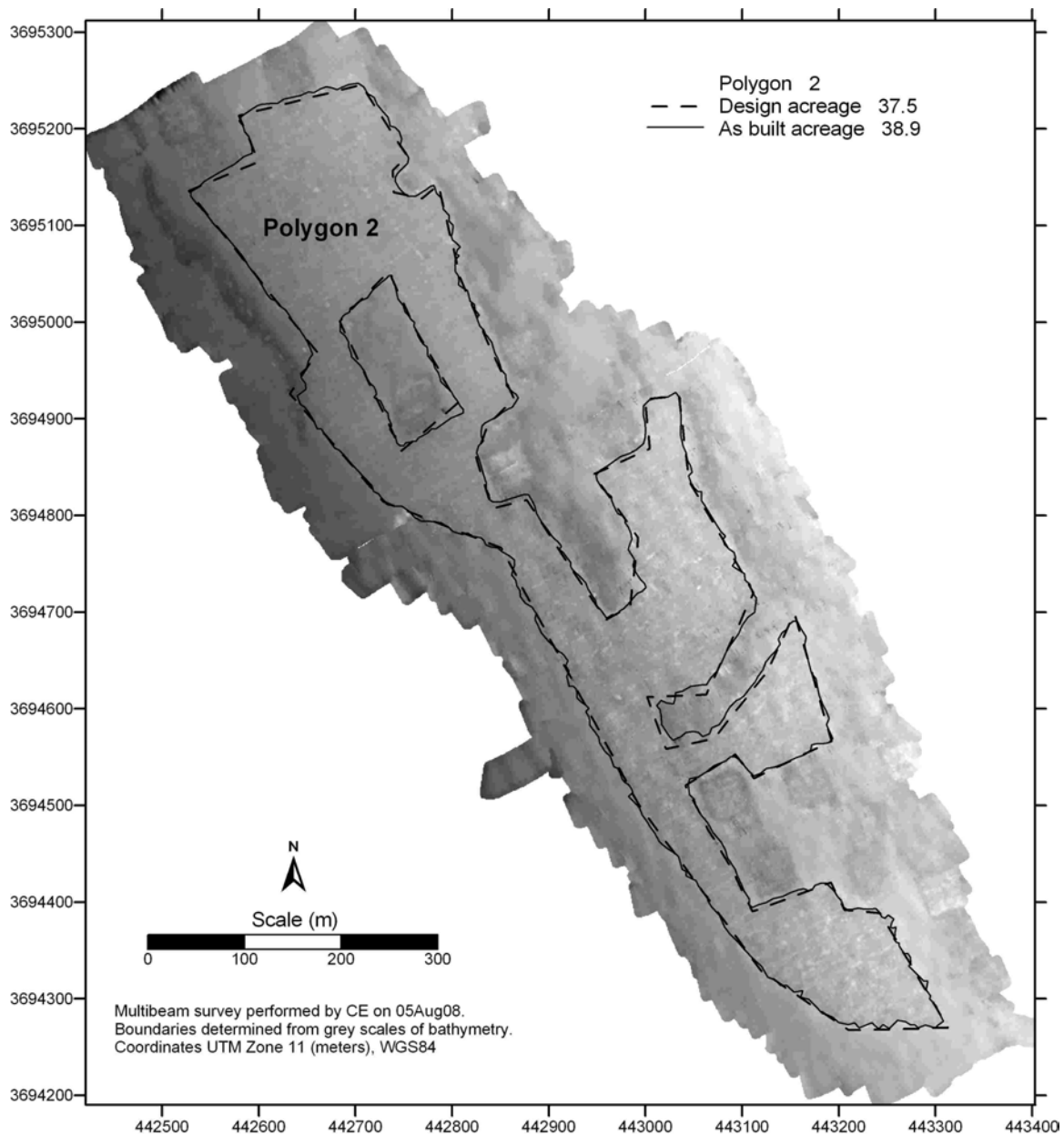


Figure E-2. Polygon 2 boundary. From CE multibeam survey using grey scale bathymetry.

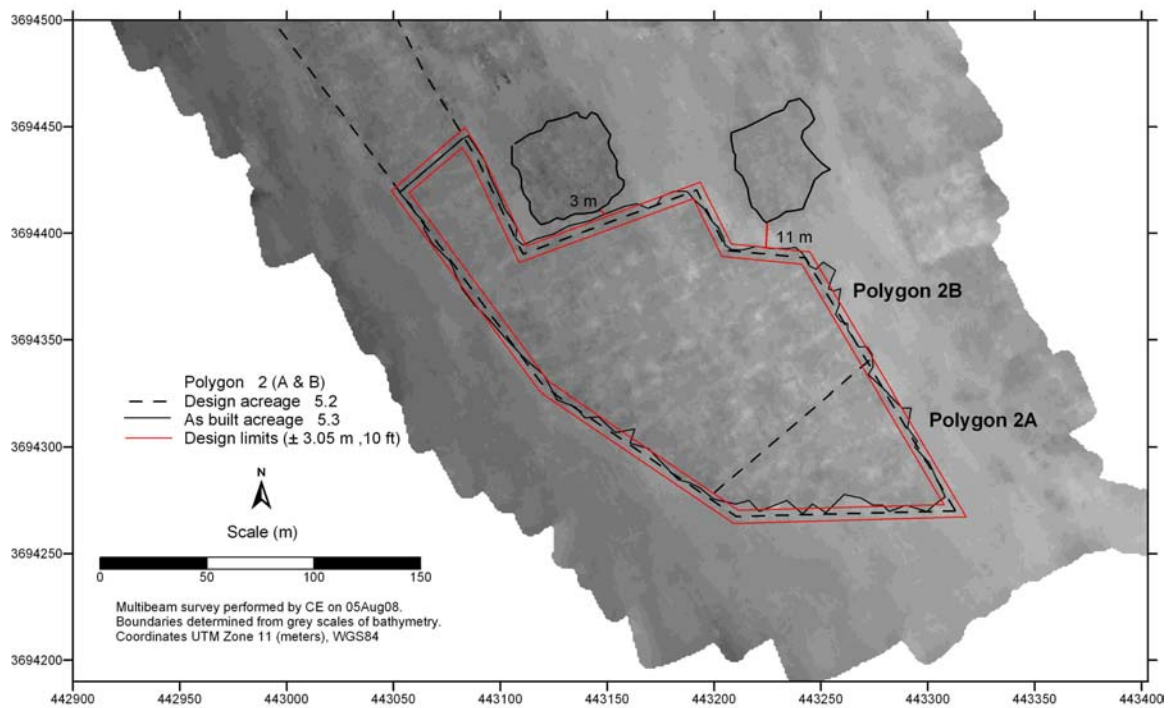


Figure E-3. Southern part of Polygon 2 boundary. From CE multibeam survey using grey scale bathymetry.

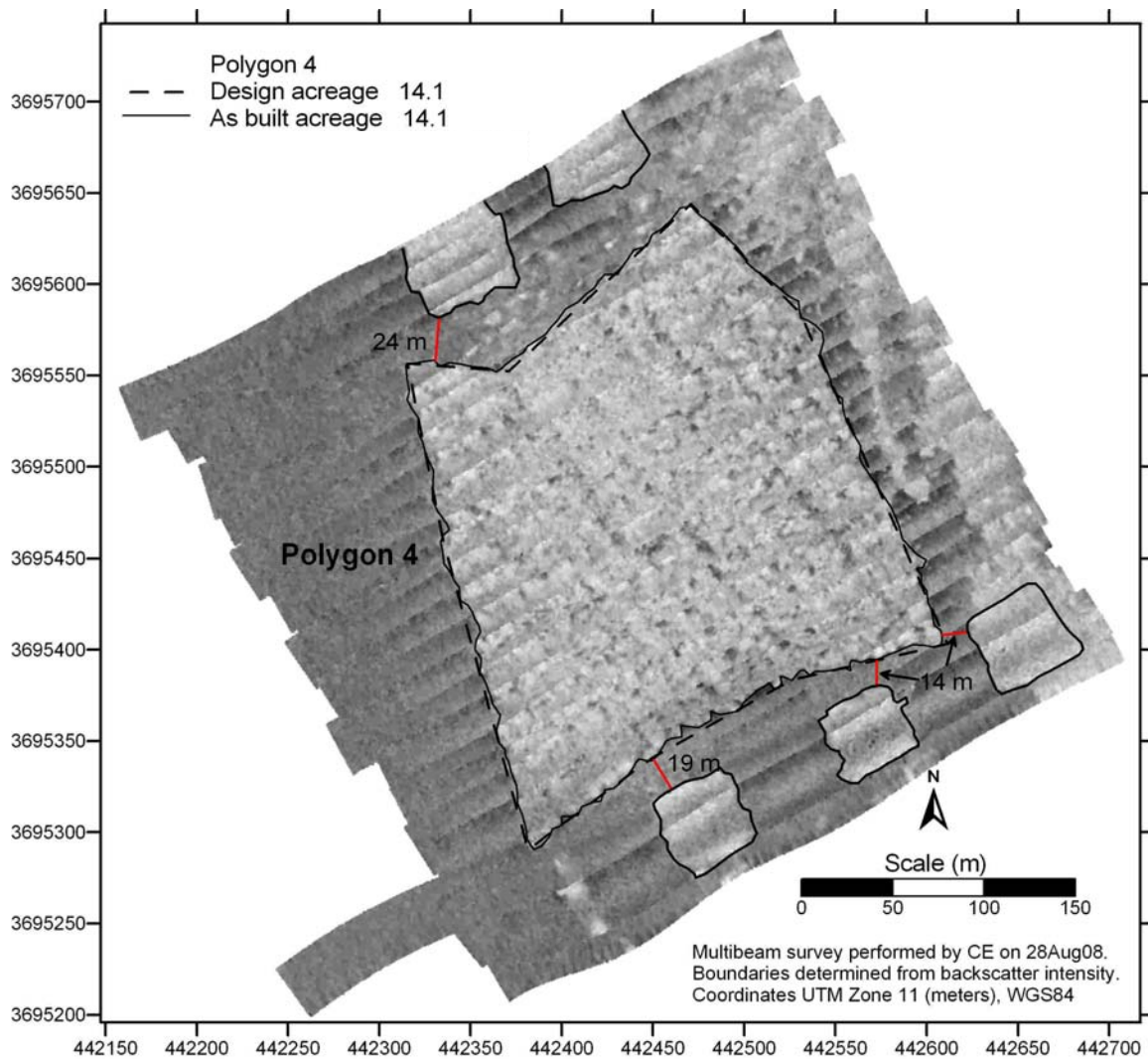


Figure E-4. Polygon 4 boundary. From CE multibeam survey using backscatter data.

