BEFORE THE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE, CHENNAI

Original Application No. 239 of 2024 (SZ)

In the matter of:

Tribunal on its own motion SUO MOTU
based on the News Item in Dinamalar
Chennai Edition Dt. 19.08.2024 titled
"Kalquarry in Sikkarayapuram near Kundrathur is full of water".

Versus

The Chief Secretary to Govt of Tamil Nadu,
Chennai and ors.
...Respondent(s)

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Through

Dr. D. Shanmuganathan

Standing Counsel of Tamil Nadu

National Green Tribunal

Southern Zone, Chennai

DATE:23.10.2025

BEFORE THE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE, CHENNAI

Original Application No.239 of 2024 (SZ)

IN THE MATTER OF

Tribunal on its own motion SUO MOTU based on the News Item in Dinamalar Chennai Edition Dt.19.08.2024 titled **"Kalquarry in Sikkarayapuram near Kundrathur is full of water".**

With

1. **The Chief Secretary to Government of Tamil Nadu**
   Goverment, Secretariat, Fort St.George,
   Chennai, Tamil Nadu 600 009.
   Phone No.044 425671555
   Email.

2. **The Principal Secretary to Government of Tamil Nadu**
   Department of Environment, Climate Change and Forests, Government of Tamil Nadu,
   Govt. Secretariat, Fort St.George,
   Chennai, Tamil Nadu-600009.

3. **Director of Geology and Mining,**
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   Guindy, Chennai-32.
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4. **The Chairman**,
   Tamil Nadu Pollution Control Board,
   No.76, Anna Salai, Guindy,
   Chennai,Tamil Nadu-600 032
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... Respondents.

STATUS REPORT FILED BY THE DISTRICT COLLECTOR,KANCHEEPUAM

I, Tmt.Kalaiselvi Mohan, I.A.S., Hindu, aged about 46, residing at Collector's Bungalow, Kancheepuram do hereby solemnly affirm and sincerely state as follows:-

Assistant Director
Geology and Mining
Kancheepuram.

DISTRICT COLLECTOR
KANCHEEPURAM

2) I am the District Collector, Kancheepuram herein and as such I am well acquainted with the facts and circumstances of the case from the records available with office.

3) The Hon'ble National Green Tribunal Southern Zone, Chennai on its own SUO MOTU has registered case in Original Application No.239/2024(SZ) based on the news item in Dinamalar, Chennai edition dated 19.08.2024, titled "Kalquarry (stone quarry) in Sikkarayapuram near Kundrathur is full of water".

4) In this regard, the District Collector submitted a report to the Hon'ble National Green Tribunal Southern Zone Chennai on 24.10.2024 concerning the Suo Motu case, news article that was published in the Dinamalar daily regarding the Sikkarayapuram kalquarry (stone quarry). Subsequently, the above said case was listed for hearing on 03.07.2025 and the tribunal has ordered that,

"1.The report submitted by the District Collector -Kancheepuram District states that a final Detailed Project Report (DPR) for assessing the adaptive reuse of abandoned quarries, prepared by M/s. Care Earth Trust, was expected to be ready within six months. A Government Order to that effect was also issued on 05.06.2024.

2. The six-month period sought by the District Collector has now lapsed. Let a detailed report be filed based on the final DRP prepared by M/s. Care Earth Trust".

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5) In this regard, the status/brief history of the case is submitted as follows:

In pursuance to the G.O.(D) No.55, Natural Resources (MMC-1) Department dated 05.06.2024 and as ordered by the District Collector vide Proceedings dated 11.07.2024, Tvl.Care Earth Trust have conducted pre feasibility survey in 15 abandoned quarries in Kancheepuram District and submitted the final report to the Commissioner of Geology and Mining, Chennai on 04.12.2024. The Feasibility report is as follows:

6) The feasibility study under the " Assessment of the Adaptive Re-Use of Resource Depleted Quarries" aims to collect the basic profile and assess possible redevelopment options of the selected abandoned quarries available with the Department of Geology and Mining in Kancheepuram District.Taluk wise list of quarries

Sl.No	Taluk	Village	Survey No.
1	Uthiramerur	Siruthamur	338(P) Q.No.1
2	Uthiramerur	Siruthamur	338(P) Q.No.2
3	Uthiramerur	Siruthamur	337/2
4	Uthiramerur	Siruthamur	107(P)
5	Uthiramerur	Siruthamur	326(P)
6	Uthiramerur	Siruthamur	161 (P) Q.No.2
7	Uthiramerur	Siruthamur	155 (P)
8	Uthiramerur	Siruthamur	159 (P)
9	Uthiramerur	Kunnavakkam	122
10	Uthiramerur	Kunnavakkam	122(P)Q.No.3

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11	Uthiramerur	Paleshwaram	164
12	Walajabad	Magaral	431/1(P), 2, 3
13	Walajabad	Sankarapuram	240/P
14	Kundrathur	Sikkarayapuram	207/1
15	Kundrathur	Malaiyambakkam	873, 874, 876, 877, 878, 880 and 981
16	Kundrathur	Sikkarayapuram	296/1A

7) The Talukwise-areawise details of the quarries and their potential for reuse / redevelopment are given quarry wise below:-

i. **Uthiramerur Taluk: Siruthamur, Survey No. 338(P) Q.No.1**
The quarry was leased to S. Kothandaraman, Kancheepuram and was leased until August 8, 2010. The quarry has a depth of around 20 meters and a volume of water available is of 730000 m^3. Scrub forest landscape surrounds it. The area is surrounded by several rivers, including the Cheyyar River, Palar River, Arumbuliyur Lake, Kattankulam R.F., Nerkundram R.F., Edamachi R.F., and Melmanpakkam R.F. Palmyra trees are standing around it. The two quarries are divided by a mud road. The quarry is still used for mining. The reuse of the quarry was not recommended.

ii. **Uthiramerur Taluk: Siruthamur, Survey No. 338(P) Q.No.2**
The quarry was leased for quarrying gravel and rough stones until 2010. The quarry has a depth of around 20 meters and a water volume of 6,00,000 m^3. It is currently used to fill crusher waste. The quarry has potential for reuse, with a slurry area of approximately 70% filled, which could be used for grazing, or planting native tree species for afforestation.

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The two quarries are divided by a mud road. The quarry is situated in Survey No. 338(P) Q.No.2. The quarry is to be fenced to a sufficient height with adequate gates. The water once depleted could not be recouped by recharge as the quarry is in a bed rock without any weathering or fractures. It is also not recommended for irrigation for the above reason.

iii. **Uthiramerur Taluk: Siruthamur, Survey No. 337**

The quarry leased for gravel and rough stones to K. Subramaniam in Chennai. The quarry, which spans 1.93.00 ha, was leased until 21.09.2012. The depth is around 35 meters, and the available water volume is 700000 m^3. The quarry is located in the Patta revenue classification. Hence the reuse of the quarry does not arise..

iv. **Uthiramerur Taluk: Siruthamur, Survey No.161(P) Q.No.2**

The quarry located in the Kallankuthu revenue classification. The quarry which spans 5.00.00 hectares was leased for quarrying gravel and rough stones until 23.02.2011. The quarry has a depth of around 30 meters and a water volume of 1,20,000 m3 The water can be used for drinking water and irrigation of nearby farmlands. The area is not used completely, and adjacent to 159 (P) quarry, both areas are mixed together, Cattle grazing is seen in the quarry area which has not been quarried. The area is surrounded by roads, paddy fields, and a high-tension line. The quarry is to be fenced to a sufficient height with adequate gates. The water could also be used for watering saplings if trees are planted around power is not advisable. The water in the quarry can be used for drinking only to manage drought

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situations. The water once depleted could not be recouped by recharge as the quarry is in bedrock without any weathering or fractures. It is also not recommended for irrigation for the above reasons.

v. Uthiramerur Taluk: Siruthamur, Survey No.159

The quarry located in the Kallankuthu revenue classification. The quarry which spans 5.00.00 hectares was leased to C.G. Goverdhanan No.23, Gandhi Street, Sitlapakkam, Chennai, and was leased until 18.07.2016. The quarry has a depth of 30 meters and 633000 m3 The quarry is to be fenced to a sufficient height with adequate gates. The water could also be used for watering saplings if trees are planted around the quarry. Due to the increased depth of the quarry aquaculture and floating solar panels for power is not advisable. The water in the quarry can be used for drinking only to manage drought situations. The water once depleted could not be recouped by recharge as the quarry is in a bedrock without any weathering or fractures. It is also not recommended for irrigation for the above reasons.

vi. Uthiramerur Taluk: Siruthamur, Survey No.155

The quarry located in the Kundru revenue classification. The quarry which spans 5.00.00 hectares, was leased for rough stone quarrying until 21.09.2012. The quarry has a depth of around 35 meters and a water volume of 8,55,000 m^3 The water can be used for drinking water and irrigation of nearby farmlands. The quarry has a 10 year lease with a hillock mined on the western side. Access to the quarry is difficult, and there are no good trees at present. The area is suitable

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for planting trees like *Syzygium cumini, Albizia lebbeck. Euphorbia antiquorum, and Azadirachta indica* like native trees. The quarry is to be fenced to a sufficient height with adequate gates. Due to the undue depth of the quarry floating solar panels for power generation and fish culture is not possible. The water already stored if used for drinking or agriculture could not be recouped due to the hard nature of the rock and due to the hard nature of the rock and due to the non-availability of fractures, which is essential for recharge.

vii. Uthiramerur Taluk: Siruthamur, Survey No.107 (P)

The quarry located in the Kallankuthur revenue classification. The quarry which spans 5.00.00 ha, was leased for quarrying gravel and rough stones until 04.02.2017. The quarry has a depth of aound 40 meters and 40000 m3 of water is available, which can be used for drinking water and irrigation of nearby farmlands. The area may be used for planting trees like Ficus religiosa, Ficus amplissima, Acacia leucophloea, and Azadirachta indica. The quarry fencing is to be proposed under the Green Fund. The quarry is to be fenced to a sufficient height with adequate gates. The area has a land use land cover (LULC) and includes a road, small non –patta farmland, scrub, porampoke, and 326 quarry.

viii. Uthiramerur Taluk: Siruthamur, Survey No.326 (P)

The quarry located in S.F.No.326(P) and covering 2.00.00 ha. The quarry was leased for quarrying gravel and rough stones until 15.02.2012, with a depth of around 50 meters. The village has no demand for drinking water and has 160 households and nearly 1000 people. The majority of the

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population uses pumpset and lake irrigation. Local people are used in the quarry as labour (both skilled and unskilled) and transport lorry drivers, with many working in SIPCOT Sriperambudur and Oragadam. They also work in other quarries in the area including private patta quarry. There is potential for reused, with green belts outside the quarry boundary. There is limited possibility for floating solar panels ofr power generation. The ecological observation revealed scub vegetation, neem and palm trees, and no potential for further quarries. Due to the 50 m depth of water fish culture is not possible. Already some land is being irrigated from the quarry, which is already being polluted by waste slurry from the washing process of M Sand in the adjacent crusher. The area of irrigation if expanded may result in complete depletion of the storage which could not recouped. Thus the agriculture under the quarry could not sustained. The quarry is to be fenced to a sufficient height with adequate gates.

ix. Uthiramerur Taluk: Kunnavakkam, Survey No.122 Q1

The quarry spans 5.00.00 ha and has a depth of around 20 m. The water volume is 682000 m3, which can be used for drinking water and irrigation. The quarry also provides habitat for various land birds, including Indian Horned Owls, bonnet macaque, Block kite, little grebe, and little cormorants. The quarry's geo-coordinates are 12.662885 79.831467. A trial has been tried by TWAD Board by providing three bore wells near the quarry for water supply to the village. Due to the availability of bed rock without weathering or fractures, there was no yield in the wells. Hence the bore wells had been abandoned. If the water is pumped for drinking water, it can

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provide water supply to population of 2000 at 40 lpcd for 284 months. Beyond this period no water can be supplied as the quarry will not recoup ground water due to the nature of the rock. Fish culture in this quarry is possible due to the limited depth of water. The quarry is to be fenced to a sufficient height with adequate gates. The quarry is to be fenced to a sufficient height with adequate gates.

x. Uthiramerur Taluk: Kunnavakkam, Survey No.122 (P) Q.No.3

The quarry was leased to D. Siva, Thottanaval Village, Uthiramerur Taluk, and was used until 21.08.2015. The quarry has a depth of around 5 meters and 123600 m3 of water available, which can be used for drinking water and irrigation. The water can also be used for planting trees in social forestry areas, and the water can be used for watering saplings during summer. Aquatic weeds like Hydrilla, valisnerea etc. are witnessed in the water. The use of the water for drinking and agriculture may be of one time used as the recoupment of water due to ground water recharge is not possible, due to the solid nature of rough rock without any fractures. This quarry is most suitable for fish culture due to the shallowness of the depth. The quarry is to be fenced to a sufficient height with adequate gates.

xi. Uthiramerur Taluk: Paleshwaram, Survey No.122 (P) Q.No.3

The quarry was leased out for quarrying Roughstone & Gravel to D. Srinivasan, Thottanaval Village, Uthiramerur Taluk, and has a depth of around 20 meters. The water available is 820000 m3, which can be used for drinking water and

