

NGU Report 2001.033

Norway's coastal aggregates.
Current production in 2000 and potential.
April 2001

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Summary: The Geological Survey of Norway is in the process of making out an inventory of hard rock aggregate deposits in coastal Norway. This report contains a catalogue of Norwegian coastal quarries at present in production and potential production areas along the coast of southern Norway. 9 million tons of aggregates were exported to Europe in 2000 and ca. 2 million tons was used in the offshore industry (continental shelf).			
Keywords:			
Pukkregister	Database	Fagrapport	

CONTENTS

	Page
Introduction	4
Bedrock map of Norway with important aggregate deposit	5
Norwegian aggregate for export in 2001.	6
Norwegian quarries and potential areas along the coast of South Norway.	8
Hard rock aggregates, sand and gravel and armourstone	
Maps of quarries and potential deposits of hard rock aggregate and sand/gravel in South-Norway	20

INTRODUCTION

The Norwegian production of hardrock aggregates was in 2000 ca. 34 million tons and sand/gravel 19 million tons.

8.7 million tons of aggregate and 0.3 million tons of sand and gravel were exported with an export value of NOK 417 million from 20 hard rock aggregate- and 4 sand and gravel producers from Halden in Østfold county to Møre and Romsdal (statistics compiled by NGU and the producers), pages 5 - 7. Export of hard rock aggregate represents 26 % of the total hard rock production. The majority of the quarrying companies are relatively small, catering essentially for local needs. There are, however, a number of major players including Oster Pukk og Grus A/S, NorStone, Kolo-Veidekke A.S, NCC Råstoffer, Halsvik Aggregates A/S and Franzefoss Pukk A/S. These companies each have an annual production in the order of 1-2.5 million tons. The largest individual aggregate quarry (gneiss) owned by Norsk Stein A/S had a production of approx. 2.8 million tons in 2000. Export of aggregates for use offshore, mostly in Norwegian sectors of the North Sea was 2.0 million tons in 2000. The sand- and gravel export is from three quarries in Rogaland and one in Sogn and Fjordane county.

Norway is probably northern Europe's principal **hardrock** country being composed almost entirely of Precambrian and Palaeozoic igneous and metamorphic rocks. Norway has a long, indented and rugged coastline where a considerable variety of rocks suitable for aggregate production are well exposed. Deep-water anchorage, low tidal range and a well-developed infrastructure allow for planning of harbour facilities for medium-large size bulk carriers. Norway has an attractive investment and taxation climate and overseas investment is encouraged. National and local authorities are aware of the potential for the development of large coastal quarries (super-quarries) designed for the production and export of rock aggregates. The Geological Survey of Norway (NGU) is undertaking a number of investigations of potential coastal sites for such quarries, so that local government planners, can classify such sites for future development. In Bremanger kommune two new quarries are planned and will start production of green sandstone in 2001/2003 with PSV from 58 to 62.

NGU is planning to map, together with counties, local authorities and industry the potential for new coastal rock units for which environmental, topographic and transport criteria would allow quarrying.

The Gravel- and Aggregate database has been on internet from January 1999, <http://grusogpukk.ngu.no/> or <http://www.ngu.no>

The next report will come in April 2002.

Trondheim, 11th April 2001



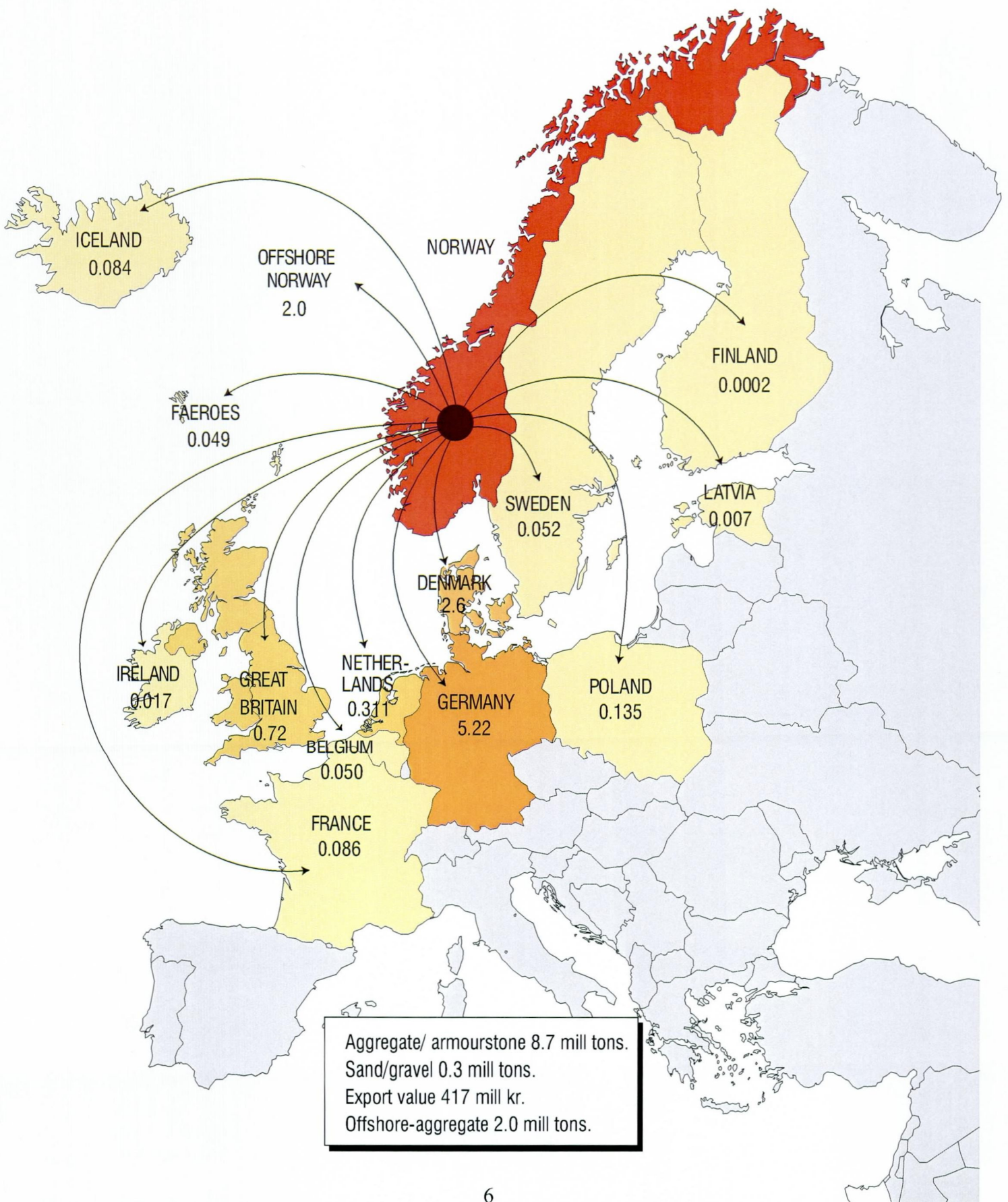
Peer-Richard Neeb
Program Manager
Mineral Resources