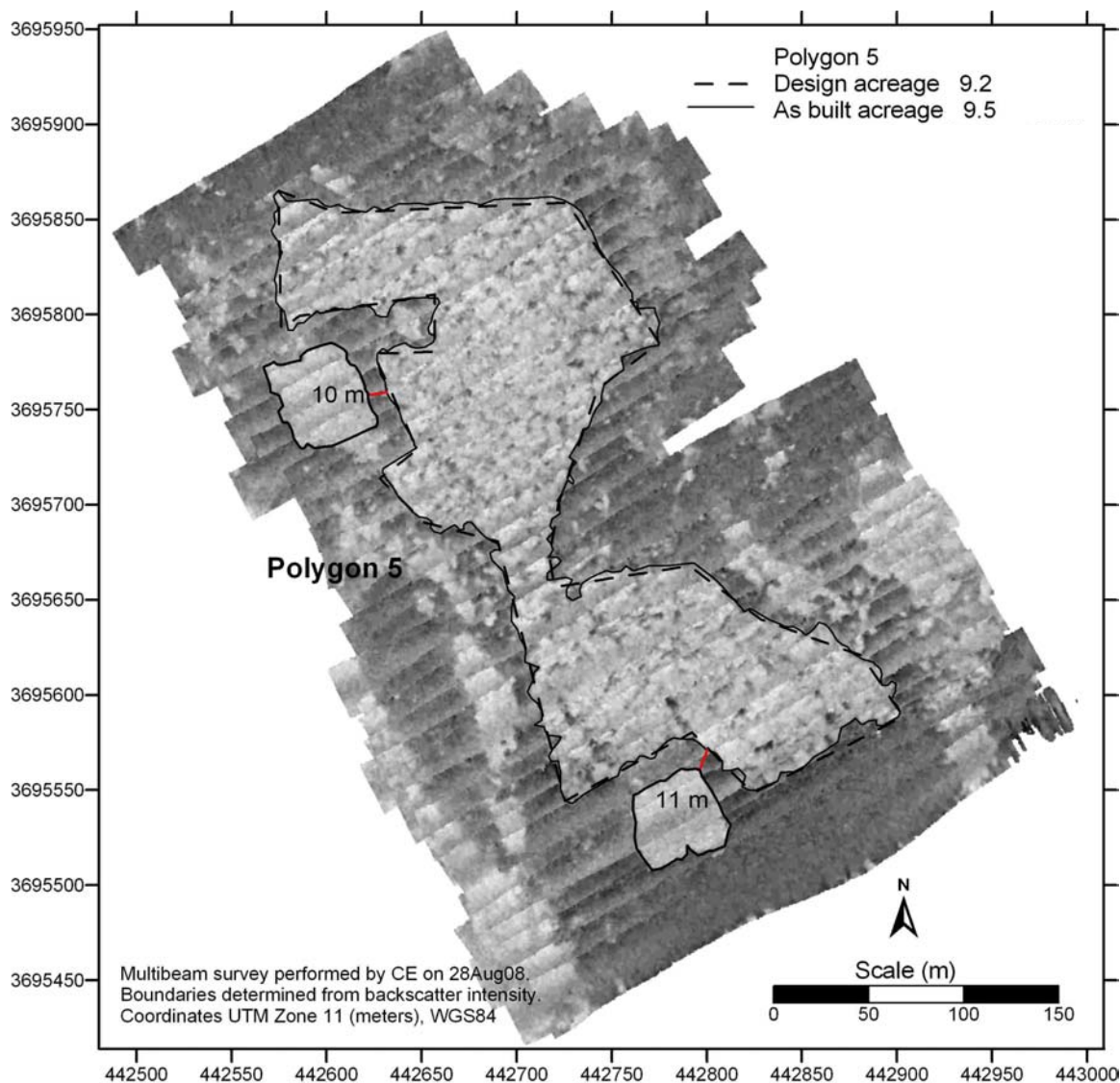


Figure E-5. Polygon 5 boundary. From CE multibeam survey using backscatter data.

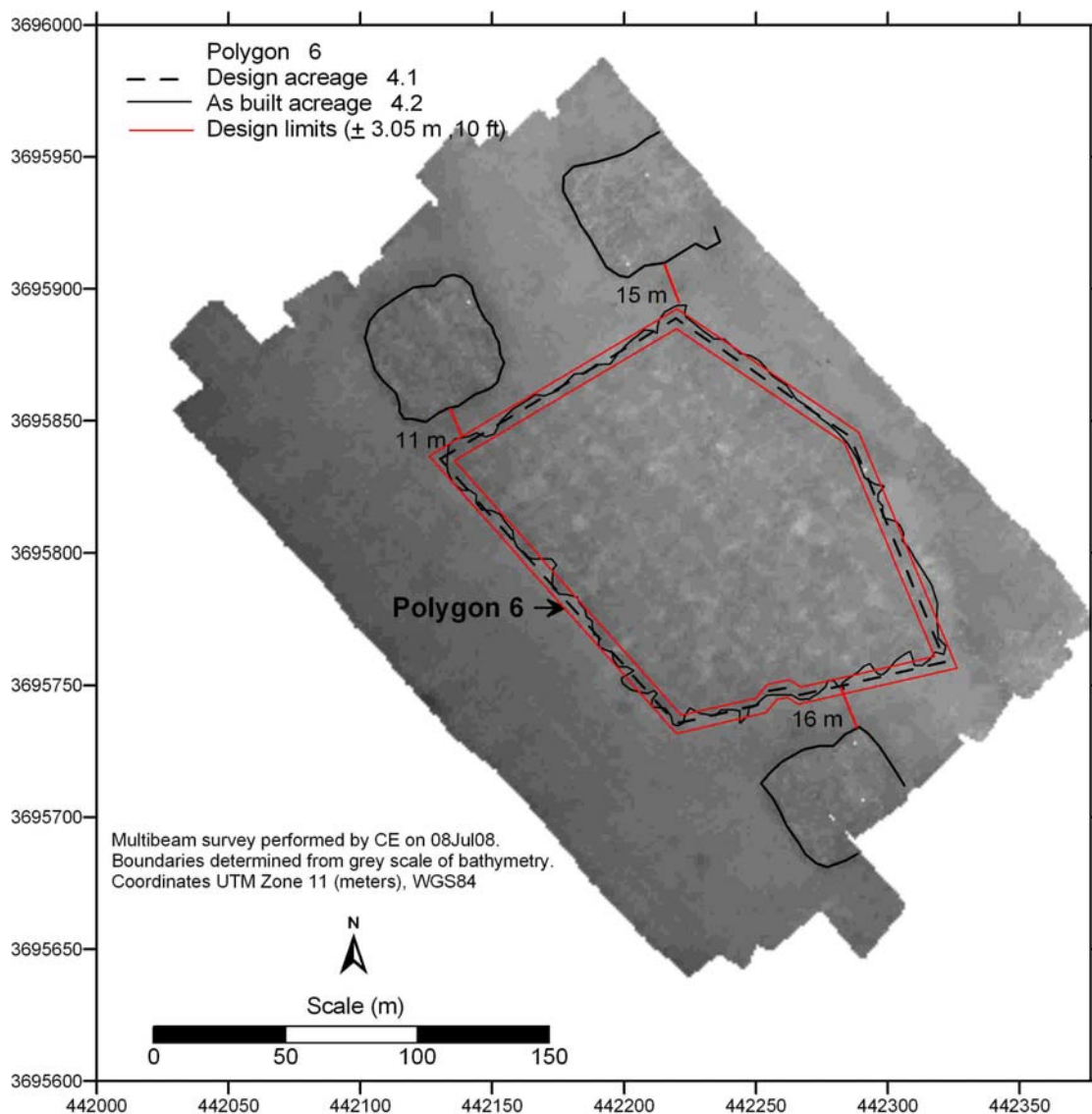


Figure E-6. Polygon 6 boundary. From CE multibeam survey using grey scale bathymetry.