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irrigation of nearby farmlands. The two quarries are part of hills surrounded by scrub forest and have been planted with trees like Velvel. The water in Quarry at survey number 122 is clear and could be used for drinking, while water in quarry at survey number 164, is green indicating eutrophication. Both quarries are currently not in use, and the water has submerged hydrophytes. The quarries are located on the border between Kunnavakkam and Paleshwaram villages, 500 meters south of Kunnavakkam village. Nearby areas include Karikili Bird Sanctuary, Vedanthangal Bird Sanctuary, and Pallavaa Mines and Raghavendra Blue Metals. The water is currently not in used, and nearby bore well provided by TWAD Board is defunct due paucity of yield. Fish culture in this quarry is possible due to limited depth of water. This is likely to attract bird from nearby sanctuaries of Karikili and Vedanthangal. As this quarry is the remote area which is not habituated by public, the possibility of attracting birds and mammals is very bright. The quarry is to be fenced to a sufficient height with adequate gates.

xii. Walajabad Taluk: Magaral, Survey No.431/1 (P), 2, 3

The quarry was leased to B. Deenan S/O. Babu Reddiar for quarrying Roughstone and Gravel until 18.12.2011. The quarry has a depth of around 7 meters and a volume of water available of 162400 m3 The water can be used for drinking water and irrigation of nearby farmlands. The area around the quarry is densely covered with Prosopis juliflora trees. A power line runs along the west side, and two private Patta quarries are on the east side. The water from the quarry was previously used for irrigation but is now dry and shallow. The

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quarry is located in nearly 5 to 6 meters of suplus weir of Magaral Big tank and is surrounded by agricultural fields. Magaral big tank, receives supply of water from Cheyyar River. A running quarry just on the north of the defunct quarry is releasing its washed slurry to the south of the quarry. Care should be taken to provide a check on this quarry not to release the slurry in to the quarry under consideration for reuse. Irrigation from this quarry will be sustainable for an area of around 55 acers, as the quarry is likely to be refilled by surplus water of Magaral big tank. Fishing activity is also possible due to shallow nature of the quarry. The abandoned quarry in the east of this quarry is brimming with water from which irrigation is available for 2 farmers using submersible pumps. As this quarry is likely to recoup the storage by runoff water from a catchment, it is possible to irrigate around 100 acers. A lift irrigation society can be formed by farmers to irrigate their lands. by pumping water from the quarry for a second crop when there is no water in Magaral big tank. GoTN may be approached by farmers for free electricity for the pump to be installed in the quarry. The quarry is to be fenced to a sufficient height with adequate gates.

xiii. Walajabad Taluk: Sankarapuram, Survey No.240(P)

The quarry was leased for quarrying rough stone and gravel until 18.12.2006. no water is stored in the isolated pits, dug by the quarry lessee. The area is surrounded by scrub and agricultural lands, with the quarry work stopped at the initial stage, as the volume of over burden to be removed was of huge quantity. The initial 3 to 4 m is only red soil with boulders and the economic viability of quarrying was very

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much doubtful and hence quarrying was abandoned. There are seven shallow pits and a high –voltage power line above the quarry. Nearby lands is classified as Kallankuthu, and Eucalyptus trees are grown around the quarry. The area is surrounded by Palaru, Arkadan eri, Sangarapuram Village, Barron land, and patta quarry. The seven pits in the abandoned quarry area maybe converted in to percolation ponds by deepening and the providing banks without obstructing runoff from the limited catchment. These seven pits can be interred liked. Nature trees can be planted in the entire quarry area and around the percolation ponds. The plants can be irrigated by groundwater by providing a bore well and a ground reservoir, to which the micro irrigation lines can be connected. The entire area of planting and ponds should be enclosed with fencing. The quarry is to be fenced to a sufficient height with adequate gates.

xiv. Kundrathur Taluk: Sikkarayapuram, Survey No.207/1

The quarry, which spans 16.44.1 ha, has a depth of 70 m and 5509000 m3 of water available. The water can be used for drinking water and irrigation of nearby farmlands. The team also suggest to plant like *Terminalia arjuna, Acacia leucophloea, Syzgium cumini and Azadirachta indica trees* along the periphery, where the soil is suitable for afforestation. The plants can be irrigated using micro irrigation from the water in the quarry. The entire area of planting and ponds should be enclosed with fencing.

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xv. **Kundrathur Taluk: Malaiyambakkam, Survey Nos.873, 874, 876, 877, 880 & 981**

The quarry which spans 6.55.0 ha, has a depth of around 50 m and 8270000 m3 of water is available. The water can be used for drinking water and irrigation of nearby farmlands. The team also suggest to plant like *Terminalia arjuna, Acacia leucophloea, Syzgium cumini and Azadirachta indica trees* along the periphery, where the soil is suitable for afforestation. The plants can be irrigated using micro irrigation from the water in the quarry. The quarry is to be fenced to a sufficient height with adequate gates.

xvi. **Kundrathur Taluk: Sikkarayapuram, Survey No.296/1A**

The quarry which spans 15.46.9 ha, has a depth of around 70 m and 245000 m3 of water is available. The water can be used for drinking water and irrigation of nearby farmlands. The team also suggest to plant like *Terminalia arjuna, Acacia leucophloea, Syzgium cumini and Azadirachta indica trees* along the periphery, where the soil is suitable for afforestation. The plants can be irrigated using micro irrigation from the water in the quarry. The quarry is to be fenced to a sufficient height with adequate gates.

8) Further, the Care Earth Trust has submitted that, the quarries located in the vicinity of Sembarambakkam in Sikkarayapuram and Malaiyampakkam are at present one entity. The water stored in all three quarries is 14024000 m3/495 mcft. This is one fifth of the capacity of Sembarampakkam Lake which is a drinking water source for Chennai city. Already during drought years when Sembarampakkam has poor storage,

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water from the above quarries is pumped to water treatment plant at Sembarampakkam and Supplied to the city. All arrangements are in place to utilise the water from the quarry for drinking. The total area of the three quarries is 38.46 hectares and with 9 small islands, which could not drastically affect the water holding capacity. The capacity provided in this report is based on the water level at the time of our inspection. During the recent rains a field irrigation channel from Sembarampakkam which runs very close tom the quarry, collected the runoff which flowed in to the quarry pits. Thus the pits are having water up to the brim. Now the capacity of the water stored may be around 600 m. cft. As there is a scope of the quarry pits to get filled up to ground level from the runoff almost every year, the use of these quarry pits for drinking water ensures assured water supply in Chennai city even during summer. 50 per cent of the area of the quarry pits can be utilised for solar power generation. Top priority must be given to be protect this are by chain link fencing of sufficient height or compound wall, so as to avoid dumping of garbage/ debris. The quarry is situated nearby location such as Sikkarayapuram, Kozhumunivakkam, Mangadu, Kollacherry, Malayambakkam, and mepur and NH

9) Further, the Tvl. Care Earth Trust has provided the following options for potential reuse of abandoned quarries:-

(a)Protection:

A Compound wall or a suitable fencing like barbed wire or strong chain link is essential for all the quarries proposed for redevelopment. Fencing of these quarry boundaries should be undertaken to provide protection to the human and cattle life and avoid any untoward incidents at the quarry site. This was also stressed by several speakers during the Stakeholders meeting. Extreme care should be taken during the measurement and construction activities at the mining site, as the pits area

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really deep. Members from stakeholders meeting suggested some bio-fencing too along with physical fences, which includes growing thorny wild plants along the boundary and layering a tall fence along. The height of the fence should not be less than ten feet high. Since much of the quarry locations are locally remote in rural areas, there is a high chance of pilfering of the materials by strangers. There are also chances for the cattle to mow down the fences, trying to browse the greenery behind. Hence, the fence should be strong enough to ward off both cattle as well as humans.

(b)Hydrological Function

1. Groundwater Recharge

i. Sirudhamur 161(P) Q.No.2
ii. Sirudhamur 155(P)
iii. Sirudhamur 159(P)

These three quarries help in recharge of ground water and need to be protected. They allow stored water to seep through the quarry bottoms to replenish aquifers. A farmer from nearby Mathur village stated that the water in these quarries has helped to maintain the water levels in the village wells, enabling them to take two crops every year. Therefore, these three quarries may be protected with a fence and boundary planted with thorny live- hedge such as, Ziziphus mauritiana (Elandai) Euphorbia tirucalli (tirukalli) and Acacia nilotica (Babul).

2. Supplementing Lake Ayacut

Magaral quarry can act as a reservoir to store rainwater for later usage during dry seasons. It can supplement the lake ayacut and help farmers to increase wet crop areas. A sluice may be provided by the PWD to connect this quarry to the adjoining lake in Walajabad taluk to allow rainwater to be collected here and utilized for agriculture during the dry season.

i. Magaral 431/1 (P), 2.3

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3. Flood Management

Using quarries as catchment areas to temporarily hold stormwater runoff. Due to its proximity to Chembarambakkam Lake, the risk of flooding can be prevented by diverting the flood during monsoons.

i. Sikkarayapuram 207/1
ii. Malaiyambakkam 873,874,876,877,878,880 and 981
iii. Sikkarayapuram 296/1A

4. Scientific and Educational Uses

The following quarry water bodies could be used for ecological research, monitoring, or education on water resource management.

i. Kunnavakkam 122
ii. Kunnavakkam 122(P) Q.No.3
iii. Paleshwaram 164
iv. Sirudhamur 326(P)
V. Sirudhamur 155(P)

Ecological restoration of the abandoned quarries will involve restoration of the native species around the quarries to make them a nature park and sanctuary for birds besides using one or several of the economic options given above to improve the standard of living of the local people. In this way, the abandoned quarries can help in Eco restoration and livelihood enhancement.

10) In this regard, a copy of report received from Tvl. Care Earth Trust has forwarded vide Rc.No.203/Q1/2022, Dated:19.12.2024 to the Project Director, District Rural Development Agency, Kancheepuram and requested

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to peruse the contents put forth by Tvl. Care Earth Trust and submit quarry wise detailed project reports with detailed estimates to execute the projects by using Green Fund accumulated in the district.

11) Based on the feasibility report submitted by Tvl. Care Earth Trust dated 04.12.2024 the Project Director, DRDA, Kancheepuram has initially submitted estimates for fencing of 10 abandoned quarries which is in compliance with the guidelines issued under Green fund. The quarry wise details of report received from DRDA are submitted as follows:

S. No	Block	Village	Name of the Quarry / Location	Length in meters	Estimates Amount (Rs.in lakhs)
1.	Uthiramerur	Sirudhamur	338(P) Q.No.1	500	15.67
2			338(P) Q.No.2	462	14.50
3			161(P) Q.No.2	272	8.65
4			107(P)	556	17.41
5			326 (P)	538	16.85
6			155 (P)	932	28.95
7			159 (P)	829	25.80
8	Kundrathur	Sikkarayapuram	207/1	895	11.71
9			296/1A	637	8.36
10		Malayambakkam	873,874,876, 877,878,880 & 981	379	5.02
TOTAL				**6000**	**152.92**

12) The estimates prepared by the Executive Engineer, DRDA after conducting field verification and since DRDA is carried out many project works the implementing agency has fixed as District Rural Development Agency, Kancheepuram. It is expected to complete the said work within a period of six months from the date of issue of Government order.

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DISTRICT COLLECTOR
KANCHEEPURAM

13) The estimates received from Project Director, District Rural Development Agency, Kancheepuram for fencing of 10 abandoned quarries with an estimated cost of Rs.152.92 lakhs has recommended and forwarded for issuing necessary sanction of the projects to be executed by the impacting agency as DRDA, Kancheepuram by utilizing Green Fund accumulated of respect of Kancheepuram District and to release the Fund to Government through the Commissioner of Geology and Mining, Chennai vide Rc.no.203/Q1/2022, Dated: 17.01.2025. Further, the said projects was also recommended by the Reclamation, Restoration and Rehabilitation committee on 20.01.2025. Subsequently, the same proposal was recommended and forwarded by the Commissioner of Geology and Mining, Chennai vide Rc.No.11306/MM7/2024, Dated:25.02.2025 to the Government.

14) Further, the Government in G.O.(Ms)No.38, Natural Resources (MMC.1) Department, Dated:22.04.2025 has delegate the powers as below to make expenditure under Green Fund for the reclamation, restoration and rehabilitation of abandoned Mines or Quarries and order accordingly:

i. The Projects involving costs upto Rs.50 (Fifty) Lakhs in a financial year may be approved and implemented by the District Collector (Chairperson of the reclamation, restoration and rehabilitation Committee)
ii. Whenever the total coast of the selected projects(s) exceeds Rs.50 (Fifty) lakhs and is upto Rs.100 lakhs in a financial year,

Assistant Director
Geology and Mining
Kancheepuram

DISTRICT COLLECTOR
KANCHEEPURAM

the Chairperson (viz. District Collector), after approval of the project, shall obtain the concurrence from the Director of Geology and Mining before implementing the project.

iii. Whenever the total cost of the selected project(s) exceeds Rs.100 Lakhs in a financial year, the Chairperson (viz. District Collector), after approval of the project, shall obtain concurrence of the Government, before implementing the project.

15) In this connection, it is submitted that as per the above Government order, the project Proposal has already been recommended and forwarded to the Government for a sanction. Hence, it is submitted that the implementing agency, i.e, DRDA will complete the said works within a period of six months from the date of order of the issue of the Government Order.

In view of the above, it is therefore humbly prayed that this Hon'ble National Green Tribunal, Southern Zone, Chennai may be pleased to record the above mentioned facts and dispose of the application or pass such further order as this Hon'ble National Green Tribunal may deem fit and proper in the fact and circumstance of this case and thus justice.

DATE 15.09.2025

DISTRICT COLLECTOR
KANCHEEPURAM

DISTRICT COLLECTOR,
KANCHIPURAM

Assistant Director
Geology and Mining
Kancheepuram.

VERIFICATION

I, Tmt.Kalaiselvi Mohan, I.A.S., working as District Collector, Kancheepuram District do hereby verify that the contents of above report are true to the best of my knowledge through records.

Verified at Kancheepuram on this 15 day of September' 2025.

District Collector,
Kancheepuram.