BEDROCK MAP OF NORWAY WITH IMPORTANT AGGREGATE DEPOSITS

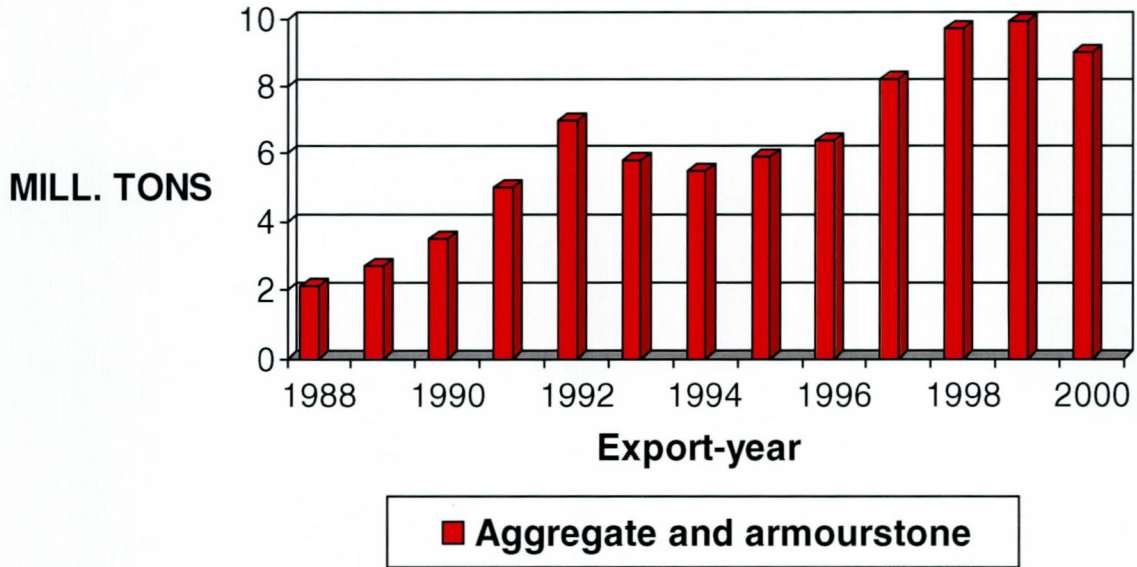


NORWEGIAN AGGREGATE FOR EXPORT IN 2000

Total production 11 mill tons aggregate, armourstone, sand and gravel



AGGREGATE EXPORT 1988-2000



NORWEGIAN QUARRIES AND POTENTIAL AREAS ALONG THE COAST OF SOUTH NORWAY. HARD ROCK AGGREGATES AND ARMOURSTONE. NUMBER REFERENCE TO ENCLOSED MAPS

<http://grusogpukk.ngu.no/>

Østfold County

No. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
0104-501 Moss	Moss pukkverk		Knut E. Skolt	69 25 13 29	69 25 04 86	Gabbro			2.66 – 2.98	
0105-501 Sarpsborg	Sarpsborg pukkverk		Knut E. Skolt	69 25 13 29	69 25 04 86	Gneiss-granite			2.63	
0101-501 Halden	Kolo - Veidekke A.S. Sauøya Pukkverk Halden, Postboks 70 1580 Rygge	Export before -99	Lars Hovland	69 18 15 02 90 02 08 43	69 18 12 82	Gneiss-granite Grey			2.60	
0101-xxx Halden	Brekke Iddefjorden Rute 503 1733 Halden	Export 97/98	Tore Brekke	69 19 71 07		Granite Grey			2.65	
0101-506 Halden	NorStone as, Svingen		Terje Holt	69 19 53 61	69 19 50 74	Gneiss/grey				

Vestfold County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other	
							Los Angeles	PSV	Density		
0709-511	NCC Råstoffer avd Hedrum- og Tjølling Pukkverk, Postboks 2073, 3255 Larvik	x	Hege Thrones/ Erik Sørensen	33 13 69 60	33 13 69 79	Syenite/Larvikite Grey-black	30.9	48	2.72 – 2.73	Hedrum	
709-501									31.2	48	2.71
0709-xxx Larvik		Svartbukt				Potential			Syenite/Larvikite Grey-black	24.5	48
0718-503 Ramnes	Kolo - Veidekke A.S Himberg Pukkverk 3175 Ramnes	x	Steinar Frellumstad	33 39 65 54	33 39 51 95	Syenite Grey	19.0 – 23.2	50	2.62 – 2.74		
0713-508 Sande	Sando Kalk og Pukk- servise AS	Closed	Nils Chr. Gevelt	32 85 09 30	32 85 20 56	Carbonate White	19.4	57	2.78		
0711-506 Svelvik	Juve pukkverk A/S, 3060 Svelvik	x	Guri Olsen	33 77 20 15		Granite Red	23.7 – 27.4		2.50 – 2.60		

Telemark County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
0806-501 Skien	NCC Skien pukkverk AS, Voldsfjorden Havnevn. 22 3739 Skien	x	Per Særen	35 90 04 44	35 90 04 41	Gneiss	35.8		2.65	Franzefoss Bruk A/S in 2000
0815-509 Kragere	NCC Valberg 3770 Kragere	x	Frode Jørgensen	35 98 99 40	35 98 99 41	Gabbro Black	15 - 20	51	2.90 – 3.11	Franzefoss Bruk A/S in 2000

Aust-Agder County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
0901-506 Risør	Franzefoss Bruk A/S Ravneberget 4990 Søndeland		Eigil Runsag	67 15 20 00 37 15 61 87	67 15 20 01 37 15 62 73	Gabbro			3.03	
0904-516 Grimstad	Landvik pukkverk Postboks 481 4801 Arendal		Oddvar Madsen			Gabbro				
0906-502 Arendal	Klodeborg pukkverk Postb. 1701, Myrene 4801 Arendal		Oddvar Madsen		37 09 49 72	Gneiss				

Vest-Agder County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1001-508 Kristiansand	Ringknuten pukkverk A/S Postboks 1121 Lundsiden 4602 Kristiansand S		Karsten Reme	38 17 91 00	38 09 72 08	Gneiss			2.60 – 2.70	
1029-xxx Lindesnes	Kolo - Veidekke A.S Båly Pukkverk Lindesnes kommune	x	Lars Hovland	69 28 31 00 90 02 08 43	69 28 31 20	Gneiss/granite				
1032-501 Lyngdal	Kolo - Veidekke A.S Hausvik Pukkverk Postboks 70, 1580 Rygge	In production 2000	Lars Hovland	69 28 31 00 90 02 08 43	69 28 31 20	Gneiss/granite	24.4	50	2.73	

Rogaland County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1101-501 1101-502 Eigersund	K.S. Norwegian Edelsplit 4375 Hegrestad	x	Anders Hovland	51 46 11 80 / 51 49 68 77	51 49 66 54	Anorthosite White	11.9 - 17	42 - 55 42	2.69 – 2.77	
1101-503 Eigersund	Ramslund pukk A.S, Hellvik 4387 Bjerkreim		Paul Ramslund local marked	51 45 01 88 51 49 68 77	51 45 01 11	Anorthosite White	12.3	54	2.78	
1111-501 Sokndal	NCC råstoffer avd Fjordstein, Rekefjord/ Helle 4380 Hauge i Dalane	x	Geir Berg Pål Tjøme	51 47 08 00	51 47 08 44	Anorthosite/ Norite	18	51 53	2.75 3.16	Anorthosite Norite
1134-501 Suldal	Norsk Stein A/S Jelsa, Berakvam Postboks 169 4230 Sand,	x	Vigleik Sirmes Per Nerheim	52 79 29 00	52 79 29 01	Gneiss	15.4 – 18.0	53 - 58	2.76 – 2.79	
1122-501 Gjesdal	NorStone a.s NorStone Dirdal 4335 Dirdal	x	Bjarne Bersagel	51 67 61 00	51 67 61 01	Gneiss	24.3	48	2.76 – 3.0	
1130-501 Strand	NorStone a.s NorStoneTau 4120 Tau	x	Bjarne Bersagel	51 67 61 00	51 67 61 01	Mylonite Quartz diorite	10.5 – 10.8	55 – 57	2.77 – 2.80	Tau, new quarry
1146-506 Tysvær	Amrock J.V. A/S Espevik,5560 Hinderåvåg, Tysvær	x	Odd Hotdvedt	52 75 42 30 94 61 34 62	52 77 89 33	Granite	23.5 – 25.9	52 - 56	2.65	
1154-502 Vindafjord	Knapphus knuseverk Toraneset Øvre Vats 5576		Svein Ove Tyssebotn	53 76 39 16		Granite			2.71	
1133-018 Årdal	NorStone Årdal 4137 Årdal i Ryfylke	x	Bjarne Bersagel	51 67 61 00	51 67 61 01	Sand/gravel				
1122-13/14 Gjesdal	Lemminkainen Norge A/S Sandnes 4033 Stavanger Avd. Vølstad	x	Rolf Stangeland	51 57 90 50	51 57 54 17	Sand/gravel				

Rogaland County - Potential deposit of aggregate

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1103-503	Ådnanesnuten Strand kommune	Potential				Augen gneiss			2.66	
1141-501	Sørevågen Finnøy kommune	Potential				Gneiss			2.75	
1145-501	Sønnaland Bokn kommune	Potential				Gneiss			2.64	
1146-503	Ramsvika Tysvær kommune	Potential				Gneiss			2.67	
1134-503	Ersdal Suldal kmmune	Potential				Gneiss			2.73	
1154-505	Rafoss Invest AS, Vindafjord Rock Company AS,Raunes Vindafjord komm.	Potential		53 76 12 00 NGU	53 76 05 20	Gneiss	21.4 – 40.3	51 – 54	2.62 – 2.71	
1111-504	Sokndal-Jøssingfjord Noran A/S	Potential quarry	Steinar Melgren	66 78 75 65	66 78 72 67	Anorthosite				
1111-503	Hauge i Dalane, Sokndal Titania a/s	Potential	Ragnar Hagen	51 47 80 00	51 47 80 10	Anorthosite	24.1	48	2.88	