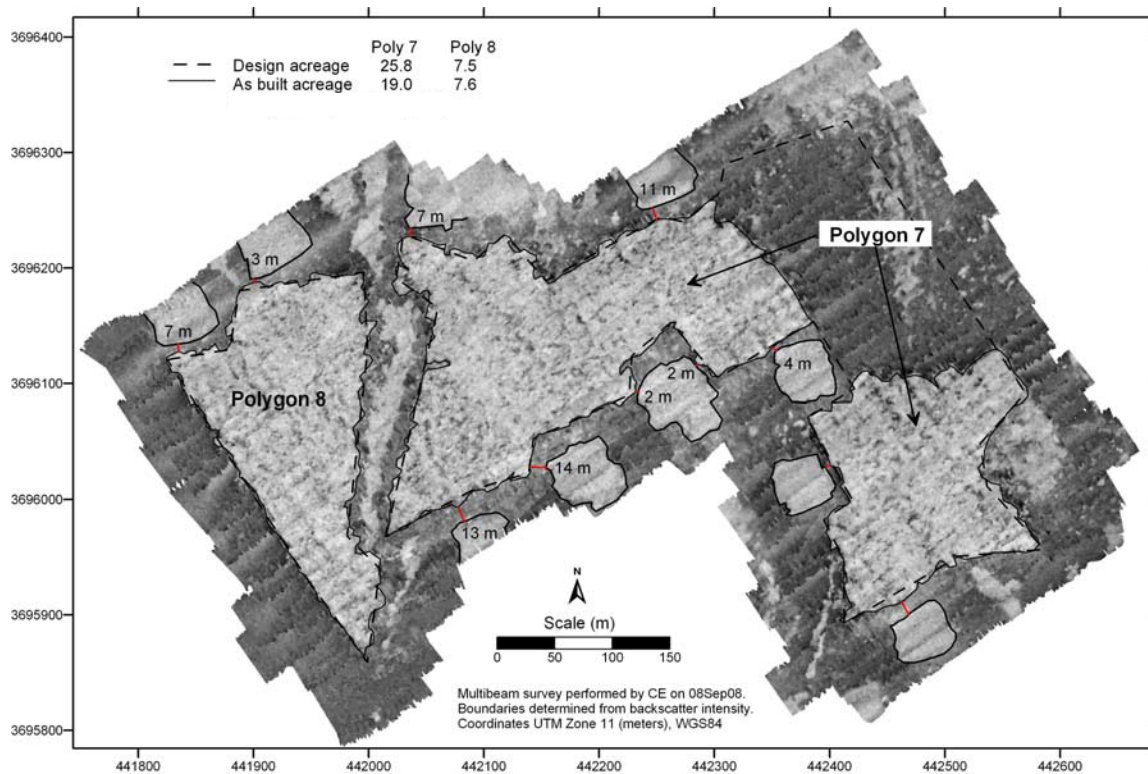


Figure E-7. Polygons 7 and 8 boundaries. From CE multibeam survey using backscatter data.

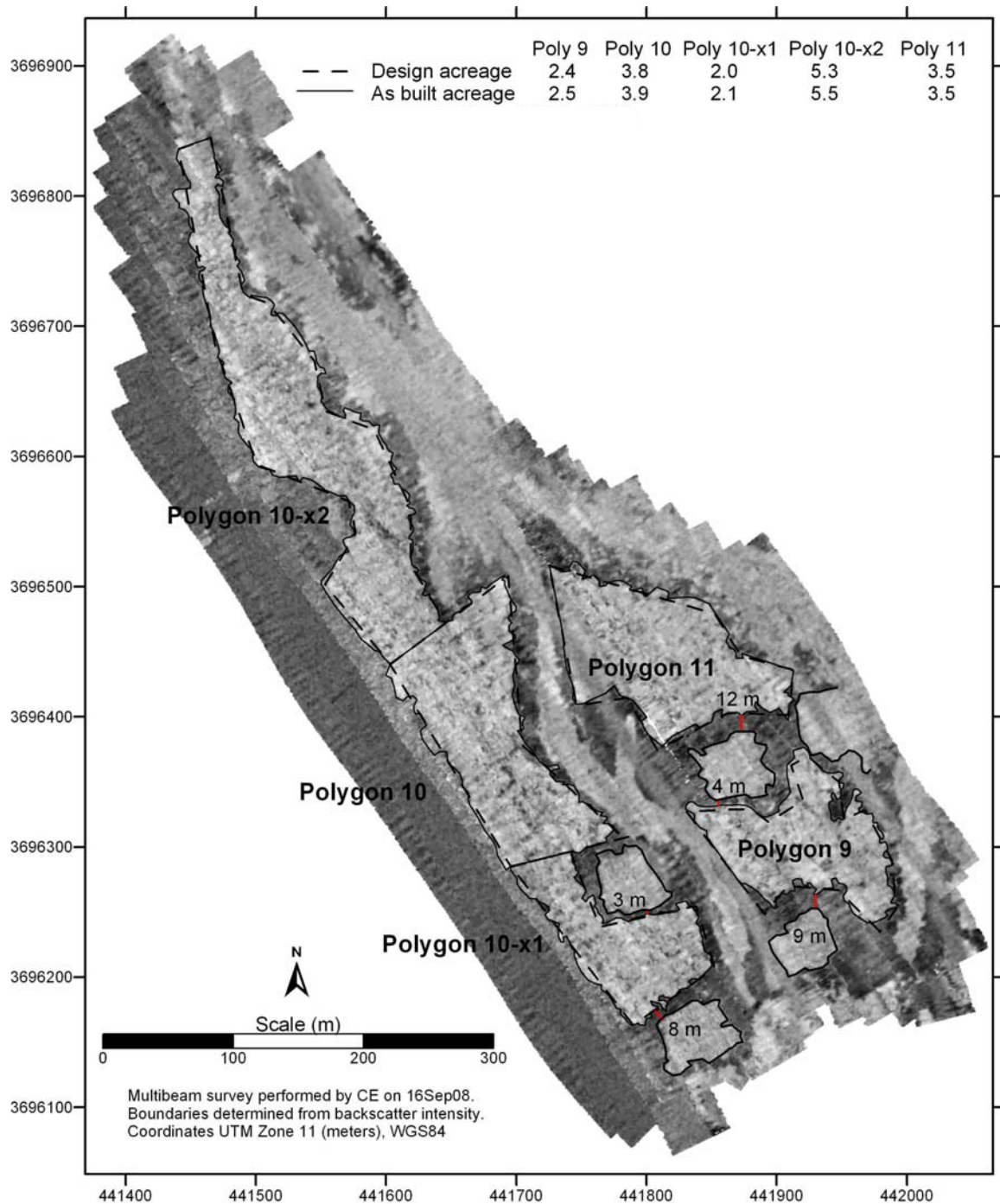


Figure E-8. Polygons 9, 10, 10-x1, 10-x2, and 11 boundaries. From CE multibeam survey using backscatter data.

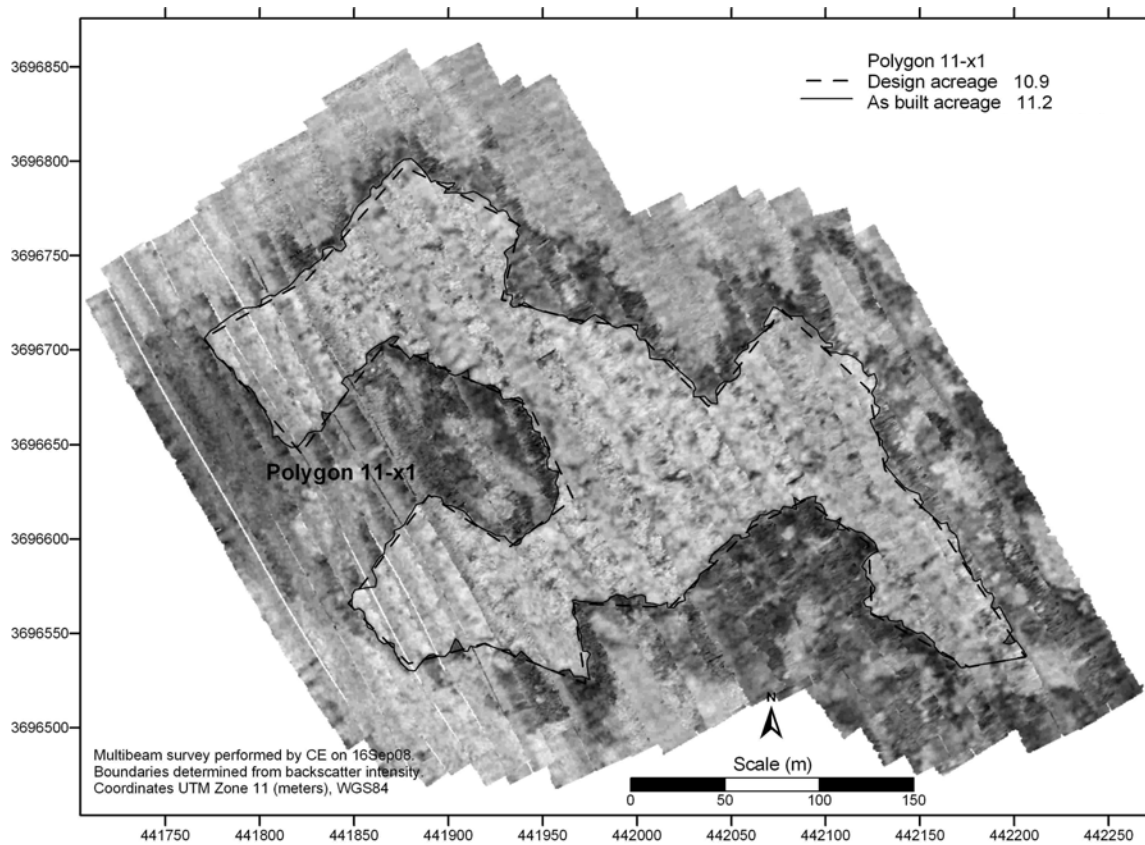


Figure E-9. Polygon 11-x1 boundary. From CE multibeam survey using backscatter data.