ANNEXURE 1

From

Tmt. Kalaiselvi Mohan., I.A.S.,
District Collector,
Kancheepuram.

To

The Addl. Chief Secretary to Government,
Natural Resources Department,
Secretariat, Chennai-9.

Through

The Commissioner of Geology and Mining, Guindy, Chennai-32.

Rc.203/Q1/2022 Dated 17.01.2025

Sir/Madam,

Sub: Mines and Minerals – Minor Minerals – Amendment in the Tamil Nadu Minor Mineral Concession Rules, 1959 – Reclamation, Restoration and Rehabilitation of abandoned quarries by utilizing Green Fund – Detailed project report called for from the District Rural Development Agency for public utility of abandoned quarries – Report received – Recommended and forwarded to the Government for issuing necessary sanction and release of fund – Requested - Reg.

Ref:

1. Announcement of the Hon'ble Minister for Water Resources during the budget session of 2021-22
2. G.O.(Ms) No.23 Industries (MMC.1) Department dated:23.02.2022
3. Government authorized Care Earth Trust vide G.O.(D) No.55, Natural Resources (MMC-1) Department dated 05.06.2024.
4. This office letter Rc.of even no. dated 09.02.2024 and 19.12.2024 addressed to Project Director, DRDA, Kancheepuram.
5. Commissioner of Geology and Mining, Chennai Letter No.5983/MM7/2021 dated 10.12.2024 (enclosed with report received from Tvl. Care Earth Trust).
6. District Collector letter Rc.of Even No.dated 19.12.2024 addressed to Project Director, DRDA, Kancheepuram.
7. Project Director, DRDA, Kancheepuram report in letter Rc.598/2023/A9 dat11.01.2025 (received this office on 13.01.2025).

(((((())))

Kind attention is invited to the references cited as above.

2) Based on the announcement made by the Hon'ble Finance Minister during the Budget for the year 2021-2022, the Government

vide G.O.(Ms) No.23 Industries (MMC.1) Department dated:23.02.2022 has inserted Section IV for creation of a "Green Fund" by collecting contribution from the lessees of Minor Minerals in addition to the Seigniorage fee for reclamation, restoration of abandoned quarries. Accordingly, The Reclamation, Restoration and Rehabilitation Committee was formed vide Proceedings dated: 22.06.2022.

3) In the meantime, in pursuance to the G.O.(D) No.55, Natural Resources (MMC-1) Department dated 05.06.2024 and as ordered by the District Collector vide Proceedings dated 11.07.2024, Tvl.Care Earth Trust have conducted pre feasibility survey in 16 abandoned quarries in Kancheepuram District and submitted the final report to the Commissioner of Geology and Mining, Chennai on 04.12.2024.

4) The Project Director, DRDA has been requested vide letter dated 19.12.2024 to submit the quarry wise detailed project reports along with detailed estimates to implement the Projects reported by Tvl.Care Earth by utilizing Green fund accumulated in the district.

5) In respect of Kancheepuram District Green Fund accumulated upto 31.12.2024 is Rs.5,01,28,864/-.

6) The Project Director, DRDA vide letter dated 09.12.2024 has submitted project reports initially for fencing of 10 abandoned quarries for 1st phase. The quarry wise details of report received from DRDA are submitted as follows:-

S. No	Block	Village	Name of the Quarry / Location	Length in meters	Estimates Amount (Rs.in lakhs)
1.	Uthiramerur	Sirudhamur	338(P) Q.No.1	500	15.67
2			338(P) Q.No.2	462	14.50
3			161(P) Q.No.2	272	8.65
4			107(P)	556	17.41
5			326 (P)	538	16.85
6			155 (P)	932	28.95
7			159 (P)	829	25.80
8	Kundrathur	Sikkarayapuram	207/1	895	11.71
9			296/1A	637	8.36
10		Malayambakkam	873,874,876, 877,878,880 & 981	379	5.02
TOTAL				**6000**	**152.92**

7) On perusal of reports and records the following are observed:

i. Based on the orders issued by the Government vide G.O.dated 23.02.2022, the District Collector, Kancheepuram has constituted committee of Reclamation, Restoration and Rehabilitation Committee vide Proceedings Rc.No.203/Q1/2022 dated 22.06.2022.

ii. In respect of Kancheepuram District Green Fund accumulated upto 31.12.2024 is Rs.5,01,28,864/-. So far no expenditure has been carried out and hence balance fund available as of 31.12.2024 is Rs.5,01,28,864/.

iii. Based on the feasibility report submitted by Tvl.Care Earth Trust dated 04.12.2024 the Project Director, DRDA, Kancheepuram has initially submitted estimates for fencing of 10 abandoned quarries which is in compliance with the guidelines issued under Green fund.

iv. The estimates prepared by the Executive Engineer, DRDA after conducting field verification and since DRDA is carried out many project works the implementing agency may be fixed as District Rural Development Agency, Kancheepuram. It is expected to complete the said work within a period of six months from the date of issue of Government order.

v. In order to avoid and safe guard public from the accident by way of entry of men and animal into the abandoned quarries, it is very much essential to fence all the abandoned quarries.

8) In view of the above, estimates received from Project Director, District Rural Development Agency, Kancheepuram for fencing of 10 abandoned quarries with an estimated cost of Rs.152.92 is hereby recommended and forwarded to the Government along with the

connected records for issuing necessary sanction of the projects to be executed by the implementing agency as DRDA, Kancheepuram by utilizing Green Fund accumulated in respect of Kancheepuram District and to release the fund to execute the said work early.

Encl:- Connected records.

Sd/-Kalaiselvi Mohan
(Dated.17.01.2025)
District Collector,
Kancheepuram.

/ True Copy /

17/09/2025

Assistant Director,
Geology and Mining,
Kancheepuram.

ANNEXURE 2

COMMISSIONERATE OF GEOLOGY AND MINING

From
Thiru.E.Saravanavelraj, I.A.S,
Commissioner of Geology and Mining,
Thiru.Vi.Ka Industrial Estate,
Guindy, Chennai-600032.

To
Additional Chief Secretary
to Government, (FAC)
Natural Resources Department,
Secretariat,
Chennai- 600 009

Rc.No. Rc.No.11306/MM7/2024, dt. 25.02.2025

Sir,

Sub : Mines and Minerals – Announcement 2021-22 by the Hon'ble Minister- bringing the abandoned quarries and mines to public utility – Kancheepuram and Chengalpattu Districts taken for pilot study – to assess the feasibility of restoration of abandoned quarries and mines – Orders issued by the Government by authorizing Tvl.Care Earth Trust – Final Reports submitted by Tvl.Care Earth Trust – Forwarded – Kancheepuram District - Fund Sanction – requested - reg.

Ref :
1. G.O.(D) No.55, Natural Resources Department (MMC.1) dated. 5.6.2024.
2. Proceedings of the District Collector, Kancheepuram Rc.No.203/Q1/2022 dated.11.07.2024.
3. Tvl.Care Earth Trust, Chennai letter Rc.No.CET/ADMN/3410 dated.04.12.2024 received on 18.12.2024. (enclosed the feasibility assessment report in respect of Kancheepuram District).
4. This office even letter no.5983/MM7/2021 dated27.12.2024 (enclosed with report received from Tvl.Care Earth Trust).
5. District Collector, Kancheepuram letter Rc.No. This officer letter even No. Rc.203/Q1/2022 dated 17.01.2025 and 07.02.2025.

&&&&&

Kind attention is invited to the references cited above.

2) The Government in the reference 1st cited has authorized Tvl.Care Earth Trust for conducting pilot study for the 15 abandoned quarries over an extent of 88.52.00 ha of Government land situated in respect of Kancheepuram District and 41 abandoned quarries over an extent of 124.77.00 ha of Government land situated in respect of Chengalpoattu District. Further the Government has granted

permission to the Green fund committee of Kancheepuram and Chengalpattu District to share the expense of Rs.17,90,000/- proportionately to execute the feasibility assessment study of the adoptive re-use of the abandoned quarries.

3) In this continuation, the Commissioner of Geology and Mining in letter dated 26.6.2024 has instructed the District Collectors of Kancheepuram and Chengalpattu District to take further necessary action to issue orders for conducting feasibility study by Tvl.Care Earth Trust for the re-use of abandoned quarries and submit the action taken report. Accordingly, the District Collector of Kancheepuram District in the reference 2nd cited has issued orders for conducting feasibility study by Tvl.Care Earth trust for the re-use of abandoned quarries.

4) In this regard, Tvl.Care Earth Trust has submitted the report on Feasibility assessment of the adaptive re-use of Resource depleted quarries in Kancheepuram Districts vide reference 3rd cited.

5) In the reference 5th cited, the District Collector, Kancheepuram has submitted the proposal for fencing of 10 abandoned quarries with an estimated cost of Rs.152.92 lakhs lakhs and stated among that,

i. Based on the orders issued by the Government vide G.O. dated.23.02.2022, The Reclamation, Restoration and Rehabilitation Committee was formed vide District Collector, Kancheepuram proceedings in R.C.No.203/Q1/2022 dated: 22.06.2022.

ii. In the meantime, in pursuance to the G.O.(D) No.55, Natural Resources (MMC-1) Department dated 05.06.2024 and as ordered by the District Collector vide Proceedings dated 11.07.2024, Tvl.Care Earth Trust have conducted pre feasibility survey in 16 abandoned quarries in Kancheepuram District and submitted the final report to the Commissioner of Geology and Mining, Chennai on 04.12.2024

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iii. The Project Director, DRDA has been requested vide letter dated 19.12.2024 to submit the quarry wise detailed project reports along with detailed estimates to implement the projects reported by Tvl.Care Earth Trust by utilizing green fund collected in the district.

iv. In respect of Kancheepuram District Green Fund accrued up to 31.12.2024 is Rs.5,01,28,864/-.

v. In this connection, the Project Director, DRDA, Kancheepuram vide letter dated 11.01.2025, has submitted detailed project reports initially for fencing of 10 abandoned quarries in the 1st phase. The quarry wise details of report received from DRDA are submitted as follows: -

S. No	Block	Village	Name of the Quarry / Location	Length in meters	Estimates Amount (Rs.in lakhs)
1.	Uthiramerur	Sirudhamur	338(P) Q.No.1	500	15.67
2			338(P) Q.No.2	462	14.50
3			161(P) Q.No.2	272	8.65
4			107(P)	556	17.41
5			326 (P)	538	16.85
6			155 (P)	932	28.95
7			159 (P)	829	25.80
8	Kundrathur	Sikkarayapuram	207/1	895	11.71
9			296/1A	637	8.36
10		Malayambakkam	873,874,876, 877,878,880 & 981	379	5.02
TOTAL				**6000**	**152.92**

vi. In view of the above, the District Collector, Kancheepuram vide letter dated 17.01.2025, has recommended and forwarded the proposal to Government for fencing of 10 abandoned quarries with an estimated cost of Rs.152.92 lakhs along with the connected records for issuing necessary sanction for implementing the aforementioned projects. Accordingly, the said projects was also recommended by the Green Fund Committee on 20.01.2025.

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vii. The Commissioner of Geology and Mining, Chennai vide letter dated 10.01.2025 has requested to furnish certain details for sanctioning of funds under the green fund.

viii. As requested by the Commissioner of Geology and Mining, Chennai the details called for are furnished as below

a) The scheme/project is eligible under rule 35-F (m) of Tamil Nadu Minor Mineral Concession Rules, 1959.

b) The project proposal received from the District Rural Development Agency for fencing 10 abandoned quarries to prevent accidents involving people and animals drowning in stagnant water was recommended by the Green Fund Committee on 20.01.2025.

c) yes, the project is in compliance with the green fund guidelines.

d) The project execution agency is the District Rural Development Agency, Kancheepuram.

e) The estimates had been prepared and duly signed by the competent authority.

f) On perusal of the project proposal/estimate the expected period of execution has not been furnished by the agency.

g) Amount collected under the Green Fund as on 31.01.2025 is Rs.5,18,67,388.

h) No expenditure has been made from the fund to date.

i) Balance under the green fund as on 31.01.2025 is Rs.5,18,67,388.

j) Copy of Green Fund constituted proceedings is enclosed herewith.

Hence, the proposal submitted by the District Collector, Kancheepuram is recommended to Government for sanction of estimated cost of Rs.152.92 lakhs for the completion of 10 projects

29

for providing fencing around the abandoned quarries situated in Government Poramboke lands of Kancheepuram District.

Encl: As above.

Sd/- E.Saravanavelraj
Commissioner of Geology and Mining

Forwarded /By Order

25.02.2025

Joint Director

Copy to

1. The District Collector,
   Kancheepuram District.

2. The Deputy Director,
   Geology and Mining,
   Kancheepuram District.

25/2/25

ANNEXURE 3

ABSTRACT

Natural Resources – Mines and Minerals – Minor Mineral - Announcement made during the year 2021-22 – Bringing the abandoned quarries and mines to public utility – Kancheepuram and Chengalpattu Districts taken for pilot study – To assess feasibility for restoration of abandoned mines and quarries – Orders - Issued.

NATURAL RESOURCES (MMC.1) DEPARTMENT

G.O.(D).No.55 **Dated:05.06.2024.**
குரோதி வருடம், வைகாசி-23
திருவள்ளுவர் ஆண்டு 2055

Read:

1. Announcement of the Hon'ble Minister for Water Resources during the Budget Session of 2021-22.
2. Government D.O. Letter No.8104/ MMC.1/2021-7, dated 18.05.2023.
3. From the Commissioner of Geology and Mining, Letter Rc.No.5983/MM4/2021, dated 18.01.2024.

*****

ORDER:

In the first read above, an announcement was made during the year 2021-22, by the Hon'ble Minister (Water Resources) to bring the abandoned quarries and mines for public utility.