Hordaland County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1247-501	NorStone a.s NorStone Askøy 5328 Herdla	x	Tore Dale Bjarne Bersagel	56 14 67 90 51 67 61 00	56 14 68 10 51 67 61 01	Mylonite			2.60	
1263-501 Lindås	Eikefæt pukkverk Oster pukk og sand A/S Ø. Muralm. 1, 5012 Bergen	x	Jostein Gjesdal	55 36 30 00	55 36 30 10	Granite-gneiss		53	2.65 – 2.70	
1246-501 Fjell	Sotra Pukk A/S, Eide Ø. Muralm. 1, 5012 Bergen	x	Jostein Gjesdal	Granite-gneiss	55 36 30 00	55 36 30 10		54	2.64	
1224 xxx/xxx Kvinnherad	Mauranger Stein A/S 5464 Dimmelsvik		Johannes Hjelmeland	Granite-gneiss	53 48 30 70 41683070	56 55 60 57		52	2.72	

Hordaland County - Potential deposit of aggregate

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1211-502	Timpeltut, 5590 Etne Etne kommune	Potential	Mr Vestbø	53 75 62 11	53 75 63 55	Gabbro Black			2.91	
1222-504	Svartasmoget, SIM, 5410 Sagvåg Fitjar kommune	Potential	Terje Gilje	53 45 78 50	53 45 78 60	Granite			2.76	
1222-xxx	Gabbro Stone, Rauholmen box 344, 546224 Varnersberg, Sverige	Potential	Arvid Andersen	467086640955		Gabbro				
1222-xxx	Landasåtane, 5419 Fitjar	Potential	Fitjar kommune	53 49 71 01	53 49 73 97	Amphibolite				

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
	Fitjar kommune									
1227-502	Herand, Hardanger Rock Company, Postboks 22, Jondal Jondal kommune	Potential envirnmental problems	Steinar Fylling	91 10 70 25 70 14 22 60	70 14 00 23	Gneiss-granite			2.65	
1245-502	Sund Granitt AS, Nova Maritime Service A/S Postboks 3703, 5845 Bergen, Lundaneset, Sund kommune	Potential	Jan Johnsen	55 12 35 50	55 12 48 90	Gneiss-granite	10.6 – 15.2	50 - 56	2.64	
1266-505	Eikemo Steinbrot Masfjorden	Potential	Tore Svendsen	56 36 51 00	56 36 51 05	Gneiss	25.9 – 31.1	52 - 55	2.65	
1263-504	Hodna, 5110 Isdalsstø Lindås kommune	Potential		56 35 05 55	56 35 28 00	Gabbro				
1246-505	Vindenes, Aktivest, Postboks 244, 5353 Straume, Fjell kommune	Potential	Harald Smedal	56 32 0055	56 32 01 60	Gneiss			2.74	
1241-xxx	Matland, 5640 Eikelandsosen Fusa kommune	Potential	Fusa kommune	56 56 11 00	56 58 13 38	Gneiss				
1223-501	Steinåsen, 5685 Uggdal Tysnes kommune	Potential		53 42 22 22	53 43 21 81	Quartzdiorite			3.03	
1216-xxx	Ålfjorden, 5520 Sveio, Sveio komm.	Potential	Sveio kommune	53 74 01 00	52 74 00 96	Gneiss-granite				
1216-xxx	Mjuk, 5520 Sveio Sveio kommune	Potential	Sveio kommune	53 74 01 00	52 74 00 96	Gneiss-granite				
1214-501	Vardåsen, 5580 Ølen Ølen kommune	Potential	Ølen kommune	53 76 81 66	53 76 82 52	Granite			2.65	

Sogn og Fjordane County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1411-504 Gulen	Halsvik Aggregates A/S, Sløvåg, 5960 Dalsøyra	x	Lars Hellandsjø	57 78 38 40	57 78 38 76	Gneiss	19,5 – 22,3	57	2,67 – 2.71	
1421-539 Aurland	Gudvangen stein, Bryalii 153, 5700 Voss	x	Sigmund Bjerke	56 52 34 65 94 68 25 20	56 52 34 61	Anorthosite White	15.2	60	2,88 – 3.04	
1424-501 Årdal	Årdalitt A/S Offerdal, 6146 Åheim		Henning Hansen	70 02 43 22		Trondhjemite				
1413-504 Hyllestad	Hyllestad Pukk A/S 6957 Hyllestad	x	Leidvin Hjartholm 5961 Brekke	57 78 23 06 57 78 88 63 95 16 60 11	57 78 23 07	Trondhjemite/- quartzdiorite white granite		50	2,63	
1433-504 Naustal	Fjordblokk A/S Engebø, Nausdal	Closed 99		NGU		Eclogite	9.5 – 12.6	51 – 53	3.31 3.38	
1420-501 Sogndal	Sogndal Pukkverk Fredheim Maskin og Betong A/S , 6856 Sogndal		Arvid Fredheim	57 67 84 46 90 51 33 66	57 67 88 14	Anorthosite			2.93	
1401-514 Flora	Havrøy Pukkverk Flora	Closed				Anorthosite				
1416-046 Høyanger	Bjordal Sandindustri A/S 6949 Bjordal	x	Helge Bjordal	57 71 02 80 57 71 02 52	57 71 02 81	Sand/gravel				

Sogn og Fjordane County - Potential deposit of aggregate

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1438-xxx	Bremanger Quarry A.S, Dyrstad 6723 Svelgen Bremanger kommune	Potential Starting production 2000	Joop Bouwman Postboks 64 4557 Vanse	38 39 43 00	38 39 43 84	Sandstone Green				
1438-514	Bremanger Aggregates, Gulestø, Bremanger kommune	Potential	NGU	73 90 40 00	73 92 16 20	Sandstone Green	13	57 – 58	2.74	
1438-504 and 510	Gotraneset - Skipperdalen Bremanger kommune	Potential	NGU			Trondhemite Grey/white	14.7 – 17.2	50 - 58	2.68 – 2.71	
1401-506	Beidvik, Durmålhornet Flora kommune	Potential	NGU			Sandstone Green	11.8	56	2.74	
1412-501	West Stein A/S, Postboks 258 2381 Brumundal Daløy, Solund kommune	Potential	Geir Skjelstad	62 36 84 55	62 36 86 03	Conglomerate			2.80	

Møre og Romsdal County

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1516-505 Ulstein	Kvalnes pukkverk Ulstein Betongindustri A/S 6072 Haddal			70 01 60 04		Gneiss/granite			2.67 – 2.70	

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1504-501 Ålesund	Kolo -Veidekke AS Ålesund 6019 Ålesund		Magne Mørkedal	70 17 54 00 94 73 63 76	70 17 54 10	Gneiss			2.65 – 2.72	
1504-502 Ålesund	Ufo pukkverk Nodest vei A/S 6010 Spjelkavik		Tore Rødal	70 14 19 00		Gneiss			2.69 – 2.71	
1523-501 Ørskog	Skjøholt pukkverk 6240 Sjøholt		Karl Vaksvik Vaksvik Maskin	70 27 30 52	70 27 31 02	Dioritic-Gneiss			2.77 – 2.85	
1543-522 Neset	Kolo-Veidekke A.S Raudsand 6462 Raudsand		Magne Mørkedal	71 23 31 00	71 23 31 02	Gneiss/granite			2.60 – 2.66	
1551-508 Eide	Visnes Eklogitt A.S 6493 Lyngstad	Export -98	Karl Johan Eide	71 29 56 05	71 29 55 70	Eclogite	21.9	59 – 61	3.14	
1548-512 Fræna	Viken Pukkverk A/S 1548 Fræna	x	Gunder Viken	71 26 93 78	71 26 93 76	Gneiss			2.9	New export

Møre og Romsdal County - Potential deposit of aggregate

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1523-502 Ørskog kommune	Viset pukkverk A.S Jønningshagen 40, 4316 Sandnes	Potential In planning	Alf Follo	51 62 43 18		Gabbro black	11.9	52	3.13	
1547-502	Hollingen Aukra kommune	Potential				Gneiss-granite			2.63	
1543-501 Neset kommune	Breidvik	Potential				Gabbro			3.20	
1560-503 Tingvoll	Hammaren	Potential				Gabbro			3.15	
1566-501 Tingvoll kommune	Durmålhaugen pukkverk A.S Jønningshagen 40,	Potential In planning	Alf Follo	51 62 43 18		Gneiss/granite	26	52	2.69	