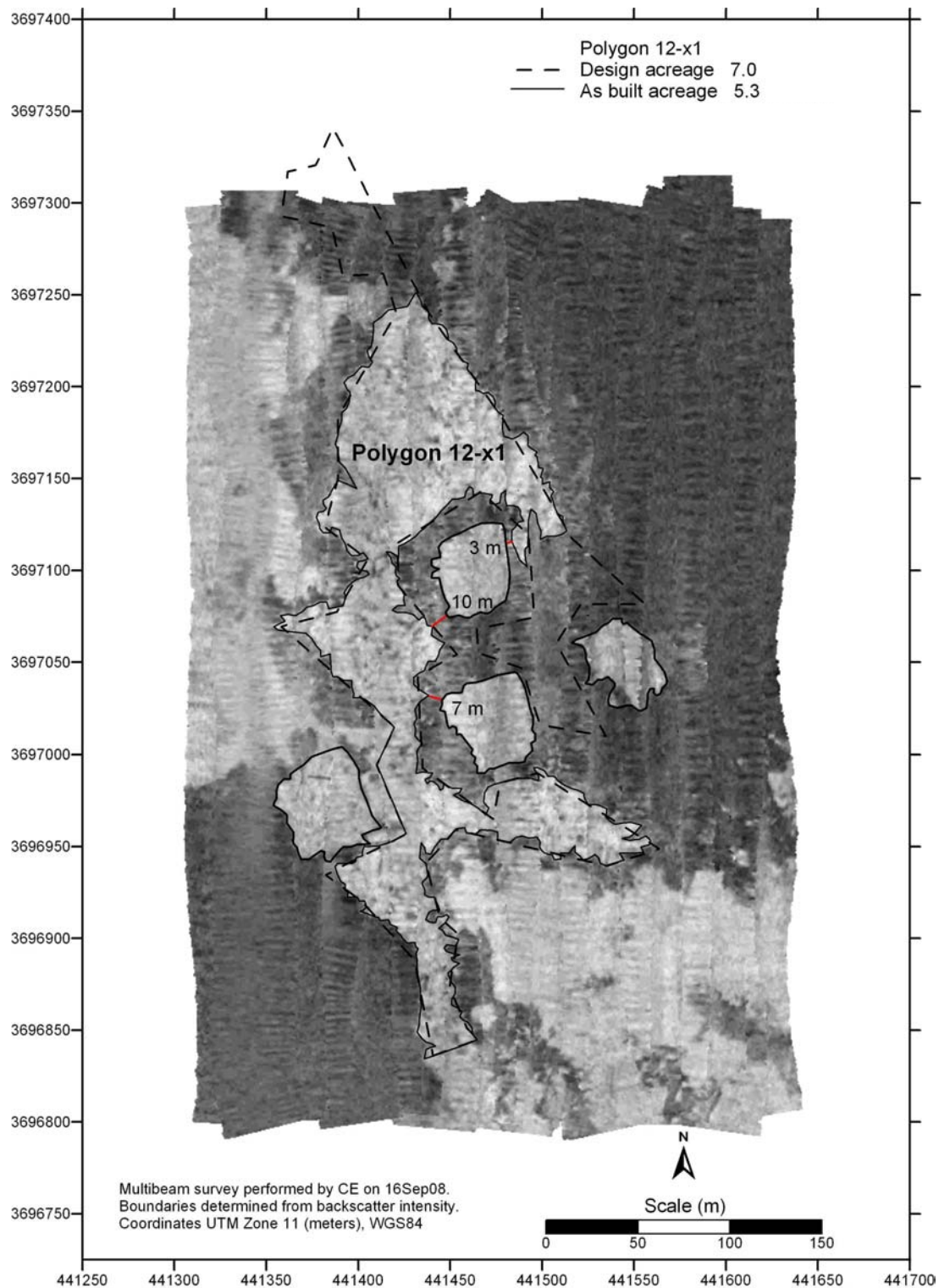


Figure E-10. Polygon 12-x1 boundary. From CE multibeam survey using backscatter data.

APPENDIX F

MUTIBEAM SURVEY RESULTS
(BATHYMETRY AND ROCK OVERLAP ESTIMATION)

APPENDIX F. MUTI-BEAM SURVEY RESULTS BATHYMETRY AND ROCK OVERLAP ESTIMATION

F-1. ANALYSIS OF OVERLAP

Design specifications (CE, 2008a) required that the reef height would be less than 1 m and that rock overlap (stacking of the rocks) should be less than 15 percent. Rock overlap on the constructed reef was evaluated by calculating the difference in the seafloor bathymetry before and after construction of the reef. Data from the bathymetric survey conducted in 2006 (CE and Fugro, 2006b) was used to establish the baseline bathymetry. Multibeam bathymetric data collected in a survey by CE in 2008 for each polygon was used to represent post-construction bathymetry. No significant differences in seafloor bathymetry greater than 0.5 m were detected (Volume II, Appendix F). This is in agreement with the diver observations made along the CCC-CS transects. (CE, 2008d). The conclusion is that placed rock stacking was minimal.

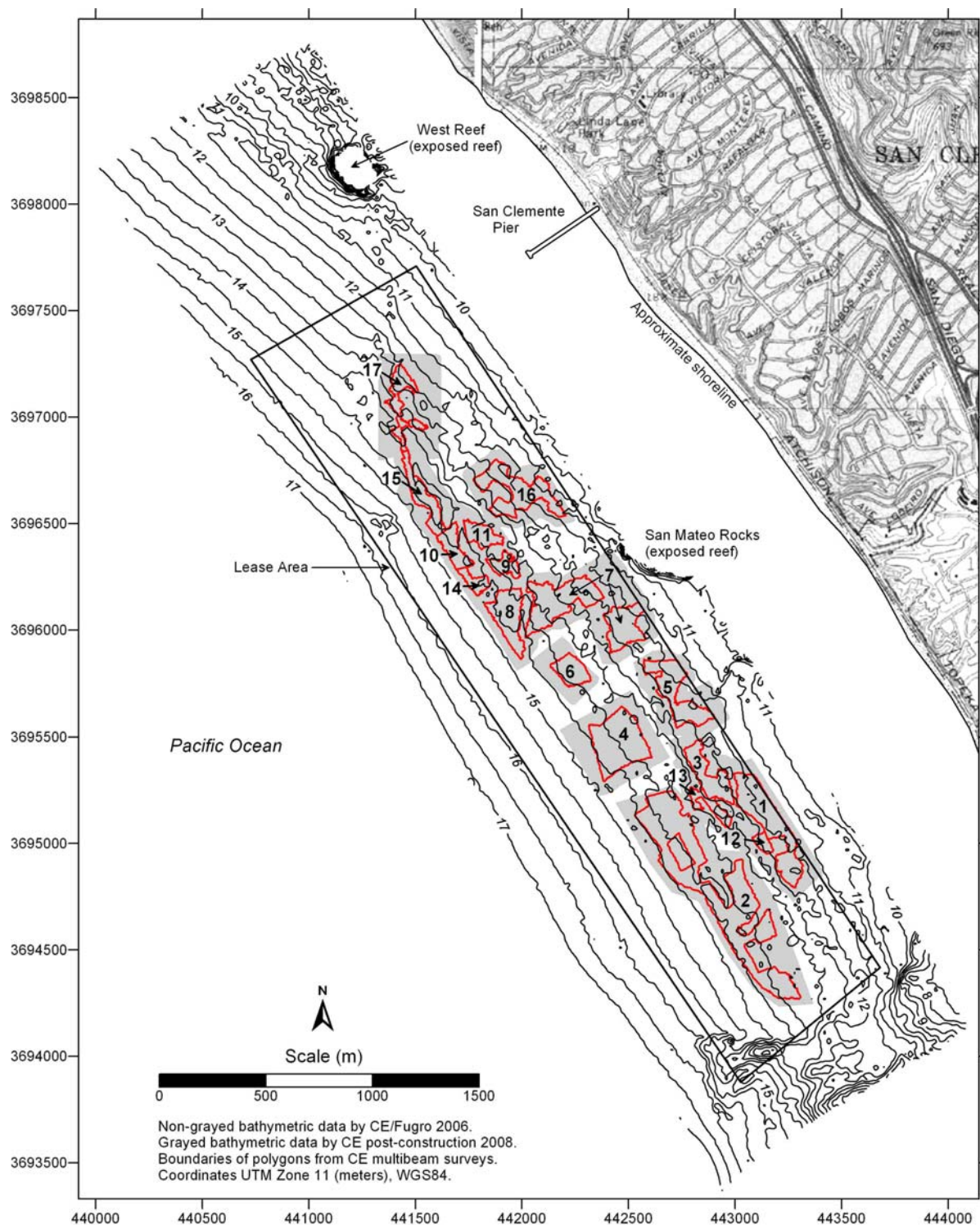


Figure F-1. Post-construction bathymetry (grayed areas) for WNR.