2. In the letter 3rd read above, the Commissioner of Geology and Mining has sent the following report:-

i. The abandoned mines and quarries pose a threat to public and livestocks and hence, reclamation and rehabilitation of abandoned mines and quarries is of paramount importance considering the degree of danger.

ii. The Chief Secretary in D.O. letter dated 20.10.2021 had instructed all the District Collectors to take immediate action to make use of the abandoned quarries falling in their districts as per the announcement and to send action taken report to Government.

iii. Further in G.O.(Ms).No.23, Industries (MMC.1) Department, dated 23.02.2022, the Government have inserted Rule 35-A to 35-H to the Tamil Nadu Minor Mineral Concession Rules, 1959 for creation of Green fund by collecting contribution from the lessees of minor minerals in addition to the seginiorage fee for reclamation, restoration and rehabilitation of abandoned mines and quarries. Accordingly, upto November, 2023 an amount of Rs.93.43 crore has been collected all over the State.

iv. For implementation of the above said restoration of abandoned mines and quarries, the rough stone quarries in Government lands in Kancheepuram and Chengalpattu districts have been selected for pilot study. Accordingly, 15 abandoned quarries over an extent of 88.52.0 Hectares in Kancheepuram district and 41 abandoned quarries over an extent of 124.77.0 hectares in Chengalpattu district have been taken for the above said project. In this regard, Tvl.Care Earth Trust, Chennai, an empanelled organization of the State Planning Commission had been called for a preliminary discussion for assessment of feasibility of the adoptive re-use of abandoned mines and quarries.

v. Based on the discussion, Tvl.Care Earth Trust have submitted its proposal on 19.12.2023. The salient schedule of activities of the proposal are secondary research, geospatial analysis, primary research, stakeholder consultations, analysis and consolidation and finalization of the report and submission. In this regard, they have submitted the details of financial commitment as follows:

Sl. No.	Budget Head	Units	Rate in INR	Duration	Total
1.	Team Leader	1	76,000/-	6 months	4,50,000/-
	Expert - Wildlife Biology	1	20,000/-	1 month	20,000/-
	Expert – Geology	1	50,000/-	4 months	2,00,000/-
	Expert - Architecture	1	40,000/-	4 months	1,60,000/-
	Expert – Botanist / horticulturist	1	40,000/-	4 months	1,60,000/-
	Expert - Hydrologist	1	40,000/-	2 months	80,000/-
	Expert - Restoration Ecologist	1	50,000/-	1 month	50,000/-
	Expert – Civil Engineering	1	50,000/-	1 month	50,000/-
	Expert - Geospatial analyst	1	50,000/-	2 months	1,00,000/-
	Total				**12,60,000/-**

2.	Travel	11	10,000/-	2 months	2,20,000/-
3.	Geospatial analysis			2 months	2,00,000/-
4.	Data analysis and report formulation			2 months	
5.	Documentation and Visual representation			6 months	60,000/-
	Printing of reports				
6.	Contingencies				50,000/-
	Grand Total				**17,90,000/-**

vi. While examining the organization profile of the Tvl.Care Earth Trust, it is ascertained that the institution is registered as a Trust under the Tamil Nadu Societies Act and empanelled organization of the State Planning Commission of Tamil Nadu. Further, the Trustees have taken various projects for the Government such as Assessing the Bio-diversity of Kovalam Beach and its Back Waters, Plantation Strategy of Chennai City, Survey, Identification and Characterization of Mountain Wetlands in Western Ghats of Tamil Nadu, Developing Water Management Strategy and Action Plan for the Megamalai Wildlife Sanctuary, Guindy National Park and Erode Forest Division in Tamil Nadu, Comprehensive Management Plan for Conservation of Pallikaranai Marshland, etc.

3. Hence, the Commissioner of Geology and Mining has requested the Government on the following:

i. to authorize Tvl.Care Earth Trust for carrying out the feasibility study for assessment of the adoptive re-use of the abandoned quarries in Kancheepuram and Chengelpet districts.

ii. to grant permission to the Green Fund Committee of Kancheepuram and Chengelpet districts as contemplated in Rule 35-F (2) of the Tamil Nadu Minor Minerals Concession Rules, 1959 to share the expense of Rs.17,90,000/- (Rupees Seventeen Lakh and Ninety Thousand only) proportionately for the said agency to execute the feasibility assessment study of the adoptive re-use of the 15 abandoned quarries in Kancheepuram district and 41 abandoned quarries in Chengelpet district already selected by the Member Secretary/Deputy Director, Geology and Mining. Kancheepuram and Chengelpet districts. The duration of the

project is 6 months and the schedule of payment is as detailed below:

Sl. No.	Duration for payment	Category of payment	Percentage of sanctioned budget
1	End of the first month - preliminary report	Interim payment	10%
2	End of third month - interim report	Interim payment	40%
3	End of sixth month - final report	Final payment	50%

iii. to authorize the Commissioner of Geology and Mining to constitute a Committee comprising of Additional Director from the Department of Geology and Mining, Member Secretary of Tamil Nadu Pollution Control Board, and a Professor from Department of Mining Engineering, Anna University under the Chairmanship of Commissioner of Geology and Mining to empanel the outsourcing agencies for conducting necessary field studies and to get detailed project reports for reclamation, restoration and rehabilitation of the abandoned mines / quarries in the State.

4. The Government, after careful examination have decided to accept the request of the Commissioner of Geology and Mining and issue orders accordingly.

i. to authorize Tvl.Care Earth Trust for carrying out the feasibility study for assessment of the adoptive re-use of the abandoned quarries in Kancheepuram and Chengelpet Districts.

ii. to grant permission to the Green Fund Committee of Kancheepuram and Chengelpet Districts as contemplated in Rule 35-F(2) of the Tamil Nadu Minor Mineral Concession Rules, 1959 to share the expense of Rs.17,90,000/- (Rupees Seventeen Lakh and Ninety Thousand only) proportionately for the said agency to execute the feasibility assessment study of the adoptive re-use of the 15 abandoned quarries in Kancheepuram district and 41 abandoned quarries in Chengelpet district already selected by the Member Secretary/ Deputy Director, Geology and Mining, Kancheepuram and Chengelpet Districts. The duration of the

project is 6 months and the schedule of payment is as detailed below:

SL. No.	Duration for payment	Category of payment	Percentage of sanctioned budget
1	End of the first month - preliminary report	Interim payment	10%
2	End of third month - interim report	Interim payment	40%
3	End of sixth month - final report	Final payment	50%

(BY ORDER OF THE GOVERNOR)

K. PHANINDRA REDDY
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT(FAC)

To
The Commissioner of Geology and Mining, Guindy, Chennai-600 032.
The District Collectors concerned (thro Commissioner of Geology and Mining).

Copy to:
O/o. Hon'ble Minister (Water Resources),
Secretariat, Chennai-600 009.
O/o. Hon'ble Minister (Finance),
Secretariat, Chennai-600 009.
Finance (Natural Resources) Department,
Secretariat, Chennai-600 009.
Natural Resources (OP1.1) Department,
Secretariat, Chennai-600 009.
Stock File/Spare Copy.

// FORWARDED / BY ORDER //

5.6.2024
SECTION OFFICER

5.6.24

-197-

ANNEXURE 4

ABSTRACT

Natural Resources - Mines and Minerals – Minor Minerals – Delegation of powers to make expenditure under Green Fund for the reclamation, restoration and rehabilitation of abandoned Mines or Quarries - Orders – Issued.

NATURAL RESOURCES (MMC.1) DEPARTMENT

G.O.(Ms).No.38 **Dated 22.04.2025**

விசுவாவசு வருடம் – சித்திரை 9

திருவள்ளுவர் ஆண்டு 2056

Read:

1. G.O.(Ms).No.23, Industries (MMC.1) Department, dated 23.02.2022.
2. Government letter No.9628/MMC.1/2021-1, dated 23.02.2022.
3. From the Commissioner of Geology and Mining, Letter Rc.No.535/PD2/2024, dated 28.10.2024 and 29.01.2025.

*****

ORDER:

In the letters 3rd read above, the Commissioner of Geology and Mining has stated that:-

- In the G.O.(Ms).No.23, Industries (MMC.1) Department, dated 23.02.2022, the Government have issued orders for creation of Green Fund based on the powers conferred by the sub-sections (1) and (1-A) of Section 15 of the Mines and Minerals (Development and Regulation) Act, 1957 (Central Act 67 of 1957) and amendments were made in the Tamil Nadu Minor Mineral Concession Rules, 1959 (TNMMCR), which was notified in the Government Gazette. Accordingly Section IV inserted in the Tamil Nadu Minor Mineral Concession Rules, 1959 with rules 35-A: Green Fund, 35-B: Contribution to the Fund, 35-C: Constitution of Reclamation, Restoration and Rehabilitation Committee, 35-D: Meetings of the Committee, 35-E: Functions of the Committee, 35-F: Procedure for Reclamation, Restoration and Rehabilitation, 35-G: Duties of Members and 36-H: The Seal of the Committee.
- Subsequently, in the letter 2nd read above, the Government have issued relevant head of accounts for the operation of Green Fund viz., i) Reserve Fund Head of Account; ii) Receipts Head of Account; iii) Expenditure Head of Account; iv) Transfer to Reserve Fund Deposit Account; v) Amount met from Reserve Fund Head of Accounts. The Director of Geology and Mining is the Estimating, Reconciling and Controlling Authority for the above new Head of Accounts.

(PTO)

2. As the District Collector is the Chairperson of the Reclamation, Restoration and Rehabilitation Committee, the Commissioner of Geology and Mining has requested the Government to delegate the powers to the District Collectors to make expenditure for the Reclamation, Restoration and Rehabilitation of abandoned mines or quarries and to issue amendment for the Government letter dated 23.02.2022 as to the District Collectors of concerned districts are the estimating, reconciling and controlling authority of the head of accounts instead of the Director of Geology and Mining is the Estimating, Reconciling and Controlling Authority for the above new Head of Accounts.

3. Since the fund withdrawal mechanism can be direct Treasury release, the Government after careful examination of the request of the Commissioner of Geology and Mining hereby delegate the powers as below to make expenditure under Green Fund for the reclamation, restoration and rehabilitation of abandoned Mines or Quarries and order accordingly:

i. The projects involving costs upto Rs.50 (Fifty) Lakhs in a financial year may be approved and implemented by the District Collector (Chairperson of the reclamation, restoration and rehabilitation Committee)

ii. Whenever the total cost of the selected project(s) exceeds Rs.50 (Fifty) lakhs and is upto Rs.100 lakhs in a financial year, the Chairperson (viz. District Collector), after approval of the project, shall obtain the concurrence from the Director of Geology and Mining before implementing the project.

iii. Whenever the total cost of the selected project(s) exceeds Rs.100 Lakhs in a financial year, the Chairperson (viz. District Collector), after approval of the project, shall obtain concurrence of the Government, before implementing the project.

(BY ORDER OF THE GOVERNOR)

K. PHANINDRA REDDY
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT (FAC)

To
The Commissioner of Geology and Mining, Guindy, Chennai – 600 032.
All District Collectors. (through Commissioner of Geology and Mining)
All the Assistant Directors/Deputy Directors
(through Commissioner of Geology and Mining)
Copy to:
O/o. Hon'ble Minister (Water Resources), Secretariat, Chennai – 600 009.
The Natural Resources (MMA/MMB/MMD/MME/E/OP) Department,
Secretariat, Chennai – 600 009.
Stock File / Spare Copy.
Efile.No.1260/MMC.1/2025.

// FORWARDED / BY ORDER //

22.04.2025
SECTION OFFICER

ஸ்ரீராம்
22.04.2025

ANNEXURE 5

Feasibility Assessment of the Adaptive Re-Use of Resource Depleted Quarries in Kancheepuram District

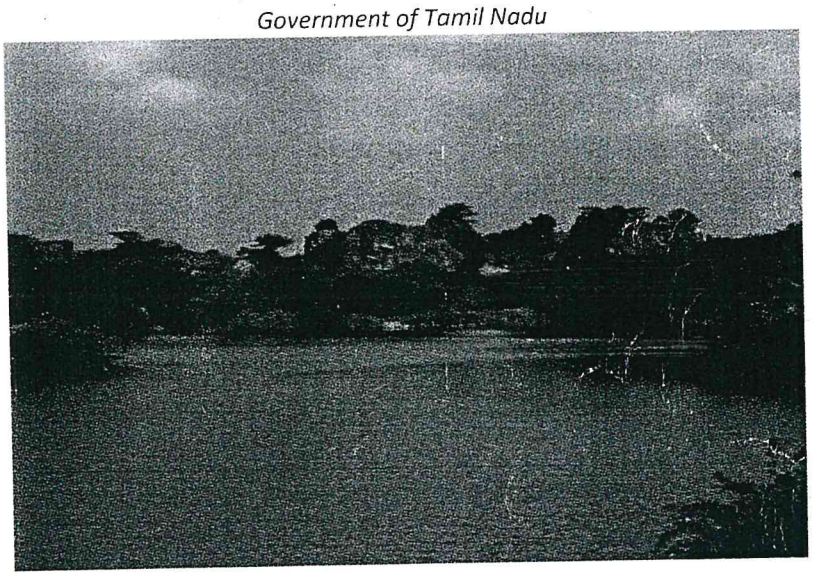
Final Report

Submitted to

The Commissioner

Department of Geology and Mining

Government of Tamil Nadu



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2024 - 2025

Final report of a feasibility assessment of the adaptive re-use of resource depleted quarries in Kancheepuram District.