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
	4316 Sandnes									
1560-501 Sumadal	Settem	Potential				Amphibolite/ tonalite			2.85	

Sør-Trøndelag/ Nord-Trøndelag Counties

Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1617-501 Hitra	Hitra Bergverk 7240 Fillan		Åge Kaasbøll	72 44 14 85	72 44 15 04	Granodiorite			2.65	
1621-501 Ørland	Kolo Veidekke A.S Ottersbo pukkverk 7140 Opphaug		Ketil Oksvold	73 82 35 00 72 52 27 80	72 52 10 80	Mylonite			2.74 – 2.78	
1627-505 Bjugn	Bjugn Pukkverk, Valsneset NCC Anlegg Liaveien 8, 5132 Nyborg		Torkjell Eskeland	55 18 54 00	55 18 76 40	Gneiss			2.77 – 2.81	
1633-501 Osen	Nord-Fosen pukkverk 7740 Steinsdalen	Offshore stone	Jon E Høvik	72 57 78 90 72 57 78 62	72 57 78 68	Granodiorite	27.4 – 47.5		2.67 – 2.69	
1724.001.04 Rissa/Verran	Ørsjødalen Verran Grus A/S 7797 Verabotn		Per Jarle Vigum	74 15 72 22		Sand/gravel				Sand/gravel production

Sør-Trøndelag County - Potential deposit of aggregate

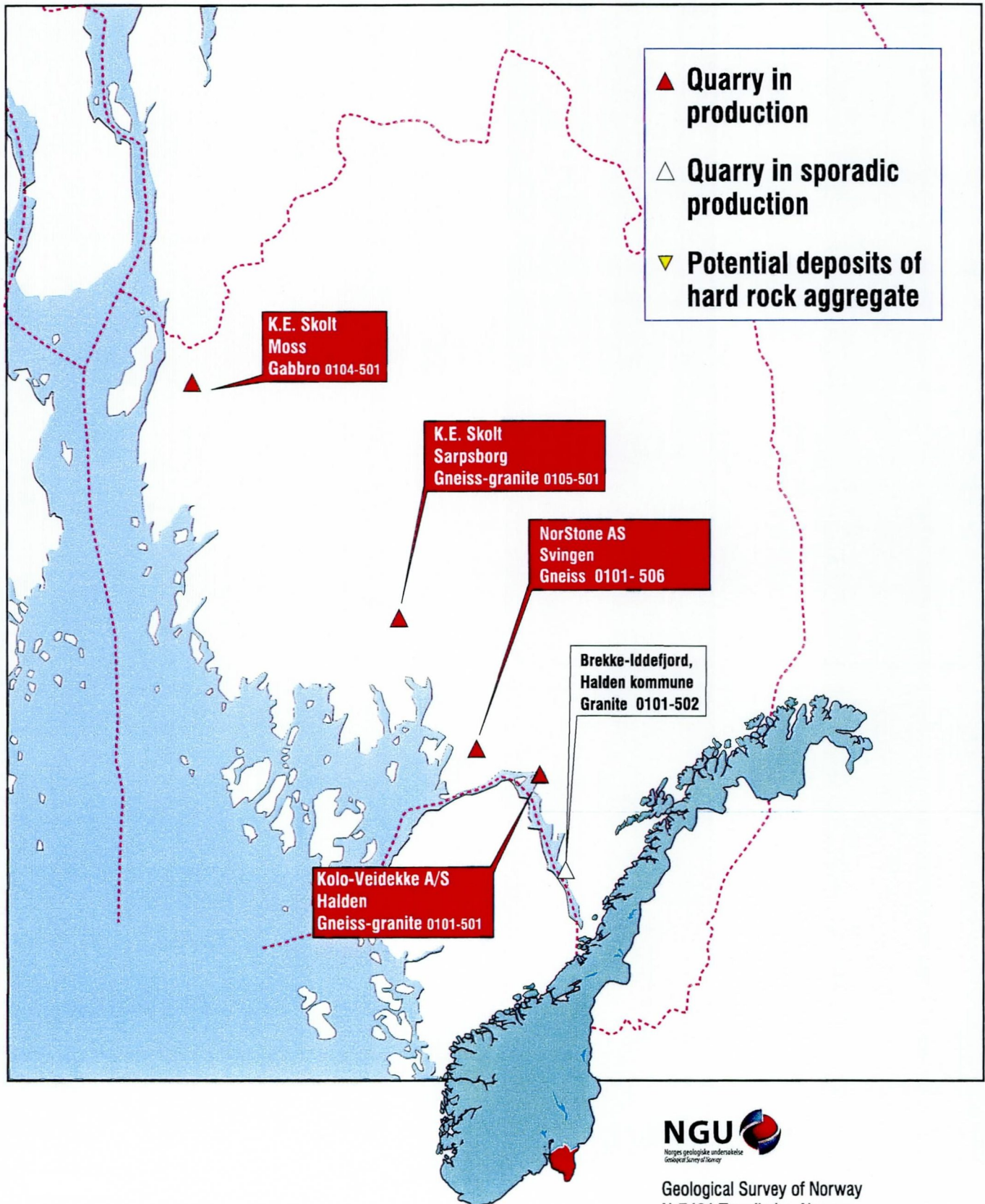
Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
1617-515	Korskammen Hitra kommune	Potential				Granodiorite Grey/white			2.70 – 2.75	
1630-506	Raudhammaren	Potential	NGU			Granite/				

Nr. Commune	Production place	Potential	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
	Åfjord kommune					amphibolite				
1633-502	Langstrandheia Osen kommune	Potential	NGU			Granite-gneiss	37.9 – 70.7	54 -61	2.62 – 2.78	
1612-506/507	Gjøbergshelia/ Kammen Hemne kommune	Potential new	NGU			Gneiss	23.3	52	2.68	
							27.2	46	2.61	
1613-505	Stokkaffjellet Snillfjord kommune	Potential new	NGU Snillfjord kommune	72 45 55 55	72 45 55 97	Gneiss	19.6	53	2.64	