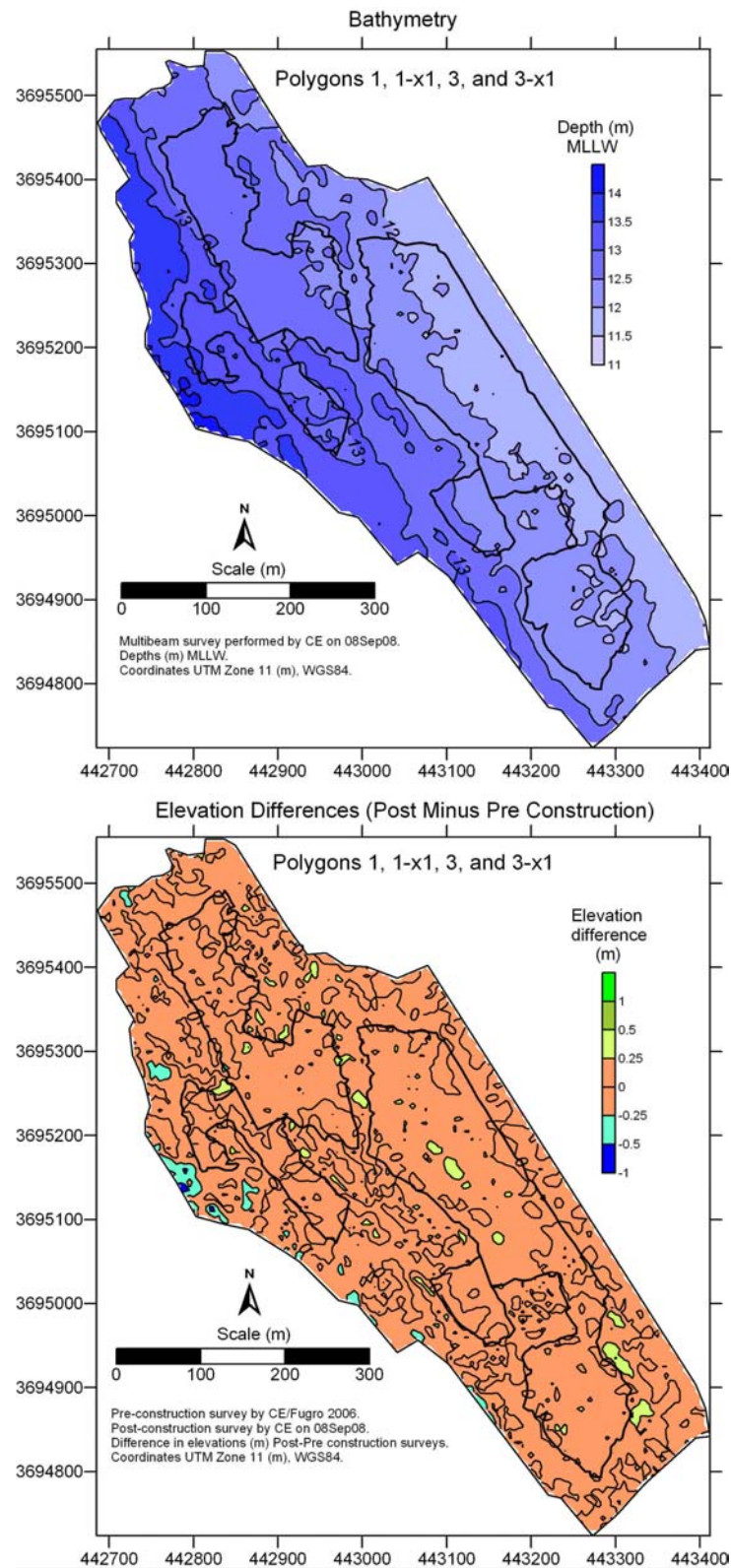


Figure F-2. Polygons 1, 1-x1, 3, and 3-x1 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