2024 - 2025

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Feasibility Assessment of the Adaptive Re-Use of Resource Depleted Quarries in Kancheepuram District

Executive Summary

A quarry is an area from which rocks such as marble, limestone, and granite stones are extracted for industrial use. Once depleted of their desired resources, quarries are frequently abandoned. The resulting gaping holes in some get filled with water and form quarry lakes while others get converted into unsightly landfills. When quarries are near urban environments, inhabitants are subjected to pollution and noise, and the undeniable eyesore of an abandoned quarry remains long after excavation is completed. In recent times, sustainable redevelopment has become a viable solution for these abandoned quarries.

The feasibility study under the "Assessment of the Adaptive Re-Use of Resource Depleted Quarries" aims to collect the basic profile and assess possible redevelopment options of the selected abandoned quarries available with the Department of Geology and Mining in Kancheepuram district. The secondary data on the mines to be studied was collected from the office of the Commissioner of Geology and Mining, Chennai and Deputy Director, Kancheepuram and Chengalpattu district. Fieldwork was carried out in sixteen quarries spread over three taluks of Kancheepuram district viz. Uthiramerur, Walajabad and Kundrathur with the guidance provided by the Department of Mines and Geology in August 2024. by the technical team of Care Earth Trust (CET).

The first was a collection of the basic details of the resource-depleted quarries Comprehending their legacy profile and georeferencing them. A rapid assessment of biodiversity was undertaken. A feasibility assessment was arrived at for various re-use options based on the profile of the quarries and our understanding through field visits and discussions with stakeholders. A comprehensive Plan of Action for each quarry or a group of quarries is suggested towards the end.

Several countries, in Europe, notably like Portugal, Sweden, Germany and United Kingdom have undertaken adaptive re-use projects to transform quarries into a variety of public and private spaces. Zollverein Coal Mine Industrial Complex in Essen, Germany, where the restored mine has been designated a World Heritage Site by the UNESCO. The potential new uses for these expanses of land include sites for football grounds, amphitheatre, aquaculture and recreational activities.

Various re development options have been given in the Action Plan. Those options using the available water were grouped under Water consumptive options. Those activities which do not use much water were classified under non consumptive options. The pilot study indicates importance of providing fencing around all the abandoned quarries as the top priority. The consumptive use of water collected in the quarries include drinking water supply, agriculture horticulture, forestry, landscaping and pisciculture. The non-consumptive use of water includes development of recreational activities like water theme park, Nature Park and bird sanctuary, swimming pool besides power generation through floating solar panels and organic composting. Hydrological functions of quarries in recharging ground water and supplementing ayacut is discussed at the end. The action plan involves diverse fields, the Department may avail services of the experts concerned to develop detailed project reports. Ecological restoration of the abandoned quarries will involve restoration of the native species around the quarries to and make them as a nature park and sanctuary for birds besides using one or several of the economic options given to improve the livelihood of the local people. In this way, the abandoned quarries can help in Eco restoration and livelihood enhancement

I. Chapter 1 Assessment of depleted quarries

Introduction

The feasibility study under the "**Assessment of the Adaptive Re-Use of Resource Depleted Quarries**" aims to collect the basic profile and assess possible redevelopment options of the selected abandoned quarries available with the Department of Geology and Mining in Kancheepuram district. The government vide G.O dated 23 to 2022 have issued notification for creation of green fund by collecting contribution from the lessees in addition to the seigniorage fee for reclamation and restoration of abandoned quarries by inserting rule 35 of TNMMCR 1959. Accordingly, the green fund is being collected from the lessees concerned as per the G.O. Further as stipulated in the GO and as per rule 35 of TNMMCR 1959, the reclamation restoration rehabilitation committee in respect of Kancheepuram district has also been constituted. The abandoned mines and quarries pose a threat to the public and life stock and hence reclamation and rehabilitation of the abandoned mines and quarries are of paramount importance. In this connection the government has authorized the Care Earth Trust to conduct a pilot study for 15 abandoned quarries over an extent of 88.52 acres of government land situated in respect of Kancheepuram district and 41 abandoned quarries over an extent of 124.77 acres of Chengalpattu district. The project was initiated following the directives outlined in G.O. (D) No.55, Natural Resources (MMC. 1) Department dated 05.06.2024 and the order Rc. No. 5983/MM4/2021, issued by the Commissioner of Geology and Mining, Chennai on 26.06.2024, and the Proceedings of the District Collector of Kancheepuram. The secondary data was sourced from the Department of Geology and Mines, the Revenue Department and local communities.

Methodology for the assessment

Secondary data collection

This is the first stage in data collection, where the available literature was reviewed for understanding the status of depleted mines and quarries. Before initiating the field visits, secondary data was collected from the Department of Geology and Mines, Kancheepuram with the help of officers and staff. Geographical Information System (GIS) was utilised for the collection of remote sensing and satellite data for geo-referencing the quarries and undertaking further analysis.

Primary Data collection

The guiding principle for the methodology would be ecological restoration. Ecological restoration is uniquely valuable in its inherent capacity to provide people with the opportunity not only to repair ecological damage, but also to improve the human condition, renew economic opportunities, rejuvenate traditional cultural practices, and refocus the aspirations of local communities. A feasibility assessment was arrived at for various re-use options based on the profile of the quarries and our understanding through field visits and discussions with

stakeholders. Finally, a comprehensive Plan of Action for each quarry or a group of quarries is suggested.

Data collection

The field work was undertaken based on the District Collector of Kancheepuram (Rc. No. 203/Q1/2022), dated July 11, 2024. This order, received from the Deputy Director of the Department of Mines and Geology, Kancheepuram, granted permission to the Care Earth Trust to conduct a study on assessing the adaptive reuse of resource depleted quarries in the Kancheepuram district over a six-month period. Thiru M. Vivekananthan, Project coordinator had meetings with the officers concerned in the office of the Commissioner of Geology and Mining, Chennai and Deputy Director, Kancheepuram and Chengalpattu districts to get the secondary data on the mines to be studied and finalize the field work.

Field visit by the technical team of CET

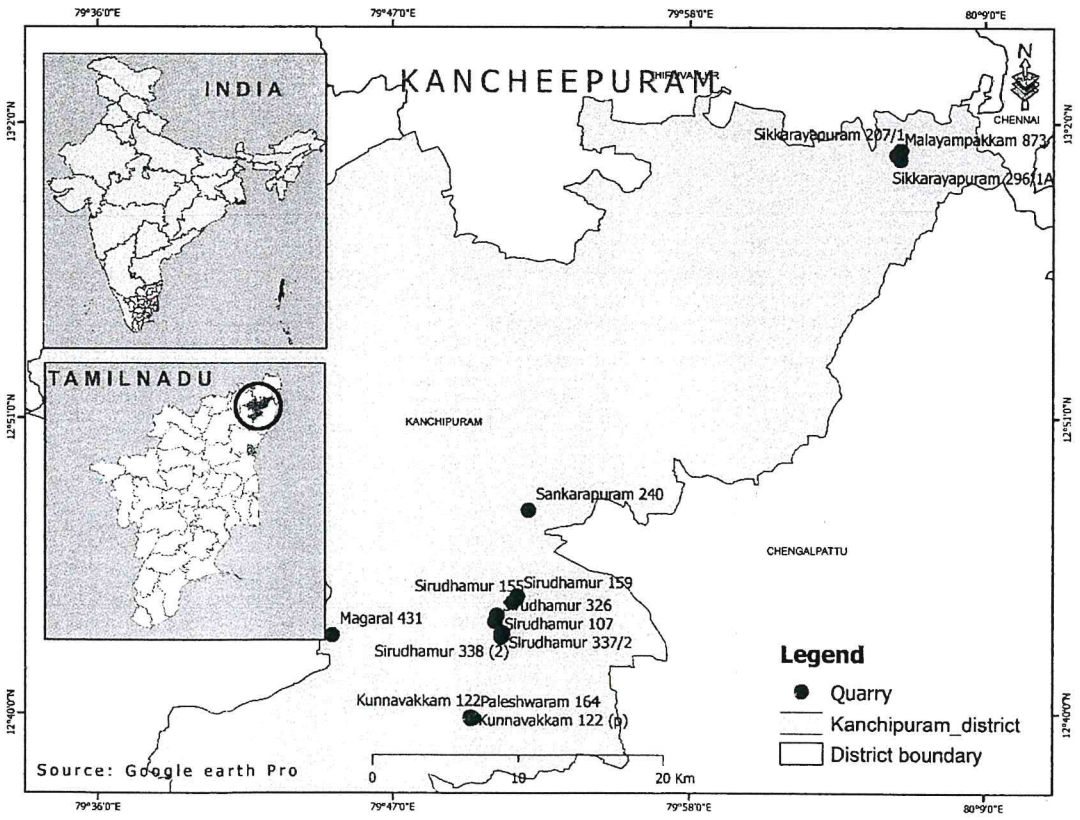
Fieldwork was carried out in three taluks of Kancheepuram viz. Uthiramerur, Walajabad and Kundrathur with the guidance provided by the Department of Mines and Geology in August 2024.The technical team of the Care Earth trust (CET) commenced the field work from August 7, 2024. The expert team comprised of Dr S. Balaji IFS (Retd) team leader, Er. S. Thirunavukkarasu, hydrologist, N. Muthu Karthick, Botanist, M. Vivekananthan, Horticulturist K. Mano Chandran, Geospatial analyst, S. Ari Prasath, Wildlife biologist and B. K. Bharath, Sociologist. The basic data collected on the abandoned quarries was grouped taluk wise and analyzed. Out of the total number of quarries provided by the Department of Geology and Mining, sixteen quarries belong to the Kancheepuram district. Taluk wise details are given in the following table.

Table 1. Taluk wise list of quarries

S.No	Taluk	Village	Survey No.	
1	Uthiramerur	Siruthamur	338(P) Q.No.1	1
2	Uthiramerur	Siruthamur	338(P) Q.No.2	2
3	Uthiramerur	Siruthamur	337/2	
4	Uthiramerur	Siruthamur	107 (P)	4
5	Uthiramerur	Siruthamur	326(P)	5
6	Uthiramerur	Siruthamur	161(P) Q.No.2	3
7	Uthiramerur	Siruthamur	155(P)	6
8	Uthiramerur	Siruthamur	159(P)	7

S.No	Taluk	Village	Survey No.
9	Uthiramerur	Kunnavakkam	122
10	Uthiramerur	Kunnavakkam	122(P] Q.No.3
11	Uthiramerur	Paleshwaram	164
12	Walajabad	Magaral	431/1(P), 2.3
13	Walajabad	Sankarapuram	240/P
14	Kundrathur	Sikkarayapuram	207/1
15	Kundrathur	Malaiyambakkam	873,874,876,877,878,880 and 981
16	Kundrathur	Sikkarayapuram	296/1A

Figure 1. Study area



Chapter 2 Assessment results

This section is arranged based on the taluks and villages of the district under study. The allotted quarries with their survey numbers are provided in Table 1 and it has been detailed in Table 2. GIS maps generated were also used here for a comprehensive understanding of the physical geography of the mines. The maps have also been used to study the hydrology and contour of the locales of depleted mines. The floral diversity found in each quarry site was analysed by a Botanist in the team and presented. Following are the area-wise observations based on the field visits undertaken during the months of August to October 2024.

Uthiramerur Taluk

There are sixteen stone quarries inspected in Uthiramerur Taluk. Details of the quarries in the taluk and their potential for reuse/redevelopment are given quarry wise below

Uthiramerur Taluk :: Siruthamur, Survey No. 338(P) Q.No.1

Care Earth Trust team visited the Siruthamur village quarry in Uthiramerur Taluk, located in Survey No. 338(P) Q.No.1 and covering 5.00.00 ha. The quarry was leased to S. Kothandaraman, Kancheepuram and was leased until August 8, 2010. The quarry has a depth of around 20 meters and a volume of water available is of 730000 m^3. Scrub forest landscape surrounds it. The area is surrounded by several rivers, including the Cheyyar River, Palar River, Arumbuliyur Lake, Kattankulam R.F., Nerkundram R.F., Edamachi R.F., and Melmanpakkam R.F. Palmyra trees are standing around it. The two quarries are divided by a mud road. The quarry is still used for mining. Hence the reuse of the quarry does not arise. The following plant species are widely found here,

Common trees: *Azadirachta indica, Prosopis juliflora, Borassus flabellifer, Pithecellobium dulce, Albizia lebbeck, Ziziphus mauritiana and Holoptelea integrifolia.*

Common Shrubs and Climbers: *Calotropis gigantea, Flueggea leucopyrus, Ficus hispida, Tinospora cordifolia, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis.*

Uthiramerur Taluk :: Siruthamur, Survey No. 338(P) Q.No.2

Care Earth Trust team visited the Siruthamur village quarry, located in the Kallangkuthu revenue land. The quarry, which spans 5 ha, was leased for quarrying gravel and rough stones until 2010. The quarry has a depth of around 20 meters and a water volume of 6,00,000 m3. It is currently used to fill crusher waste. The quarry has potential for reuse, with a slurry area of approximately 70% filled, which could be used for grazing, or planting native tree species for afforestation. The two quarries are divided by a mud road. The quarry is situated in Survey No. 338(P) Q.No.2. The quarry is to be fenced to a sufficient height with adequate gates. The water once depleted could not be recouped by recharge as the quarry is in a bed rock without any weathering or fractures. It is also not recommended for irrigation for the above reason. The following plant species are widely found here,

Common trees: *Azadirachta indica, Prosopis juliflora, Borassus flabellifer, Pithecellobium dulce, Albizia lebbeck, Ziziphus mauritiana and Holoptelea integrifolia.*