Finnmark County

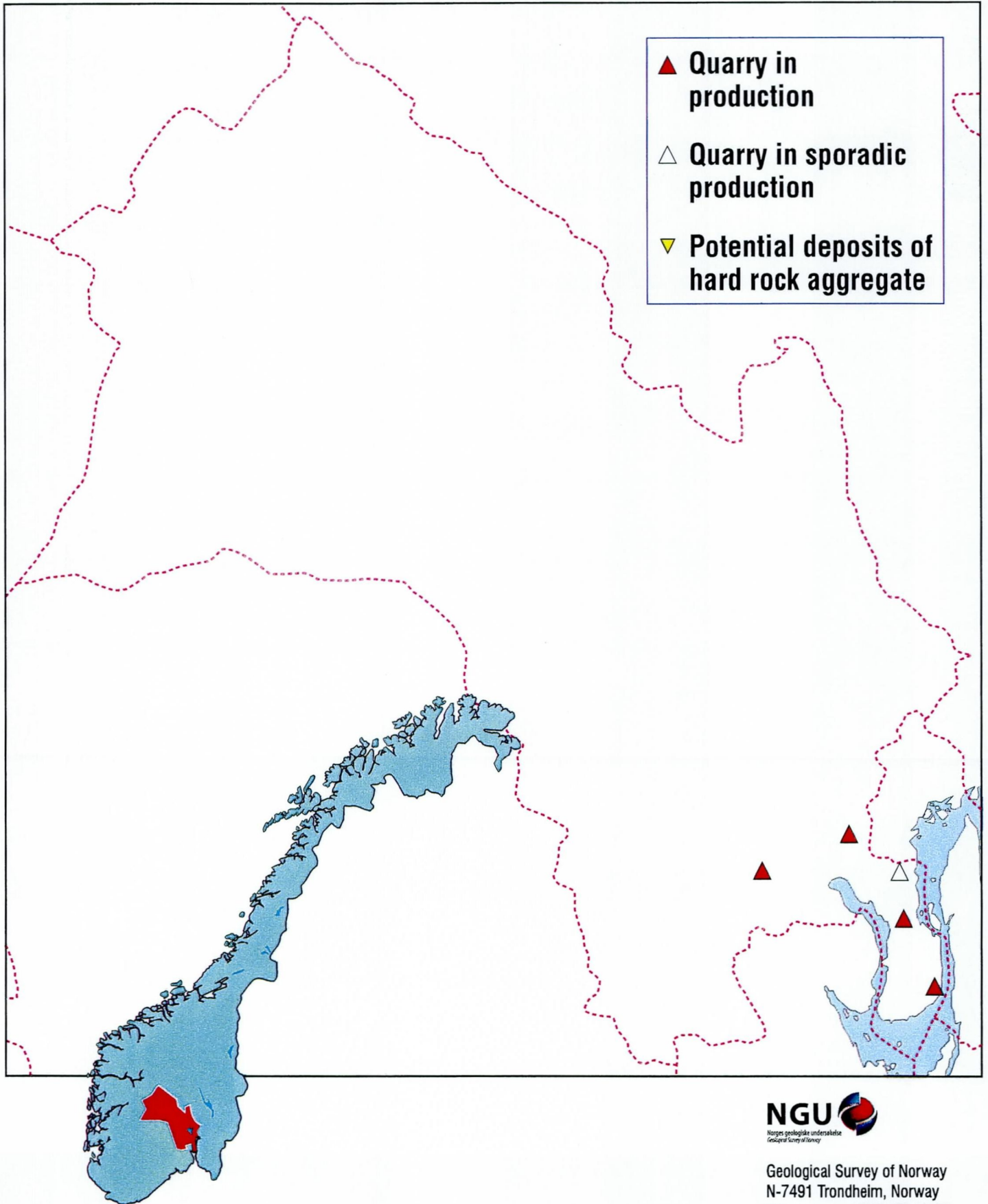
Nr. Commune	Production place	Export today	Contact person	Telephone	Fax-number	Bedrock/ colour	Quality			Other
							Los Angeles	PSV	Density	
2017-501 Kvalsund	Reprock AS		Leander Paulsen	75 05 65 14		Quartzite/grey				
2030-501 Sør - Varanger	Bjørnevatn Kirkenes Utvikling AS, Post boks 220 9915 Kirkenes	Waste from iron mine	Trond Dahlberg	78 99 48 00	78 99 48 10	Gneiss Grey	12 – 18	54 – 56	2.75-3.02	

QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN ØSTFOLD COUNTY



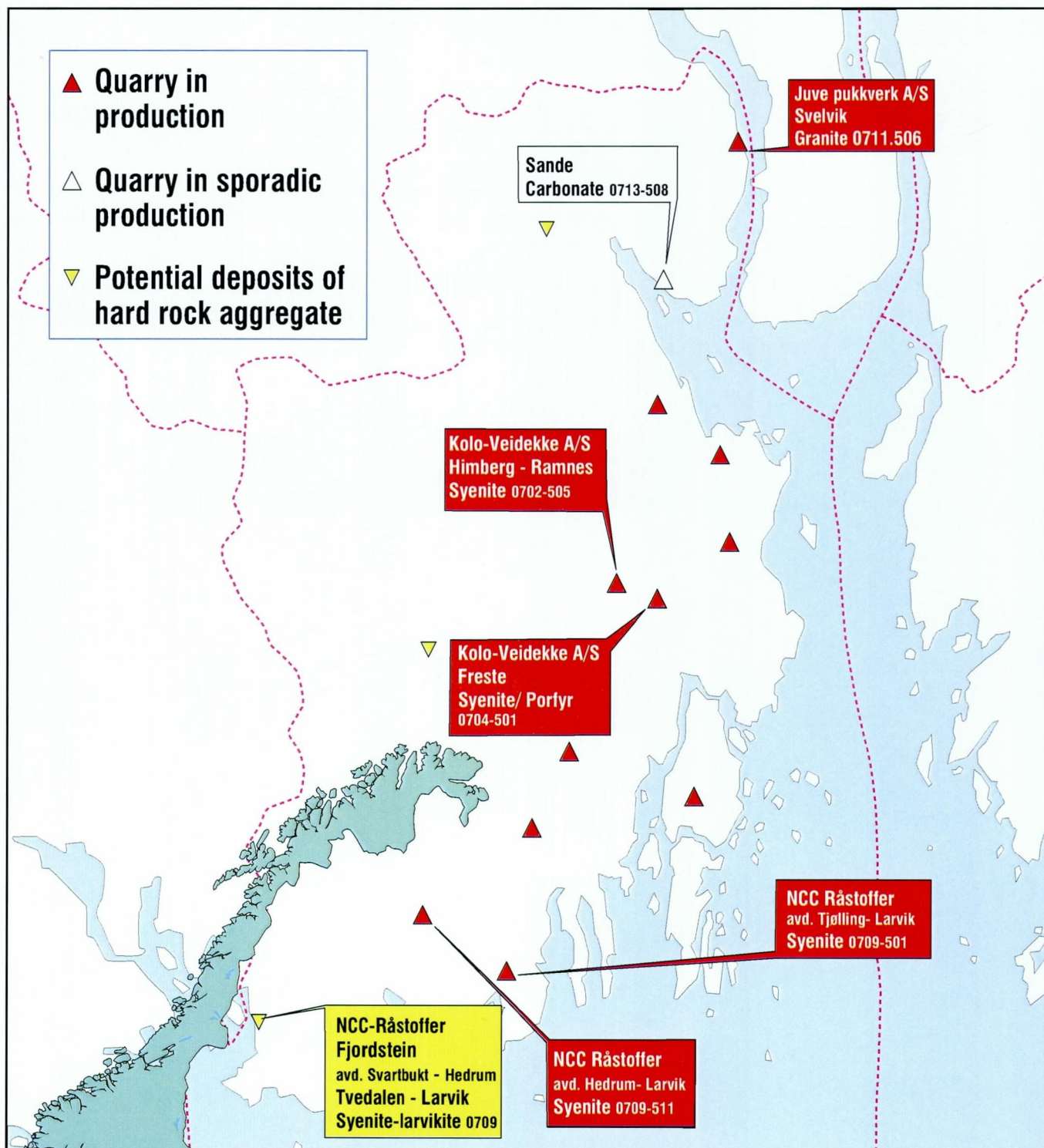
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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN BUSKERUD COUNTY



Geological Survey of Norway
N-7491 Trondheim, Norway
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Telefax: 47 73 92 16 20

QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN VESTFOLD COUNTY

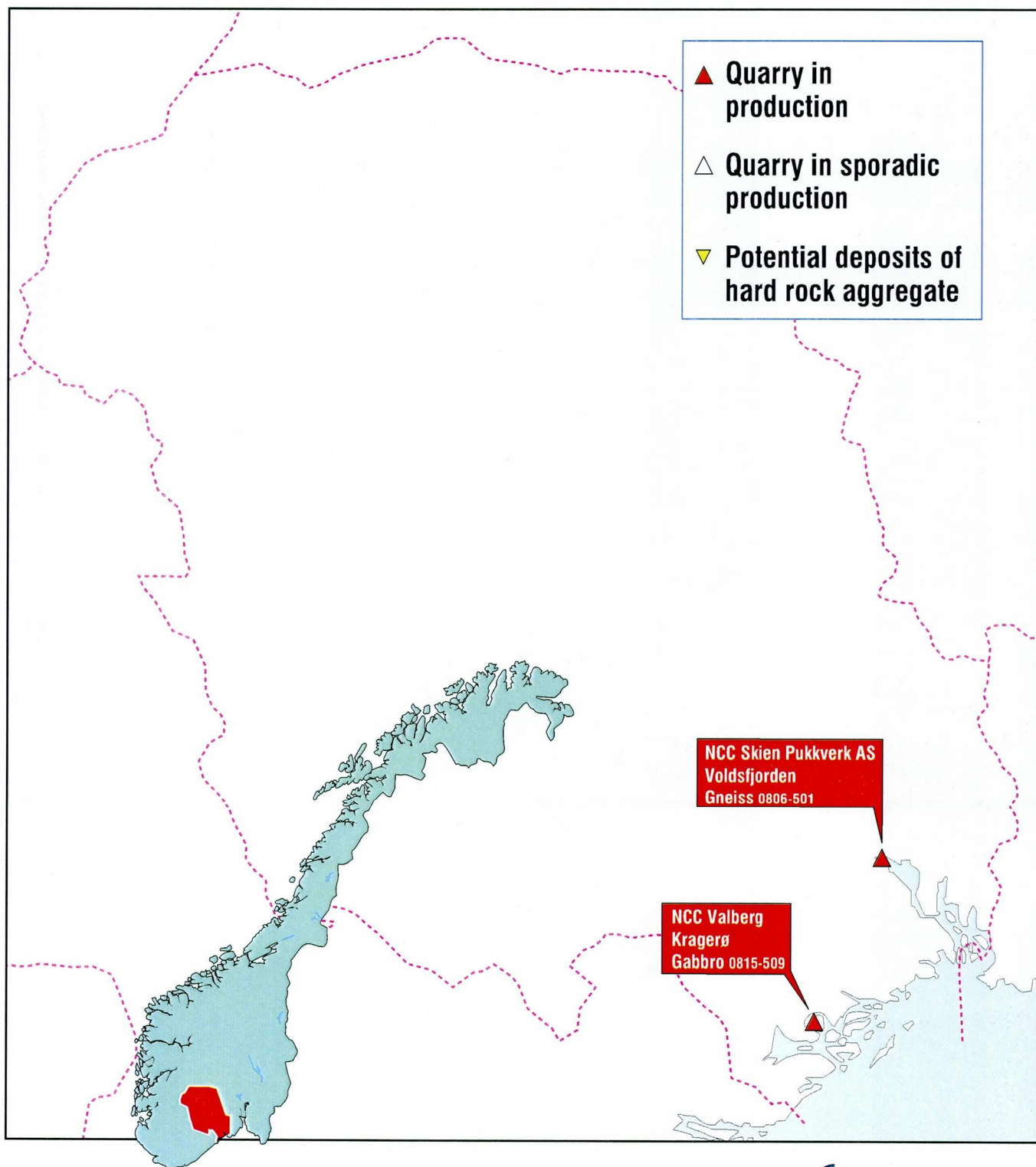


April 2001



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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN TELEMARK COUNTY

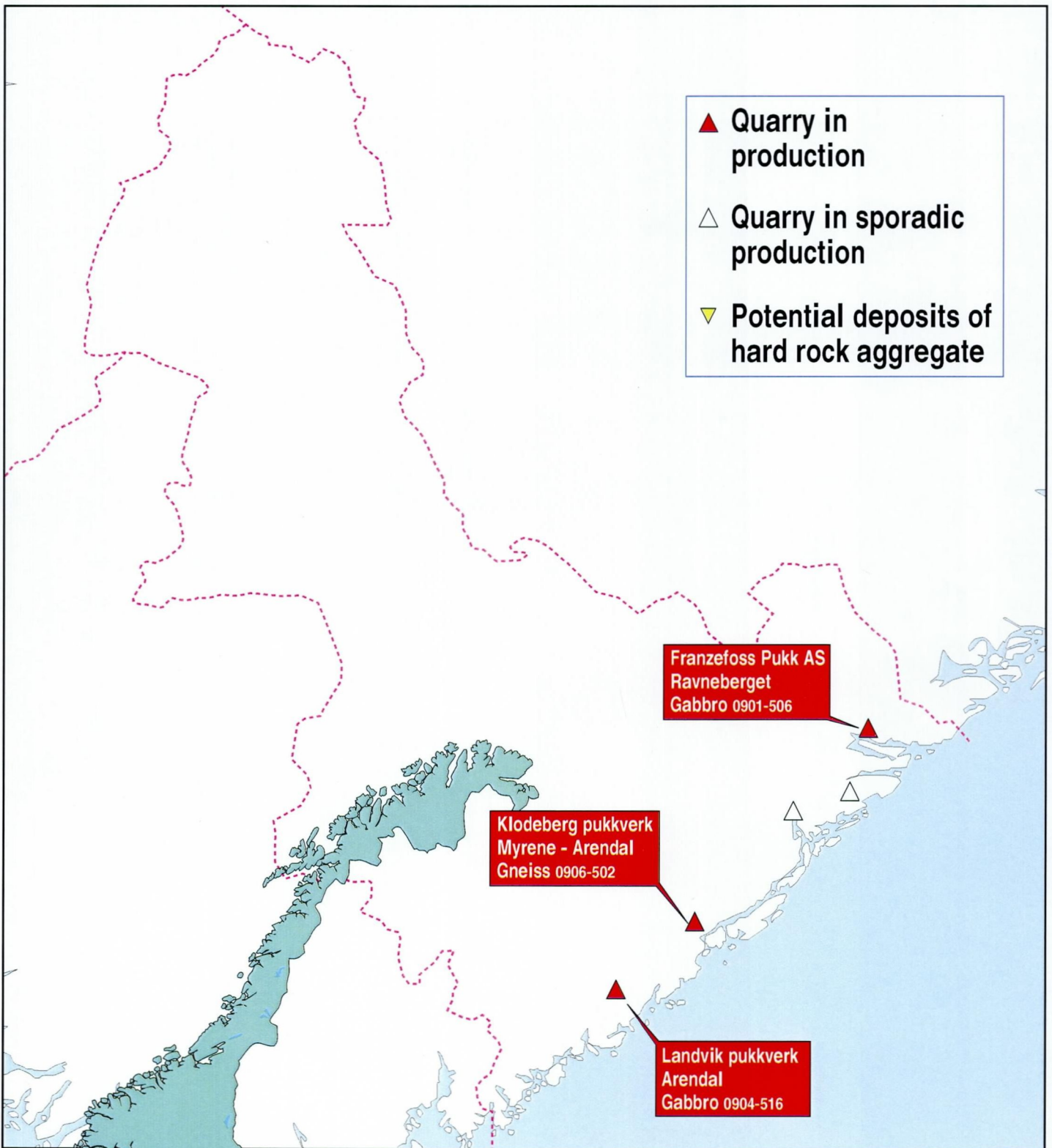


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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN AUST-AGDER COUNTY



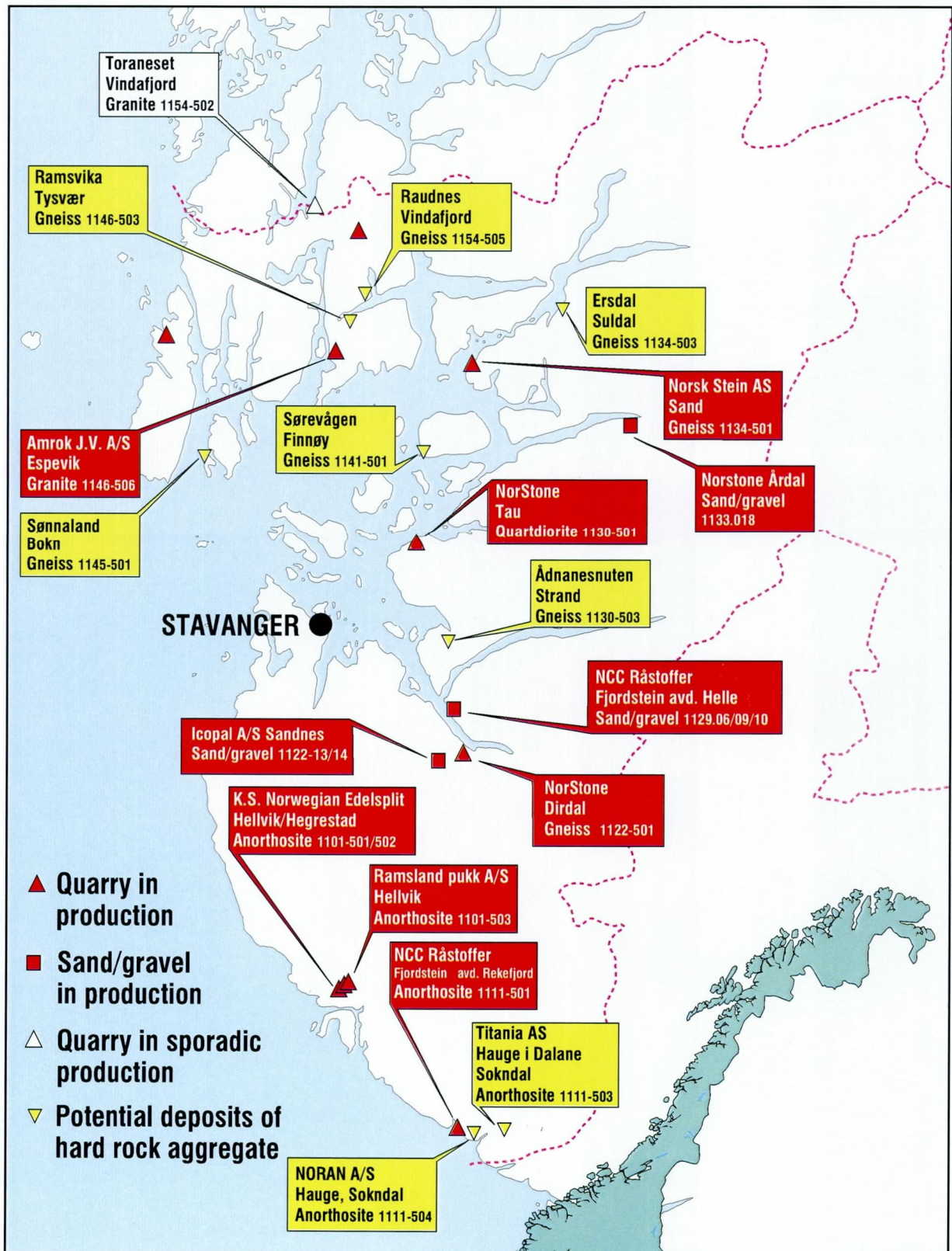
Geological Survey of Norway
Leiv Eirikssons vei 39
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Telefax: 47 73 92 16 20

QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN VEST-AGDER COUNTY



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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN ROGALAND COUNTY

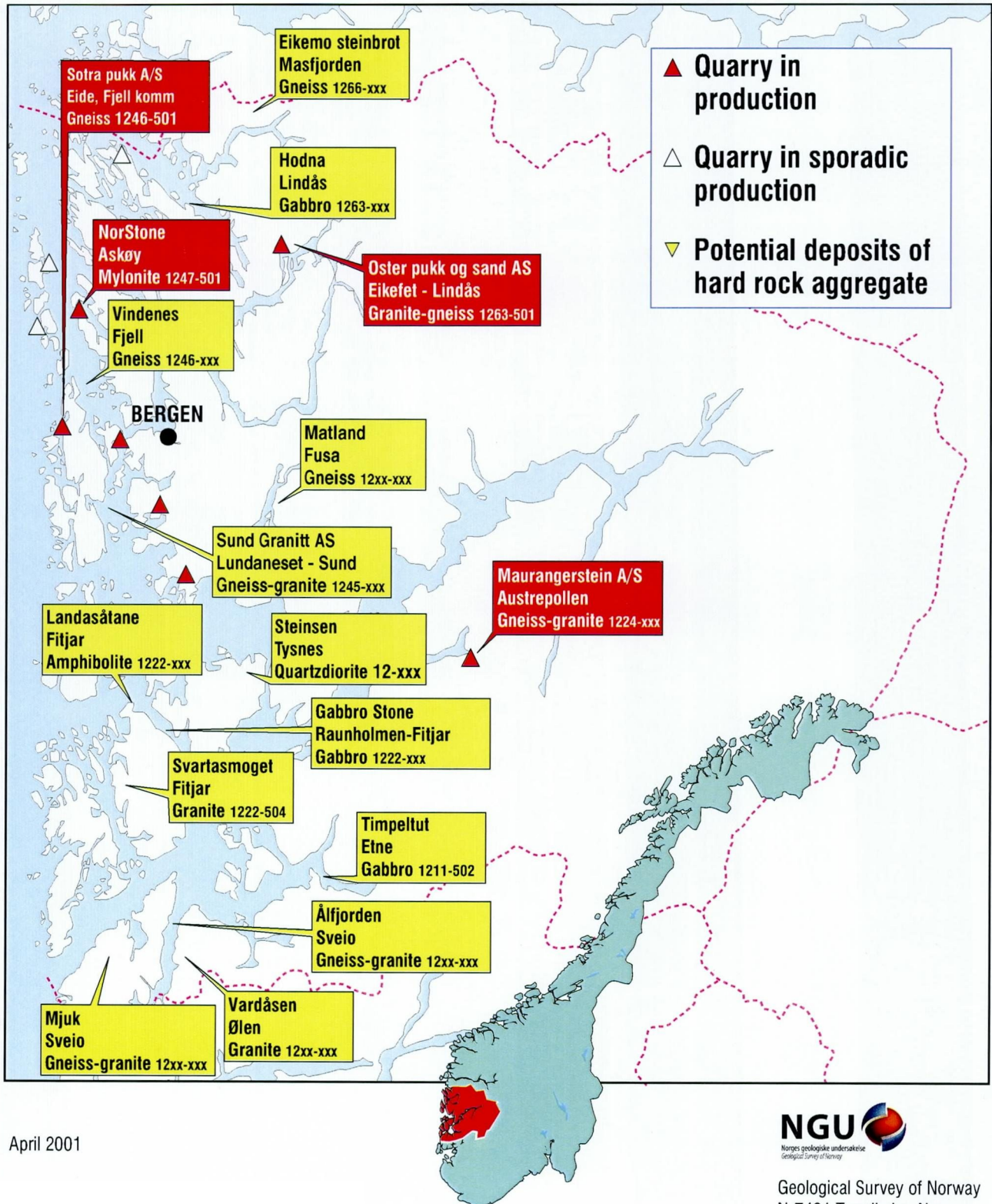


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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN HORDALAND COUNTY

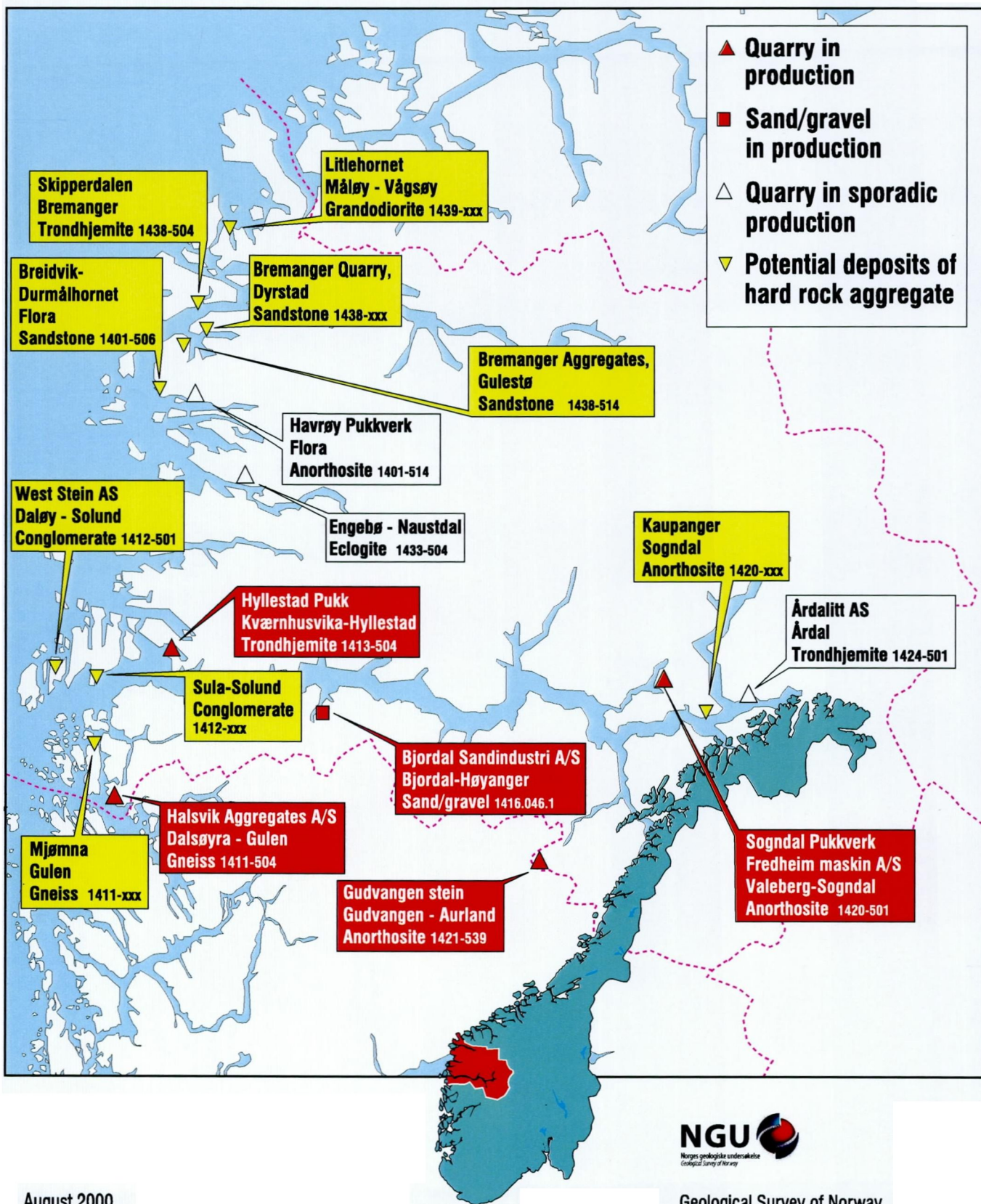


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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN SOGN OG FJORDANE COUNTY