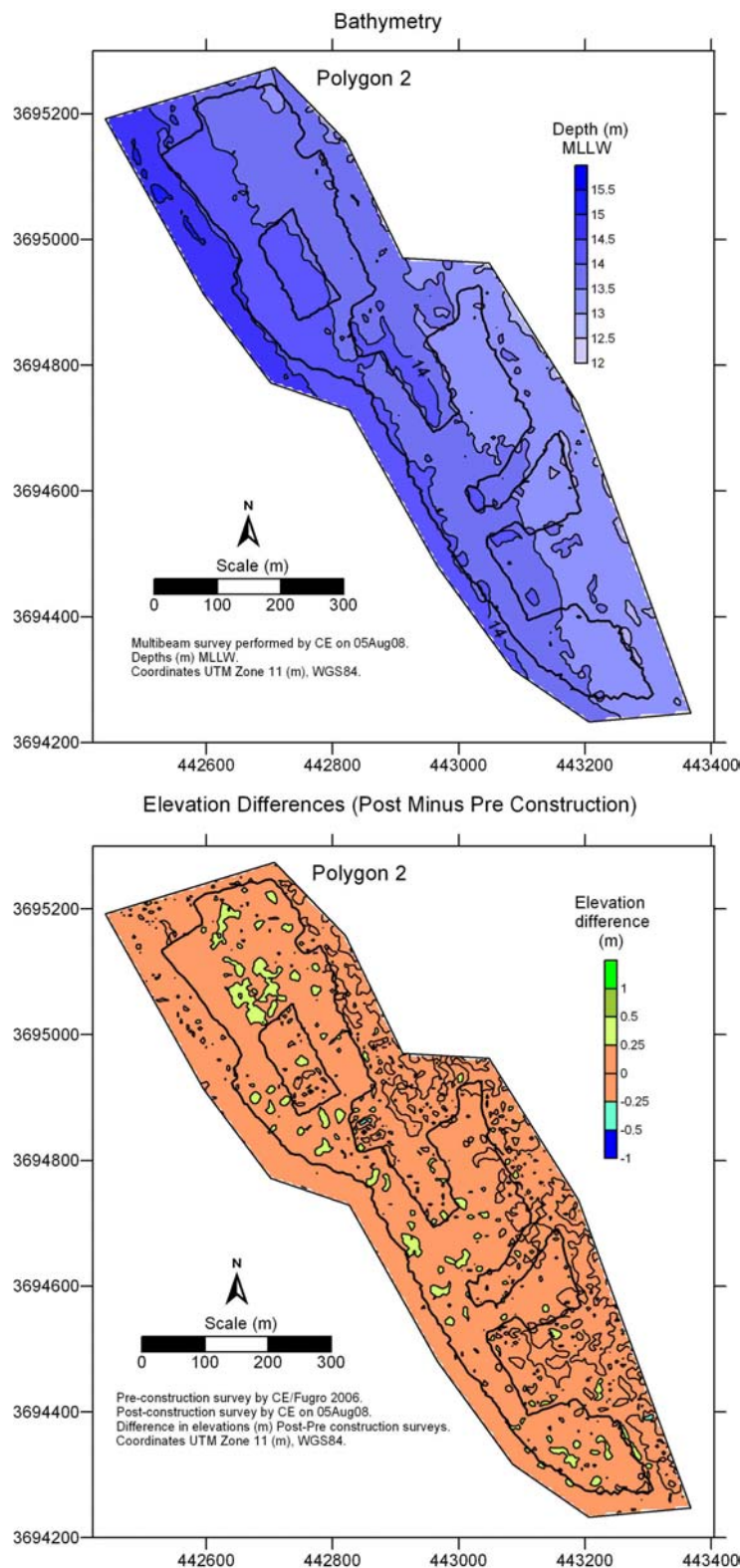


Figure F-3. Polygon 2 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

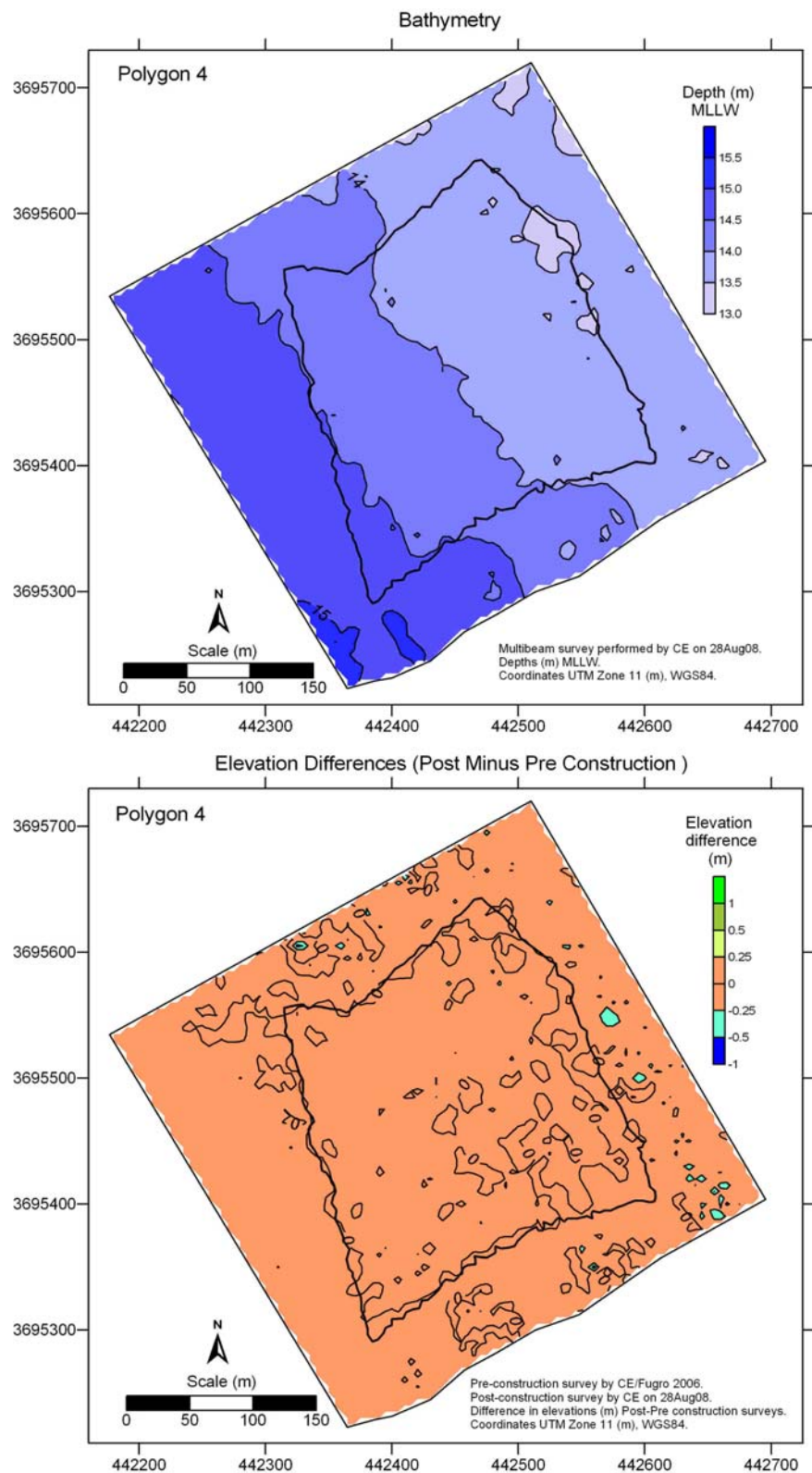


Figure F-4. Polygon 4 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

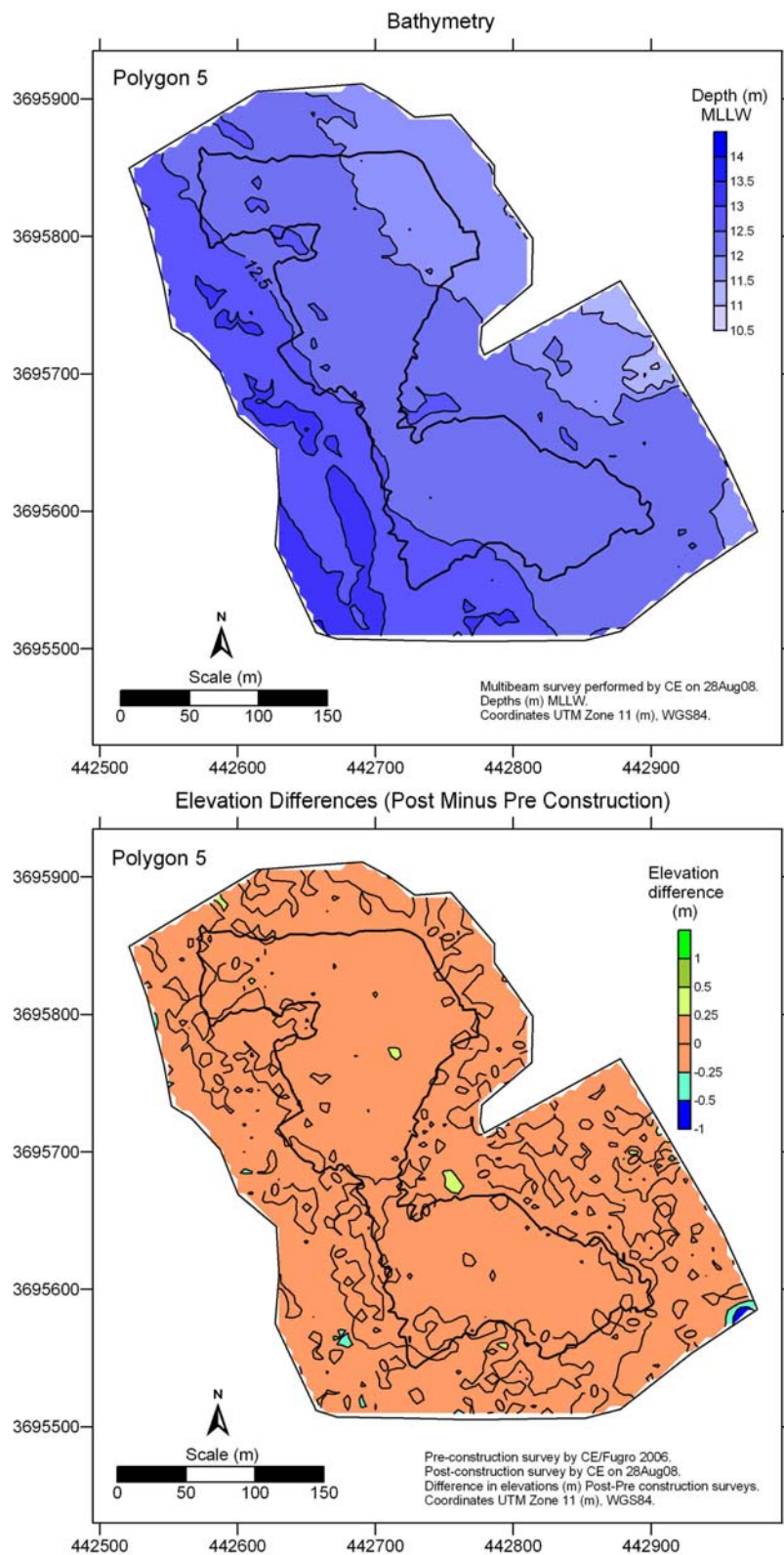


Figure F-5. Polygon 5 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