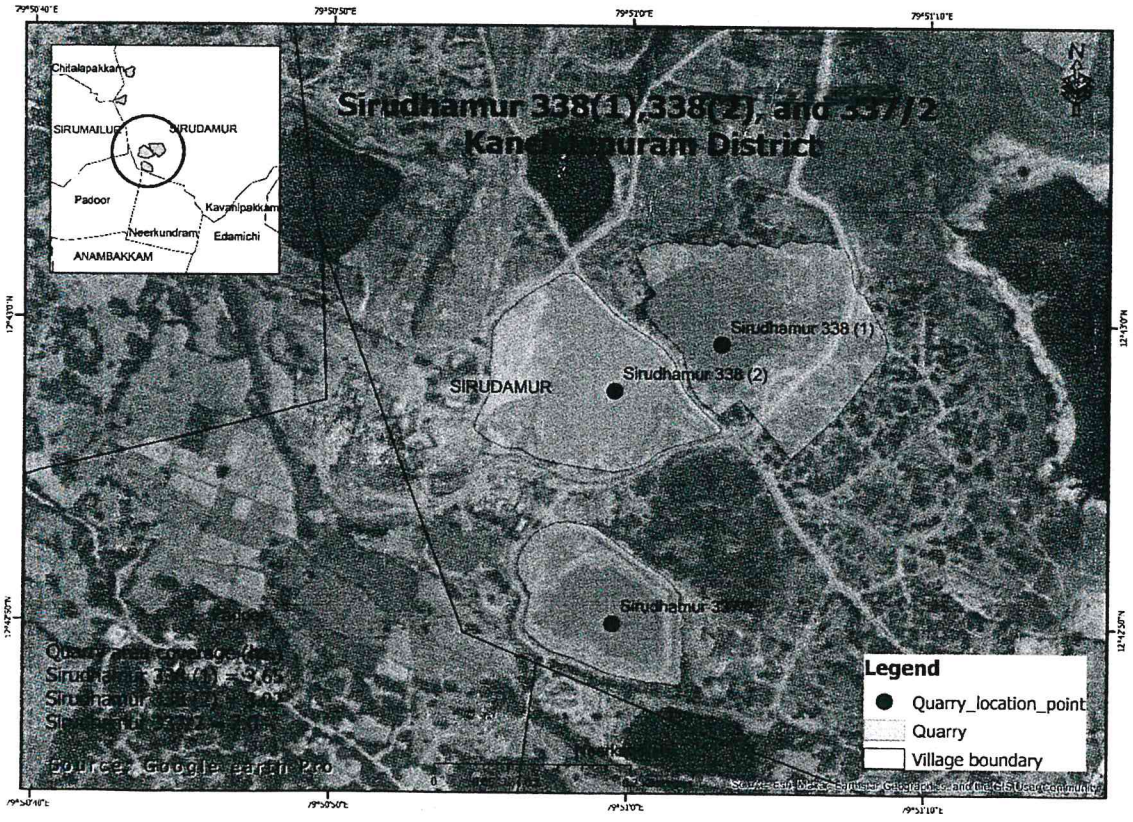
Common Shrubs and Climbers: *Calotropis gigantea, Flueggea leucopyrus, Ficus hispida, Tinospora cordifolia, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis.*

Uthiramerur Taluk :: Siruthamur, Survey No. 337

Care Earth Trust team visited the Siruthamur village quarry, leased for gravel and rough stones to K. Subramaniam in Chennai. The quarry, which spans 1.93.00 ha, was leased until 21.09.2012. The depth is around 35 meters, and the available water volume is 700000 m^3. The quarry is located in **the Patta** revenue classification. Hence the reuse of the quarry does not arise. The following plant species are widely found here.

Common trees: *Prosopis juliflora is the most dominant, Azadirachta indica, Borassus flabellifer, Phoenix sylvestris, Albizia lebbeck, Ziziphus mauritiana and Holoptelea integrifolia.*

Common Shrubs and Climbers: *Calotropis gigantea, Flueggea leucopyrus, Ficus hispida, Tinospora cordifolia, Canthium coromandellcum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Rivea hypocrateriformis and Mukia maderaspatana.*



Uthiramerur Taluk :: Siruthamur, Survey No. 161(P) Q.No.2

Care Earth Trust team visited the Siruthamur village quarry, located in the Kallangkuthu revenue classification. The quarry, which spans 5.00.00 ha, was leased for quarrying gravel and rough stones until 23.02.2011. The quarry has a depth of around 30 meters and a water volume of 1,20,000 m^3. The water can be used for drinking water and irrigation of nearby farmlands. The area is not used completely, and adjacent to 159 (P) quarry, both areas are mixed together. Cattle grazing is seen in the quarry area which has not been quarried. The area is surrounded by roads, paddy fields, and a high-tension line. The quarry is to be fenced to a sufficient height with adequate gates. The water could also be used for watering saplings if trees are planted around the quarry. Due to the increased depth of the quarry aquaculture and floating solar panels for power is not advisable. The water in the quarry can be used for drinking only to manage drought situations. The water once depleted could not be recouped by recharge as the quarry is in a bedrock without any weathering or fractures. It is also not recommended for irrigation for the above reasons. The following plant species are widely found here.

Common trees: *Azadirachta indica, Prosopis juliflora, Borassus flabellifer, Pithecellobium dulce, Albizia lebbeck, Ziziphus mauritiana and Holoptelea integrifolia, Morinda tinctoria, Ficus racemose, syzygium cumini.*

Common Shrubs and Climbers: *Abutilon indicum, Senna auriculata, Calotropis gigantea, Flueggea leucopyrus, Ficus hispida, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Opuntia dillenii, Lantana camara, Stephanotis volubilis.*

Uthiramerur Taluk :: Siruthamur, Survey No. 159

Care Earth Trust team visited the Siruthamur village quarry, located in the Kallangkuthu revenue classification. The quarry, which spans 5.00.00 ha, was leased to C.G. Goverdhanan No.23, Gandhi Street, Sitlapakkam, Chennai, and was leased until 18.07.2016. The quarry has a depth of 30 meters and 633000 m^3. The quarry is to be fenced to a sufficient height with adequate gates. The water could also be used for watering saplings if trees are planted around the quarry. Due to the increased depth of the quarry aquaculture and floating solar panels for power is not advisable. The water in the quarry can be used for drinking only to manage drought situations. The water once depleted could not be recouped by recharge as the quarry is in a bedrock without any weathering or fractures. It is also not recommended for irrigation for the above reasons. The following plant species are widely found here.

Common trees: *Prosopis juliflora, Borassus flabellifer, Azadirachta indica, Albizia lebbeck, Ziziphus mauritiana and Holoptelea integrifolia, Morinda tinctoria, Wrightia tinctoria, syzygium cumini.*

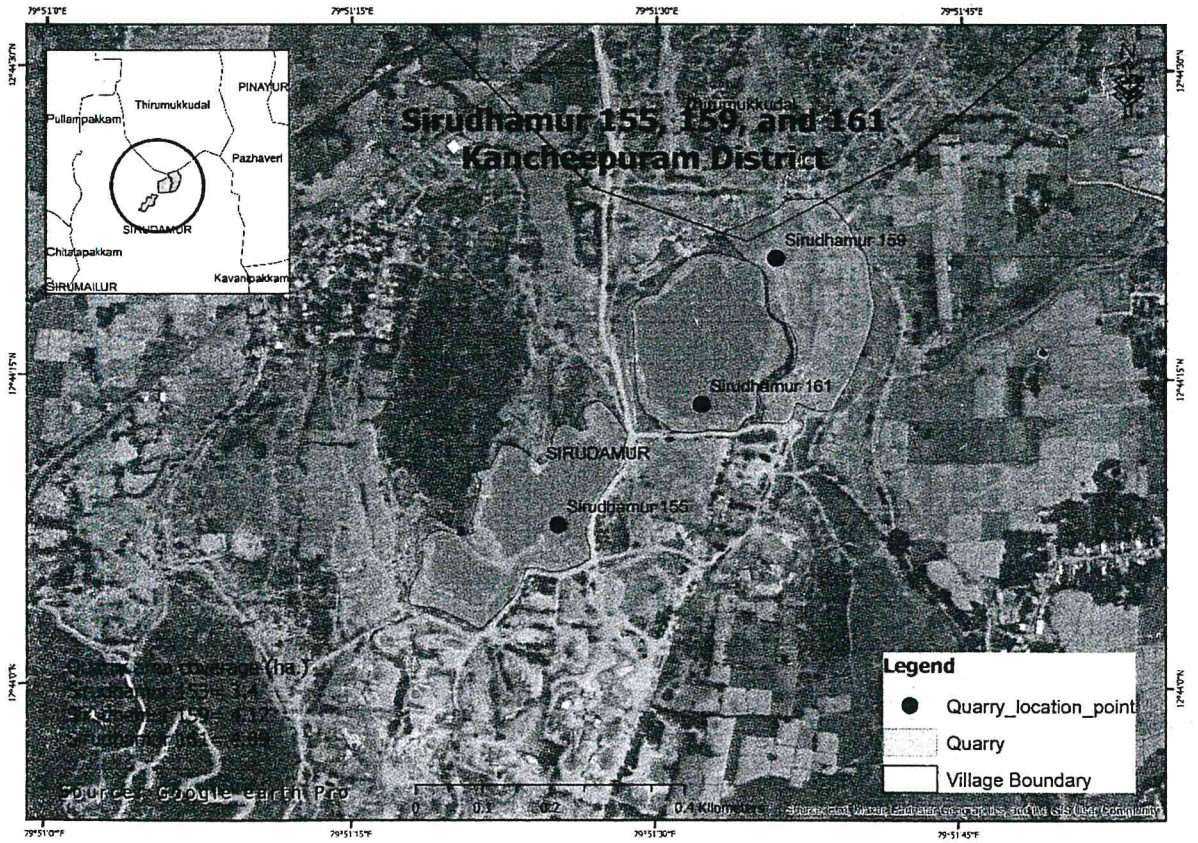
Common Shrubs and Climbers: *Phyllanthus reticulatus, Flueggea leucopyrus, Ficus hispida, Tinospora cordifolia, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Opuntia dillenii, Lantana camara.*

Uthiramerur Taluk :: Siruthamur, Survey No. 155 (P)

Care Earth Trust team visited the Siruthamur village quarry, located in the Kundru revenue classification. The quarry, which spans 5.00.00 ha, was leased for rough stone quarrying until 21.09.2012. The quarry has a depth of around 35 meters and a water volume of 8,55,000 m^3. The water can be used for drinking water and irrigation of nearby farmlands. The quarry has a 10 year lease with a hillock mined on the western side. Access to the quarry is difficult, and there are no good trees at present. The area is suitable for planting trees like *Syzygium cumini*, *Albizia lebbeck*, *Euphorbia antiquorum*, and *Azadirachta indica* like native trees. The quarry is to be fenced to a sufficient height with adequate gates. Due to the undue depth of the quarry floating solar panels for power generation and fish culture is not possible. The water already stored if used for drinking or agriculture could not be recouped due to the hard nature of the rock and due to the non-availability of fractures, which is essential for recharge. The following plant species are widely found here,

Common trees: *Azadirachta indica, Prosopis juliflora, Borassus flabellifer, Pithecellobium dulce, Albizia lebbeck, Holoptelea integrifolia, Morinda tinctoria, Ficus racemose, Syzygium cumini.*

Common Shrubs and Climbers: *Calotropis gigantea, Flueggea leucopyrus, Ficus hispida, Tinospora cordifolia, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Opuntia dilleniid, Lantana camara, Stephanotis volubilis.*



Uthiramerur Taluk :: Siruthamur, Survey number 107 (P)

Care Earth Trust team visited the Siruthamur village quarry, located in the Kallangkuthu revenue classification. The quarry, which spans 5.00.00 ha, was leased for quarrying gravel and rough stones until 04.02.2017. The quarry has a depth of around 40 meters and 40000 m^3 of water is available, which can be used for drinking water and irrigation of nearby farmlands. The area may be used for planting trees like *Ficus religiosa*, *Ficus amplissima*, *Acacia leucophloea*, and *Azadirachta indica*. The quarry fencing is to be proposed under the Green Fund. The quarry is to be fenced to a sufficient height with adequate gates. The area has a land use land cover (LULC) and includes a road, small non-patta farmland, scrub, porompoke, and 326 quarry. The area also has Patta land and a crusher. The following plant species are widely found here,

Common trees: *Prosopis juliflora, Borassus flabellifer, Azadirachta indica, Albizia lebbeck, Ziziphus mauritiana, Holoptelea integrifolia, Morinda tinctoria, Ficus racemose, Syzygium cumini, Ficus benghalensis.*