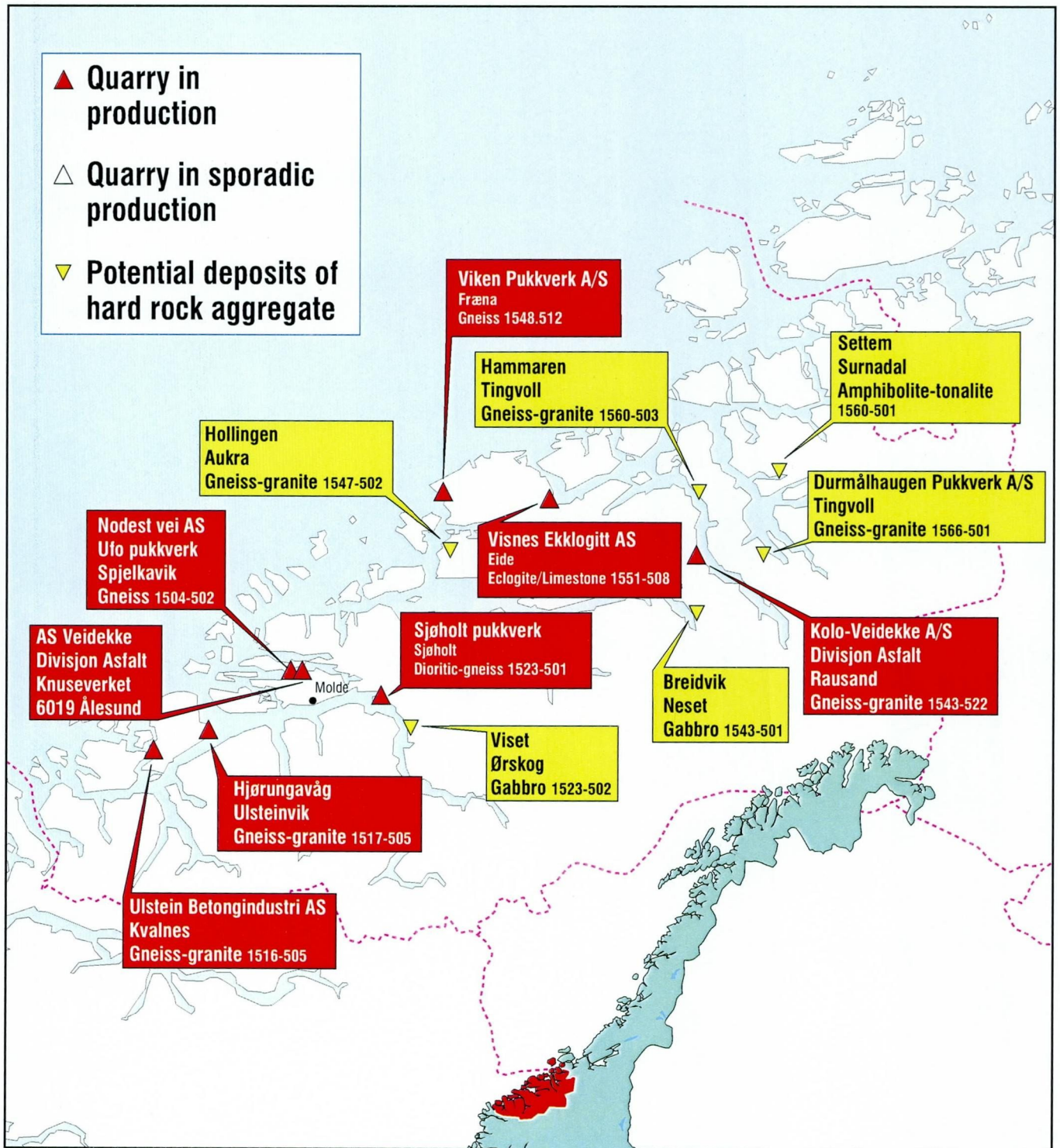


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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN MØRE OG ROMSDAL COUNTY

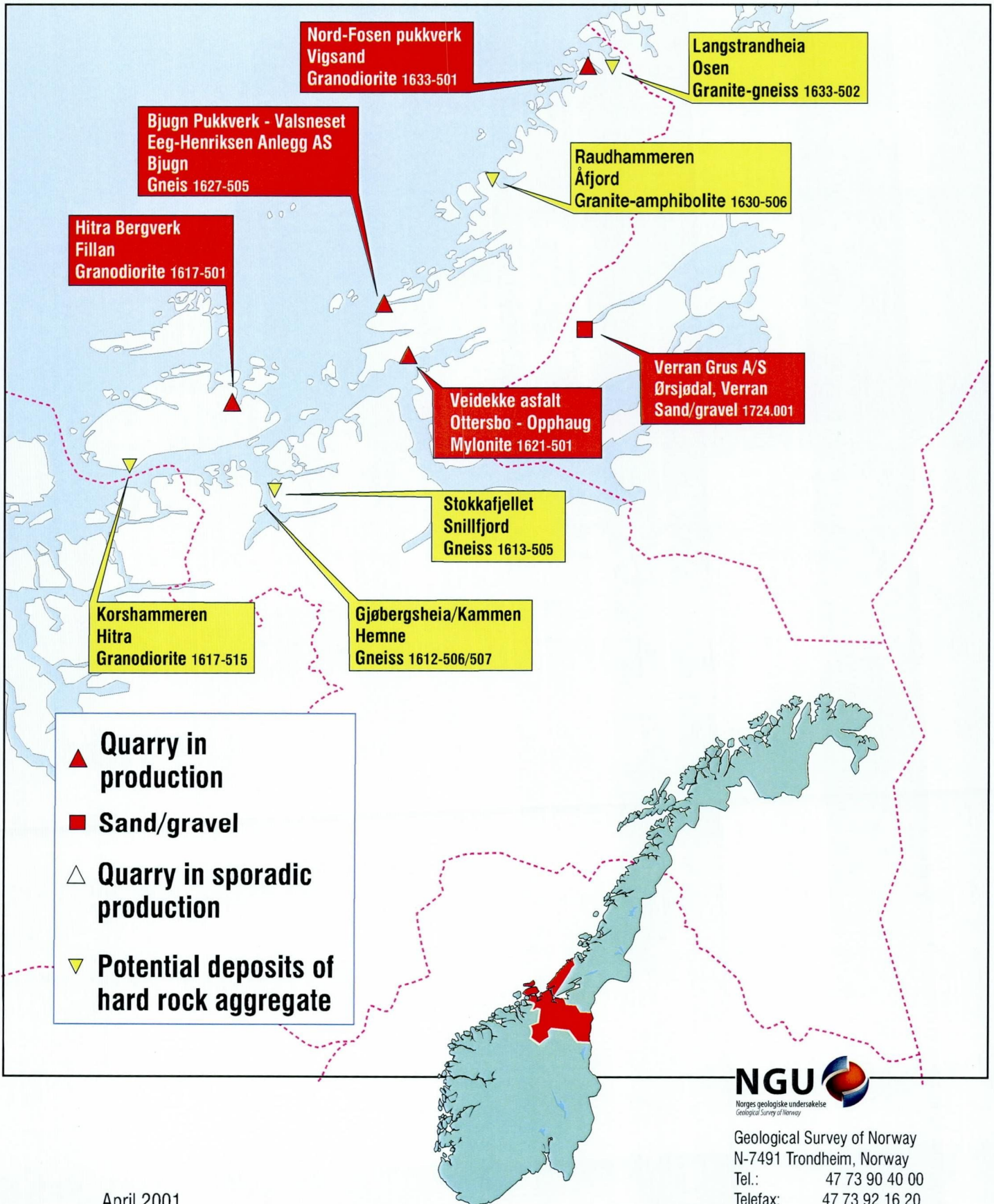


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QUARRIES AND POTENTIAL DEPOSITS OF HARD ROCK AGGREGATE IN SØR/NORD-TRØNDELAG COUNTY



April 2001