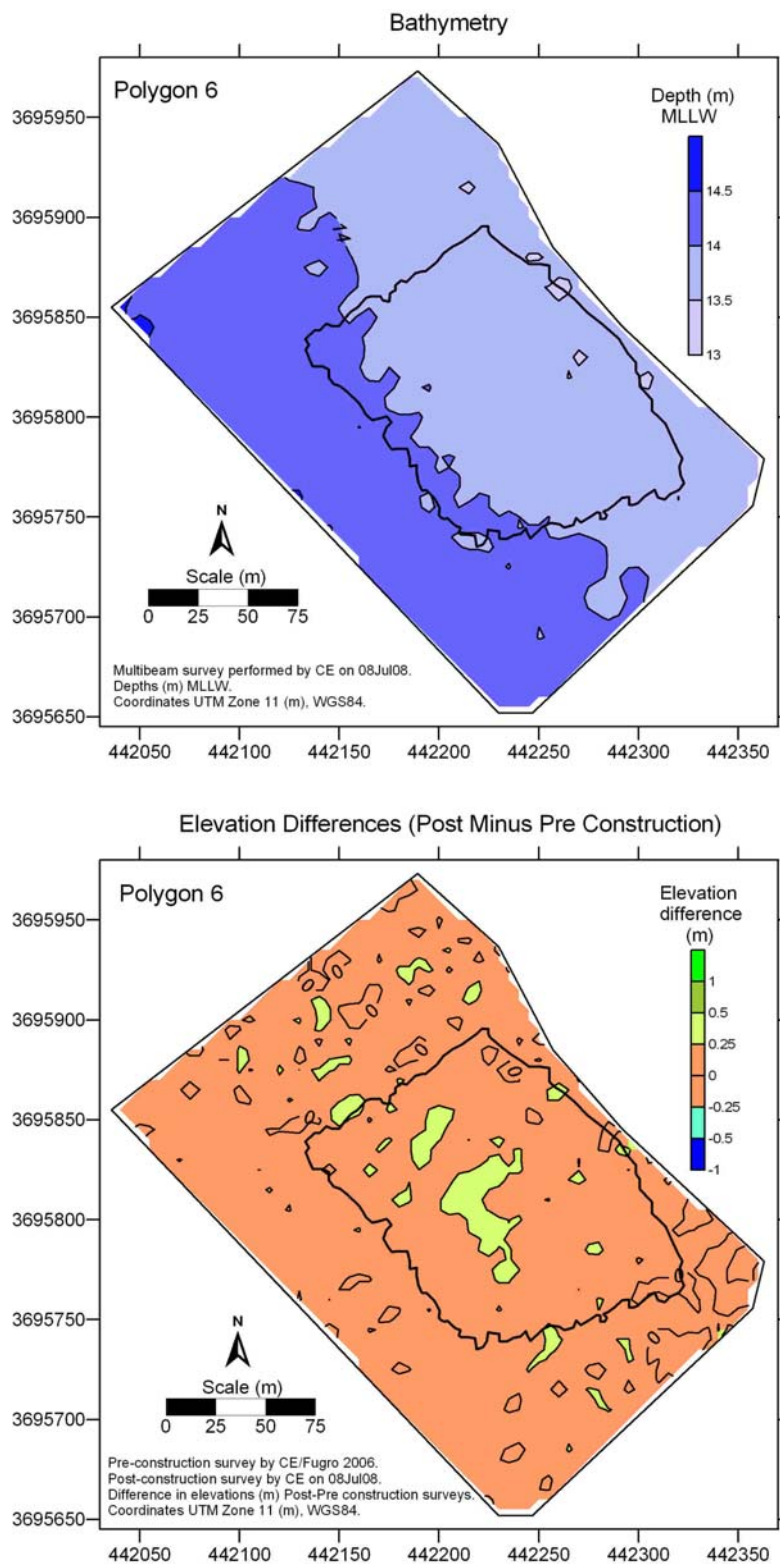


Figure F-6. Polygon 6 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

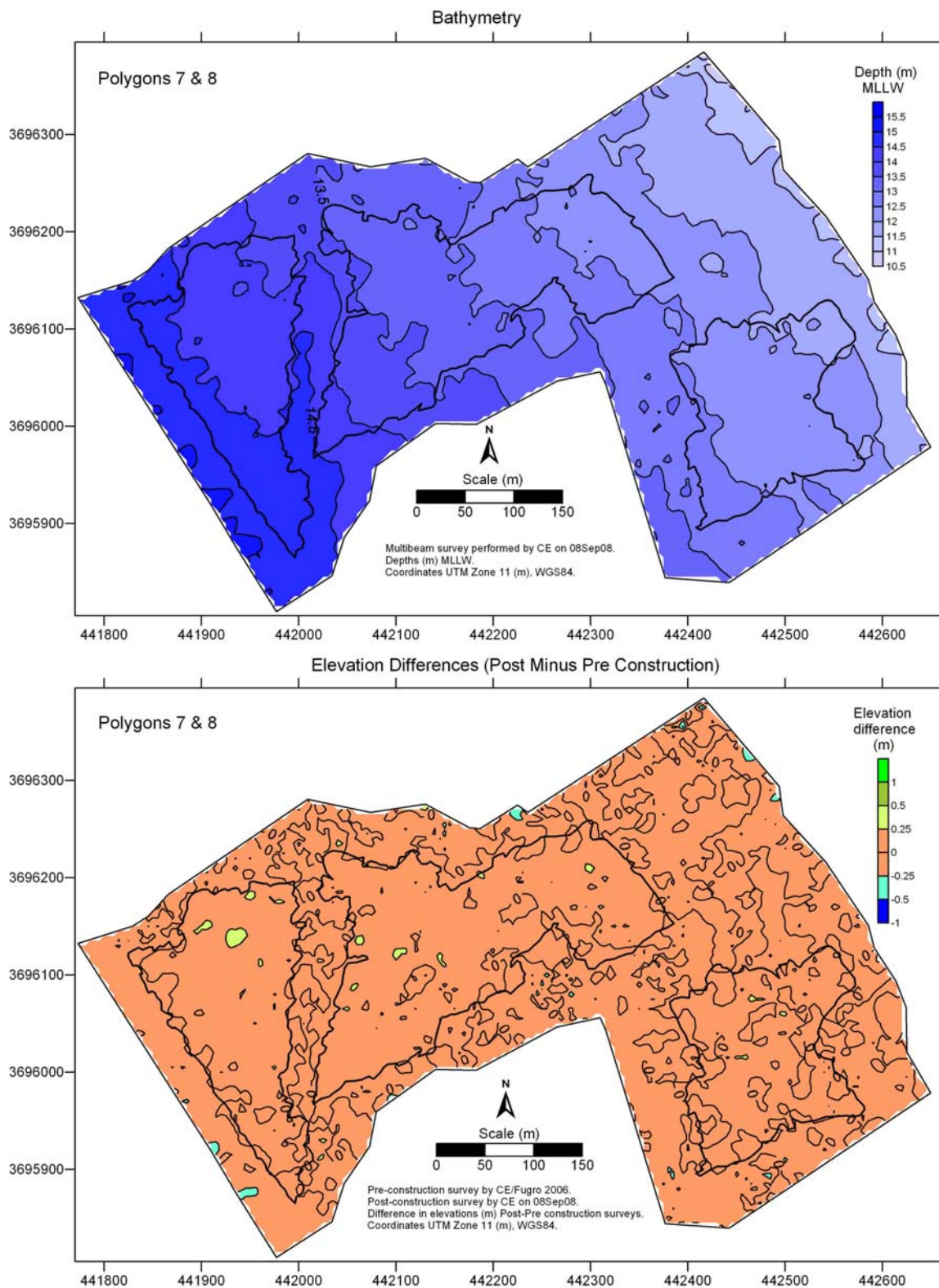


Figure F-7. Polygons 7 and 8 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

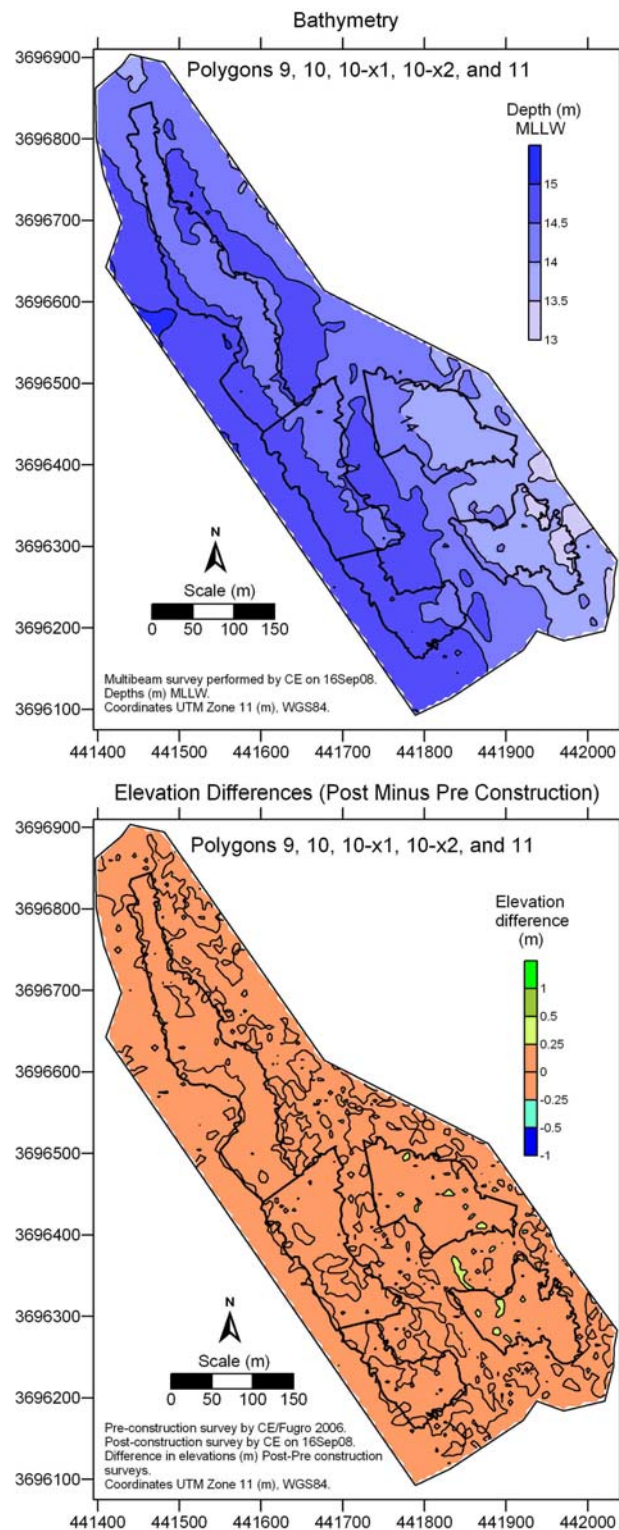


Figure F-8. Polygons 9, 10, 10-x1, 10-x2, and 11 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