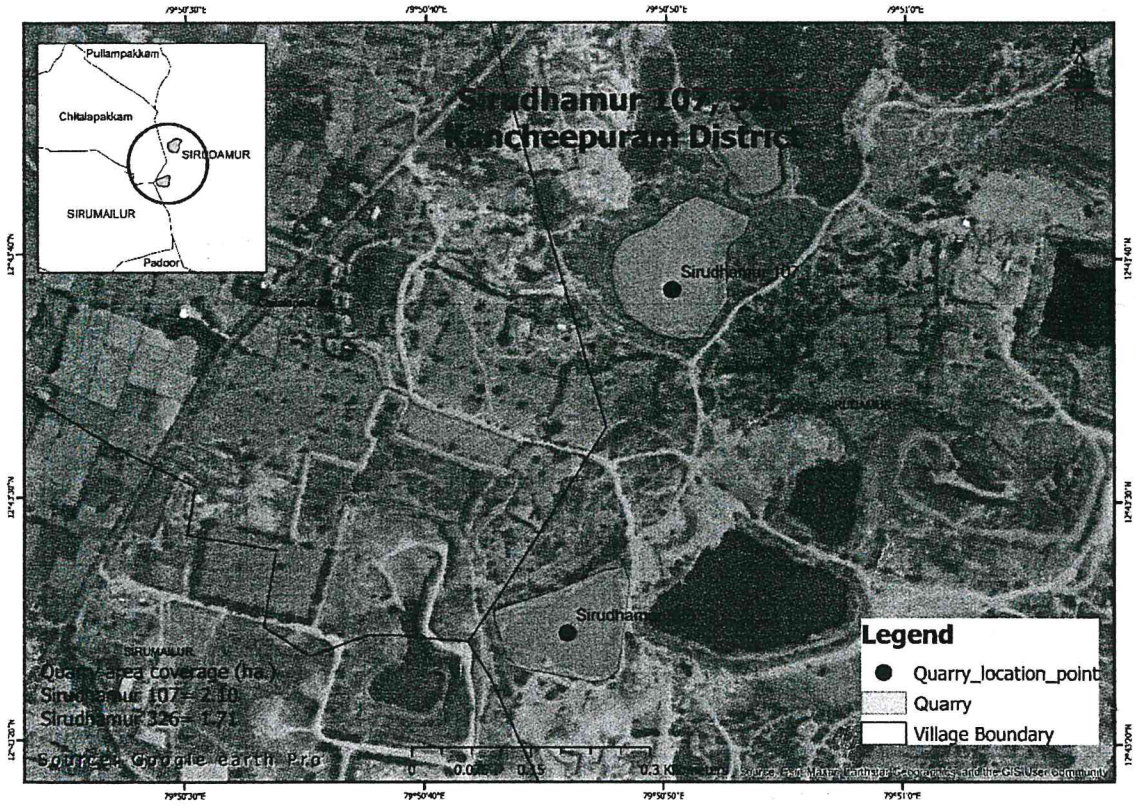
Common Shrubs and Climbers: *Tarenna asiatica, Euphorbia antiquorum, Calotropis gigantea, Flueggea leucopyrus, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Opuntia dilleniid, Senna auriculata.*

Uthiramerur Taluk :: Siruthamur, Survey No. 326(P)

Care Earth Trust team visited the Siruthamur village quarry, located in Survey No. 326(P) and covering 2.00.00 ha. The quarry was leased for quarrying gravel and rough stones until 15.02.2012, with a depth of around 50 meters. The village has no demand for drinking water and has 160 households and nearly 1000 people. The majority of the population uses pumpset and lake irrigation. Local people are used in the quarry as labour (both skilled and unskilled) and transport lorry drivers, with many working in SIPCOT Sripermpudur and Oragadam. They also work in other quarries in the area including private patta quarry. There is potential for reuse, with green belts outside the quarry boundary. There is limited possibility for floating solar panels for power generation. The ecological observation revealed scrub vegetation, neem and palm trees, and no potential for further quarries. Due to the 50 m depth of water fish culture is not possible. Already some land is being irrigated from the quarry, which is already being polluted by waste slurry from the washing process of M sand in the adjacent crusher. The area of irrigation if expanded may result in complete depletion of the storage which could not recouped. Thus the agriculture under the quarry could not sustained. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here,

Common trees: *Prosopis juliflora, Borassus flabellifer, Azadirachta indica, Holoptelea integrifolia, Morinda tinctoria, Tamarindus indica, Vitex negundo, Ficus benghalensis.*

Common Shrubs and Climbers: *Cassia auriculata, tarenna asiatica, Euphorbia antiquorum, Calotropis gigantea, Flueggea leucopyrus, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Stephanotis volubilis, Tylophora indica, Jatropha gossypifolia, Ricinus communis.*



Uthiramerur Taluk :: Kunnavakkam, Survey No: 122 Q1

Care Earth Trust visited the Kunnavakkam village quarry, leased for rough stone quarrying until 18.06.2002. The quarry spans 5.00.00 ha and has a depth of around 20m. The water volume is 682000 m^3, which can be used for drinking water and irrigation. The quarry also provides habitat for various land birds, including Indian Horned Owls, bonnet macaque, Black kite, little grebe, and little cormorants. The quarry's geo-coordinates are 12.662885 79.831467. A trial has been tried by TWAD Board by providing three bore wells near the quarry for water supply to the village. Due to the availability of bed rock without weathering or fractures, there was no yield in the wells. Hence the bore wells had been abandoned. If the water is pumped for drinking water, it can provide water supply to a population of 2000 at 40 lpcd for 284 months. Beyond this period no water can be supplied as the quarry will not recoup ground water due to the nature of the rock. Fish culture in this quarry is possible due to the limited depth of water. The quarry is to be fenced to a sufficient height with adequate gates. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here,

Common trees: *Prosopis juliflora, Borassus flabellifer, Azadirachta indica, Holoptelea integrifolia, Ficus benghalensis.*

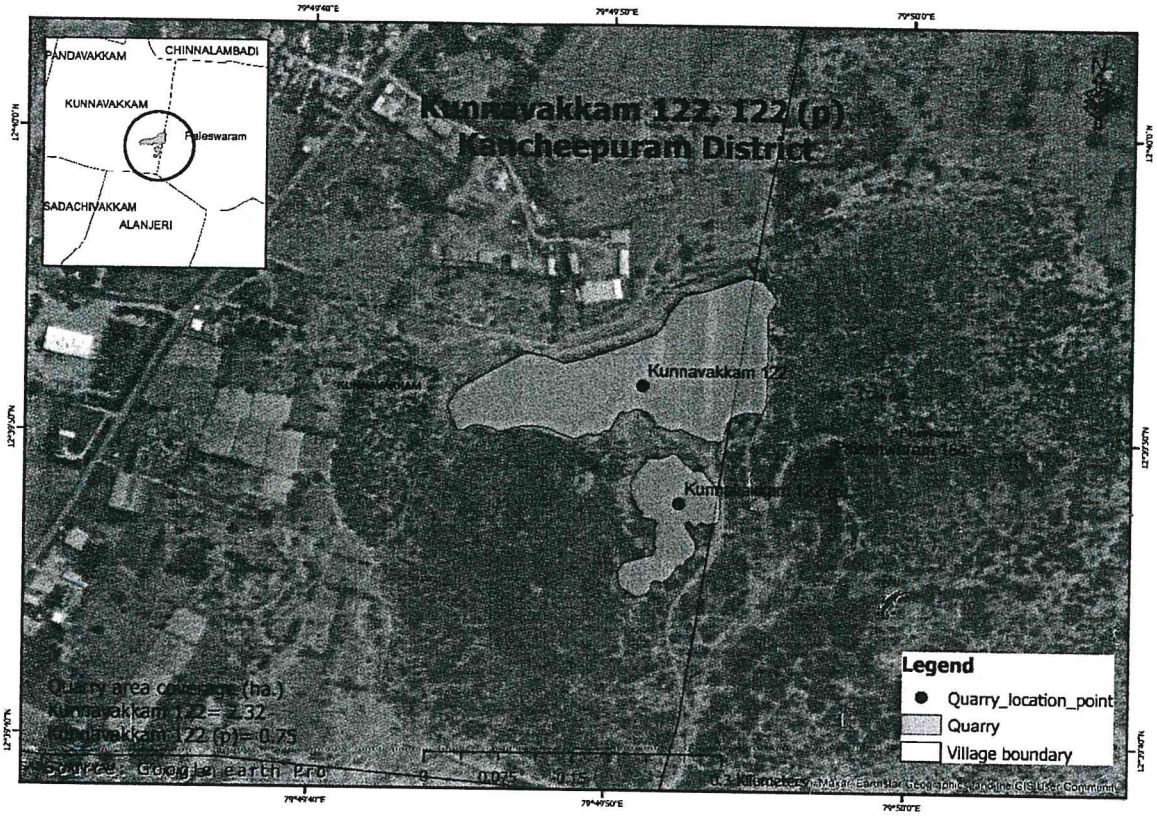
Common Shrubs and Climbers: *Ziziphus oenoplia, tarenna asiatica, Euphorbia antiquorum, Calotropis gigantea, Flueggea leucopyrus, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Stephanotis volubilis, Tylophora indica.*

Uthiramerur Taluk :: Kunnavakkam, Survey No. 122(P) Q.No.3

Care Earth Trust visited the Kunnavakkam village quarry, located in Survey No. 122(P) Q.No.3 and covering 5.00.00 ha. The quarry was leased to D. Siva, Thottanaval Village, Uthiramerur Taluk, and was used until 21.08.2015. The quarry has a depth of around 5 meters and 123600 m^3 of water available, which can be used for drinking water and irrigation. The water can also be used for planting trees in social forestry areas, and the water can be used for watering saplings during summer. Aquatic weeds like Hydrilla, valisnerea etc. are witnessed in the water. The use of the water for drinking and agriculture may be of one time use as the recoupment of water due to ground water recharge is not possible, due to the solid nature of rough rock without any fractures. This quarry is most suitable for fish culture due to the shallowness of the depth. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here,

Common trees: *Vachellia leucophloea most dominant species, Prosopis juliflora, Holoptelea integrifolia, Borassus flabellifer, Azadirachta indica, Diospyros Chloroxylon, Ziziphus xylopyrus, Morinda tinctoria.*

Common Shrubs and Climbers: *Cassia auriculata, Ziziphus oenoplia, tarenna asiatica, Euphorbia antiquorum, Calotropis gigantea, Flueggea leucopyrus, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Stephanotis volubilis, Tylophora indica.*

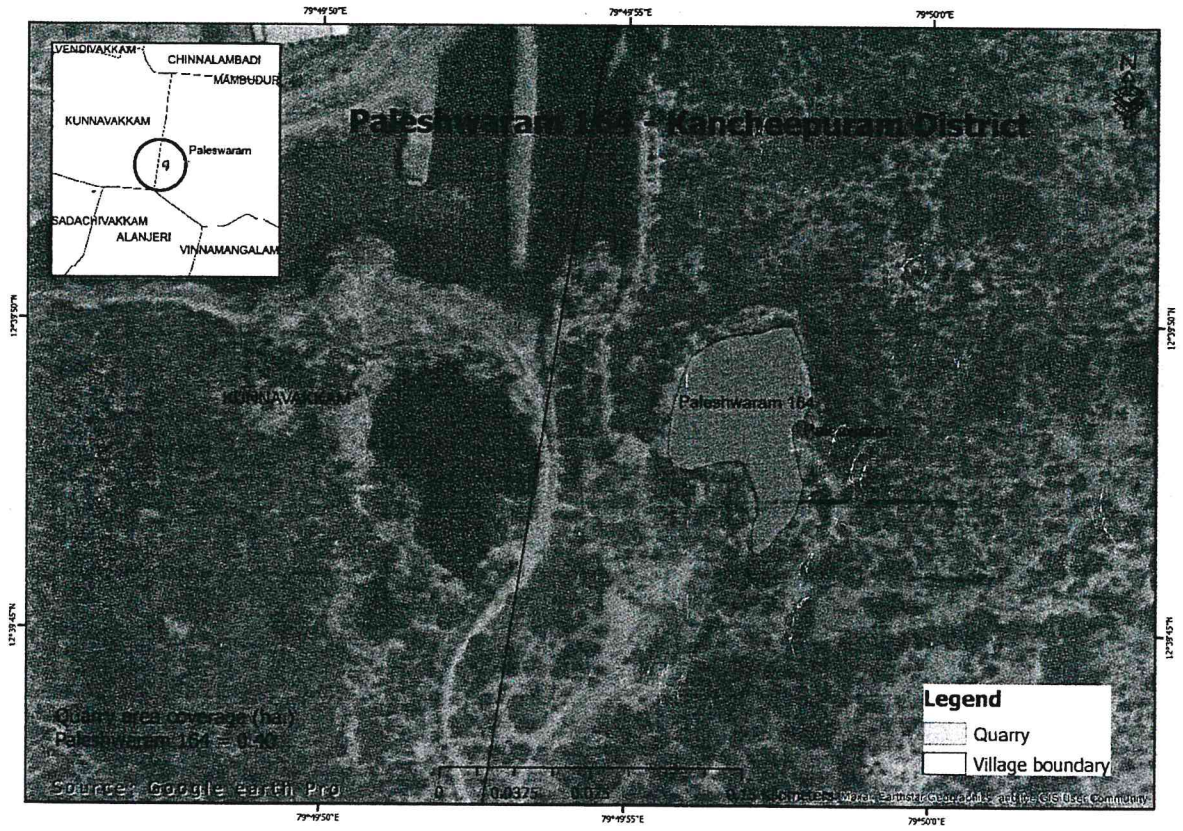


Uthiramerur Taluk :: Paleshwaram, Survey No. 164

Care Earth Trust team visited the Paleshwaram village quarry, located in Survey No. 164 and covering 5.00.00 ha. The quarry was leased out for quarrying Roughstone & Gravel to D. Srinivasan, Thottanaval Village, Uthiramerur Taluk, and has a depth of around 20 meters. The water available is 820000 m^3, which can be used for drinking water and irrigation of nearby farmlands. The two quarries are part of hills surrounded by scrub forest and have been planted with trees like Velvel. The water in Quarry at survey number 122 is clear and could be used for drinking, while water in quarry at survey number 164, is green indicating eutrophication. Both quarries are currently not in use, and the water has submerged hydrophytes. The quarries are located on the border between Kunnavakkam and Paleshwaram villages, 500 meters south of Kunnavakkam village. Nearby areas include Karikili Bird Sanctuary, Vedanthangal Bird Sanctuary, and Pallavaa Mines and Raghavendra Blue Metals. The water is currently not in use, and nearby bore well provided by TWAD Board is defunct due paucity of yield. Fish culture in this quarry is possible due to limited depth of water. This is likely to attract birds from nearby sanctuaries of Karikili and Vedanthangal. As this quarry is the remote area which is not habituated by public, the possibility of attracting birds and mammals is very bright. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here.