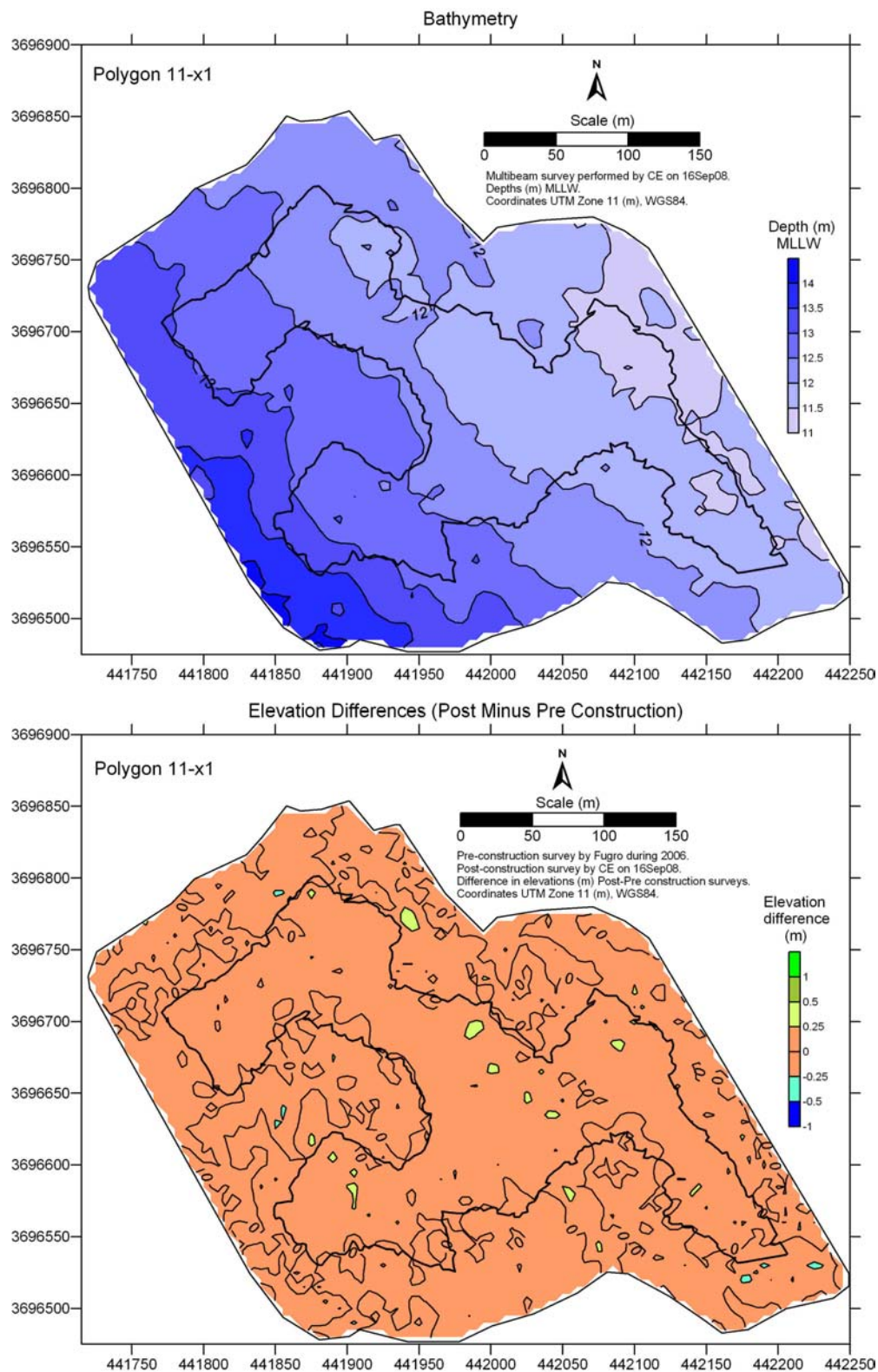


Figure F-9. Polygon 11-x1 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

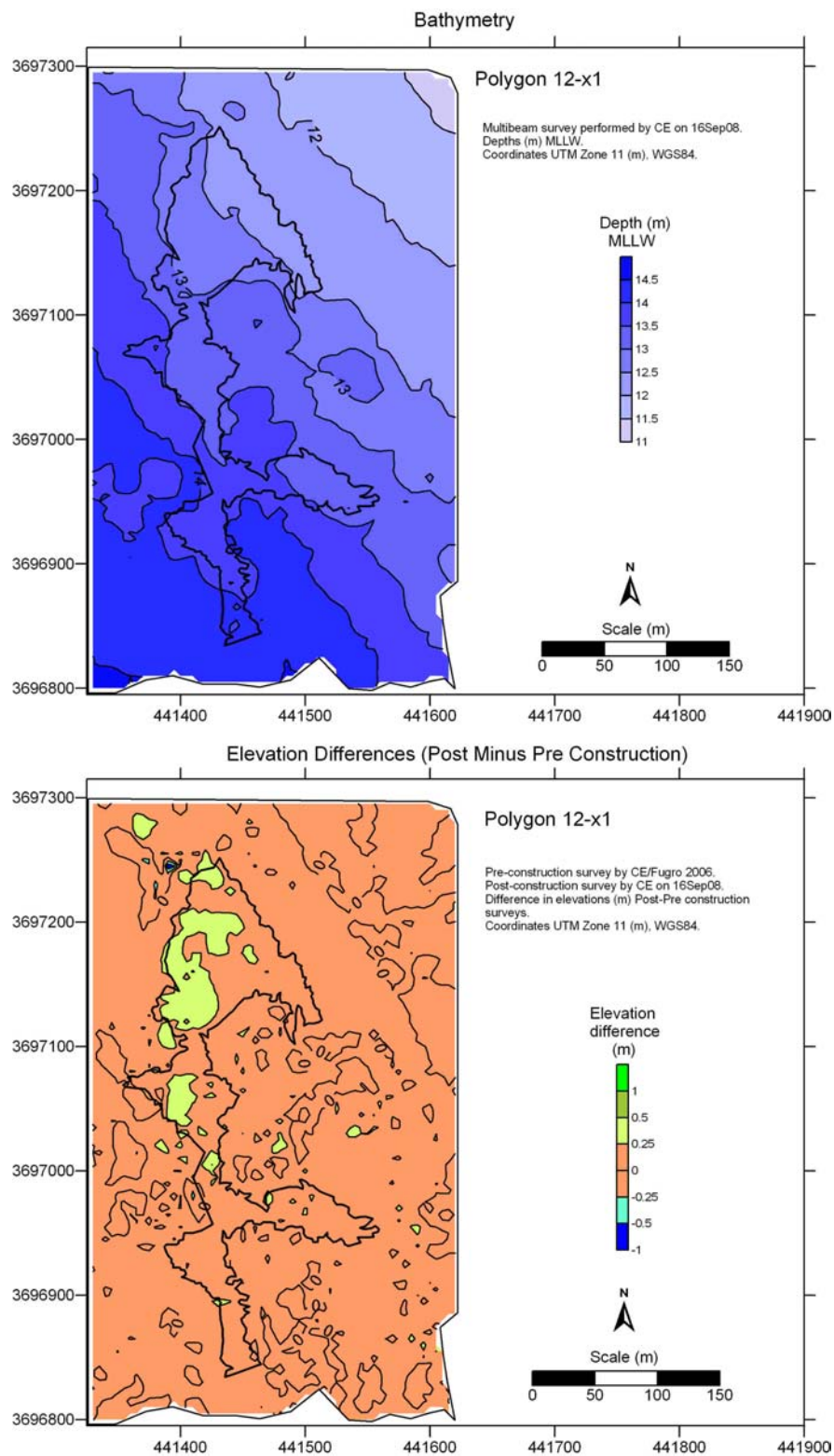


Figure F-10. Polygon 12-x1 as-built (top) bathymetry and as-built minus pre construction elevation differences (bottom).

APPENDIX G

PHOTOGRAPHS TAKEN DURING CONSTRUCTION



Photo G-1. Pebbly Beach Quarry rock, Catalina Island.



Photo G-2. Photograph taken on January 10, 2008, showing a pile of rocks from the Pebbly Beach Quarry for WNR Phase 2 construction.



Photo G-3. Rock production at Pebble Beach Quarry. Large rocks were broken into smaller rocks by the breaker (right), and small rocks were separated out by the Grizzly (left).



Photo G-4. Close-up photo of the breaker.



Photo G-5. Photograph taken on March 31, 2008, showing rock production with the separator sorting the various pile sizes.



Photo G-6. Photograph taken on March 31, 2008, showing samples of Pebbly Beach Quarry rocks.



Photo G-7. Photograph taken on March 31, 2008, showing sample of rocks from Pebbly Beach Quarry.



Photo G-8. Photograph taken on January 10, 2008, showing sample of rocks from Pebbly Beach Quarry.



Photo G-9. Photograph taken on February 19, 2008, showing rock from the Empire Quarry on Catalina Island.



Photo G-10. Photograph taken on February 19, 2008, showing typical shape of rock from the Empire Quarry.



Photo G-11. Typical anchor system.



Photo G-12. Photograph taken on June 9, 2008, showing deployment of the 15-ton mooring block.



Photo G-13. Photograph taken on June 10, 2008, showing the derrick barge at Polygon 6.



Photo G-14. Photograph taken on June 10, 2008, showing two supply barges moored farther away from the derrick barge.



Photo G-15. Photograph taken on June 10, 2008, showing the tug pulling the flat deck (supply) barge to the derrick barge.



Photo G-16. Photograph taken on June 10, 2008, showing the pile of rocks to be placed on Polygon 6.



Photo G-17. Photograph taken on August 18, 2008, showing CP moving the truck loader from the derrick barge to the rock barge with a crane.



Photo G-18. Photograph taken on June 6, 2008, demonstrating how materials are placed and spread in the ocean.



Photo G-19. Photograph taken on August 5, 2008, showing water being sprayed on the rock pile to reduce turbidity.



Photo G-20. Photograph taken on August 6, 2008, showing typical turbidity pattern caused by placing the rocks on the bottom of the ocean.



Photo G-21. Photograph taken on September 11, 2008, showing the rock materials used to construct Polygon 17 (12-x1).



Photo G-22. Photograph taken on June 11, 2008, showing a close-up of the rock used for Polygon 6. Mr. James Peeler is taking the measurements.



Photo G-23. Photograph taken on August 7, 2008, showing the on-site tug boat checking the anchor locations.



Photo G-24. Photograph taken on June 10, 2008, showing San Mateo rocks peering from the water surface.



Photo G-25. Photograph taken on August 18, 2008, demonstrating the material capacity of the front loader.



Photo G-26. Photograph taken on June 10, 2008, showing construction worker gauging the barge.



Photo G-27. Photograph taken on September 11, 2008, showing the derrick barge's anchor line control cabin and the real-time position display used to control the rock placement.

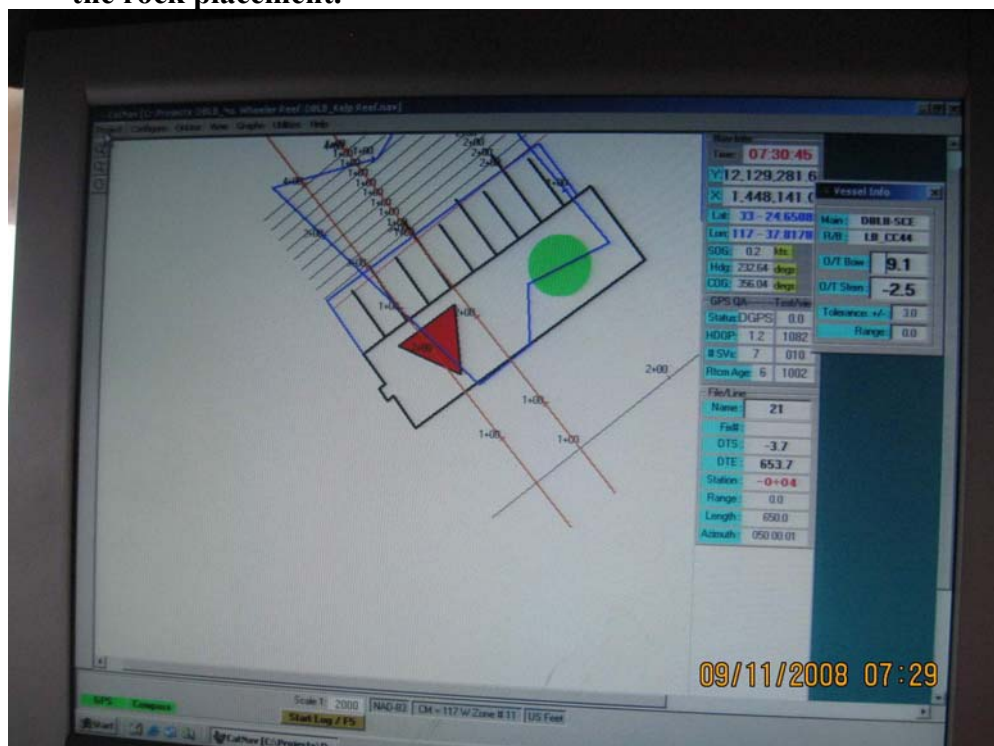


Photo G-28. Photograph taken on September 11, 2008, showing the location of the supply barge edge with respect to the placement line on a computer monitor.



Photo G-29. Photograph taken on September 12, 2008, showing the derrick barge packed to leave the site for Long Beach Harbor after completing the Phase 2 WNR.



Photo G-30. Photograph taken on September 12, 2008, showing the construction crew leaving the site after they had completed work on the Phase 2 WNR.