Common trees: *Vachellia leucophloea most dominant species, Prosopis juliflora, Holoptelea integrifolia, Borassus flabellifer, Azadirachta indica, Diospyros Chloroxylon, Ziziphus xylopyrus, Morinda tinctoria.*

Common Shrubs and Climbers: *Cassia auriculata, Ziziphus oenoplia, tarenna asiatica, Euphorbia antiquorum, Calotropis gigantea, Flueggea leucopyrus, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Stephanotis volubilis, Tylophora indica.*



Walajabad Taluk

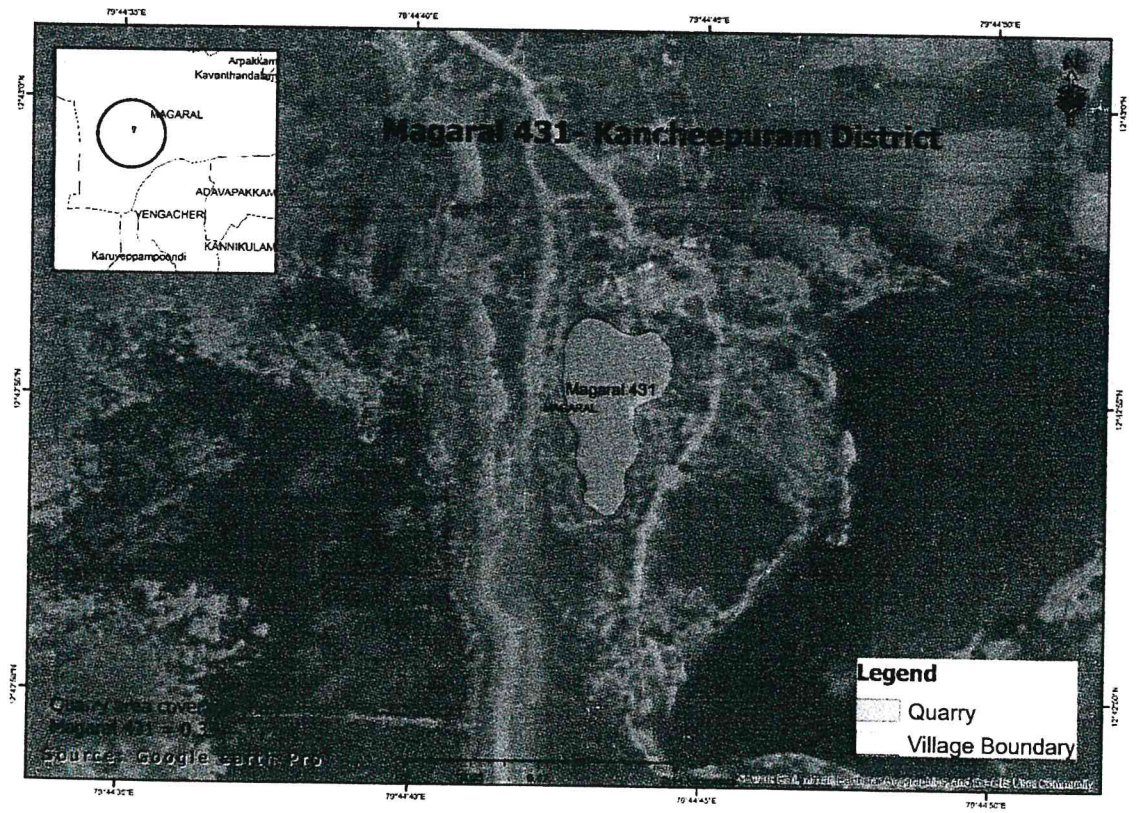
Walajabad Taluk :: Magaral, Survey No. 431/1 (P), 2, 3

Care Earth Trust team visited the Magaral village quarry, located in Survey No. 431/1 (P), 2, 3, and covering 5.00.00 ha. The quarry was leased to B. Deenan S/o Babu Reddiar for quarrying Roughstone & Gravel until 18.12.2011. The quarry has a depth of around 7 meters and a volume of water available of 162400 m^3. The water can be used for drinking water and irrigation of nearby farmlands. The area around the quarry is densely covered with Prosopis juliflora trees. A power line runs along the west side, and two private Patta quarries are on the east side. The water from the quarry was previously used for irrigation but is now dry and shallow. The quarry is located in

nearly 5 to 6 meters of surplus weir of Magaral big tank and is surrounded by agricultural fields. Magaral big tank, receives supply of water from Cheyyar River. A running quarry just on the north of the defunct quarry is releasing its washed slurry to the south of the quarry. Care should be taken to provide a check on this quarry not to release the slurry in to the quarry under consideration for reuse. Irrigation from this quarry will be sustainable for an area of around 55 acers, as the quarry is likely to be refilled by surplus water of Magaral big tank. Fishing activity is also possible due to shallow nature of the quarry. The abandoned quarry in the east of this quarry is brimming with water from which irrigation is available for 2 farmers using submersible pumps. As this quarry is likely to recoup the storage by runoff water from a catchment, it is possible to irrigate around 100 acers. A lift irrigation society can be formed by farmers to irrigate their lands by pumping water from the quarry for a second crop when there is no water in Magaral big tank. GoTN may be approached by farmers for free electricity for the pump to be installed in the quarry. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here,

Common trees: *Prosopis juliflora is the most dominant species, Azadirachta indica, Syzygium cuminii, Borassus flabellifer, Morinda tinctoria.*

Common Shrubs and Climbers: *Calotropis gigantea, Flueggea leucopyrus, Canthium coromandelicum, Benkara malabarica, Dodonaea viscosa, Cissus quadrangularis, Passiflora foetida.*

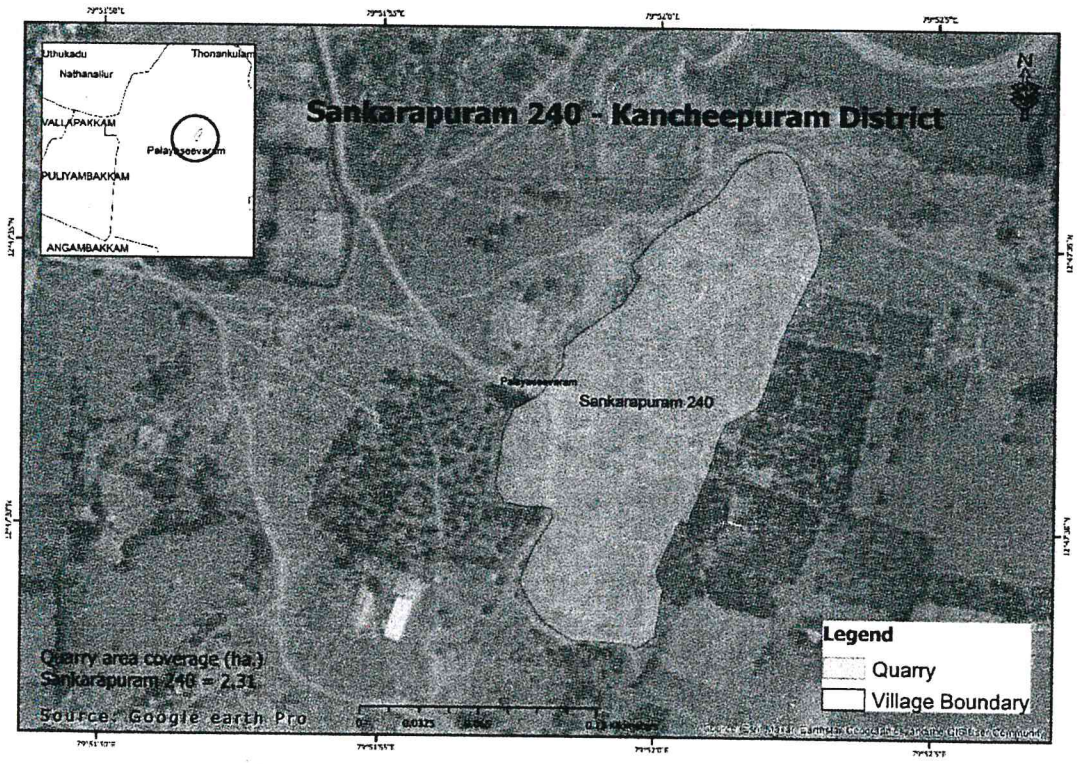


Walajabad Taluk :: Sankarapuram, Survey No. 240 (P)

Care Earth Trust team visited the Sankarapuram village quarry, located in Survey No. 240 (P) and covering 2.00.00 ha. The quarry was leased for quarrying rough stone and gravel until 18.12.2006. no water is stored in the isolated pits, dug by the quarry lessey. The area is surrounded by scrub and agricultural lands, with the quarry work stopped at the initial stage, as the volume of over burden to be removed was of huge quantity. The initial 3 to 4 m is only red soil with boulders and the economic viability of quarrying was very much doubtful and hence quarrying was abandoned. There are seven shallow pits and a high-voltage power line above the quarry. Nearby land is classified as Kallankuthu, and Eucalyptus trees are grown around the quarry. The area is surrounded by Palaru, Arkadan eri, Sangarapuram Village, Barron land, and Patta quarry. The seven pits in the abandoned quarry area maybe converted in to percolation ponds by deepening and the providing banks without obstructing runoff from the limited catchment. These seven pits can be interred liked. Nature trees can be planted in the entire quarry area and around the percolation ponds. The plants can be irrigated through the stored water by providing a pump and micro irrigation to the plants. During summer the plants can be irrigated by groundwater by providing a bore well and a ground reservoir, to which the micro irrigation lines can be connected. The entire area of planting and ponds should be enclosed with fencing. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here,

Common trees: *Prosopis juliflora is the most dominant species, Azadirachta indica, Ficus hispida.*

Common Shrubs and Climbers: *Calotropis gigantea, Lantana camara, Toddalia asiatica, Antigonon leptopus, Sarcostemma acidum, Dodonaea viscosa, Cissus quadrangularis.*



Kundrathur Taluk

Kundrathur Taluk :: Sikkarayapuram, Survey No. 207/1

Care Earth Trust visited the Sikkarayapuram village quarry, leased for quarrying rough stone and gravel to S. K. Dharmalingam in Sriperumbudur. The quarry, which spans 16.44.1 ha, has a depth of 70m and 5509000 m^3 of water available. The water can be used for drinking water and irrigation of nearby farmlands. The team also suggest to plant like *Terminalia arjuna, Acacia leucophloea, Syzygium cumini,* and *Azadirachta indica* trees along the periphery, where the soil is suitable for afforestation. The plants can be irrigated using micro irrigation from the water in the quarry. The entire area of planting and ponds should be enclosed with fencing. The following plant species are widely found here.

Common trees: *Azadirachta indica is the most dominant species, Ficus hispida, Borassus flabellifer, Morinda tinctoria, Tectona grandis.*

Common Shrubs and Climbers: *Calotropis gigantea, Lantana camara, Toddalia asiatica, Antigonon leptopus, Sarcostemma acidum, Dodonaea viscosa, Cissus quadrangularis.*

Kundrathur Taluk :: Malaiyambakkam, Survey No. 873,874,876,877,878,880 & 981

The Care Earth Trust visited the Malaiyambakkam village quarry, leased for quarrying rough stone and gravel to S.K. Dharmalingam in Sriperumbudur. The quarry, which spans 6.55.0 ha, has a depth of around 50m and 8270000 m^3 of water is available. The water can be used for drinking water and irrigation of nearby farmlands. The team also suggest to plant like *Terminalia arjuna, Acacia leucophloea, Syzygium cumini,* and *Azadirachta indica* trees along the periphery, where the soil is suitable for afforestation. The plants can be irrigated using micro irrigation from the water in the quarry. The quarry is to be fenced to a sufficient height with adequate gates. The following plant species are widely found here.

Common trees: *Azadirachta indica is the most dominant species, Ficus hispida, Borassus flabellifer, Morinda tinctoria, Tectona grandis.*

Common Shrubs and Climbers: *Calotropis gigantea, Lantana camara, Toddalia asiatica, Antigonon leptopus, Sarcostemma acidum, Dodonaea viscosa, Cissus quadrangularis.*

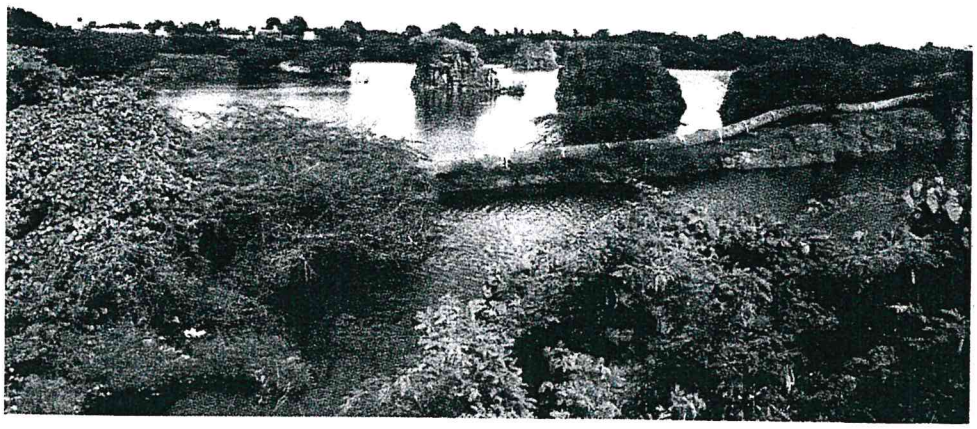
Kundrathur Taluk :: Sikkarayapuram, Survey No. 296/1A

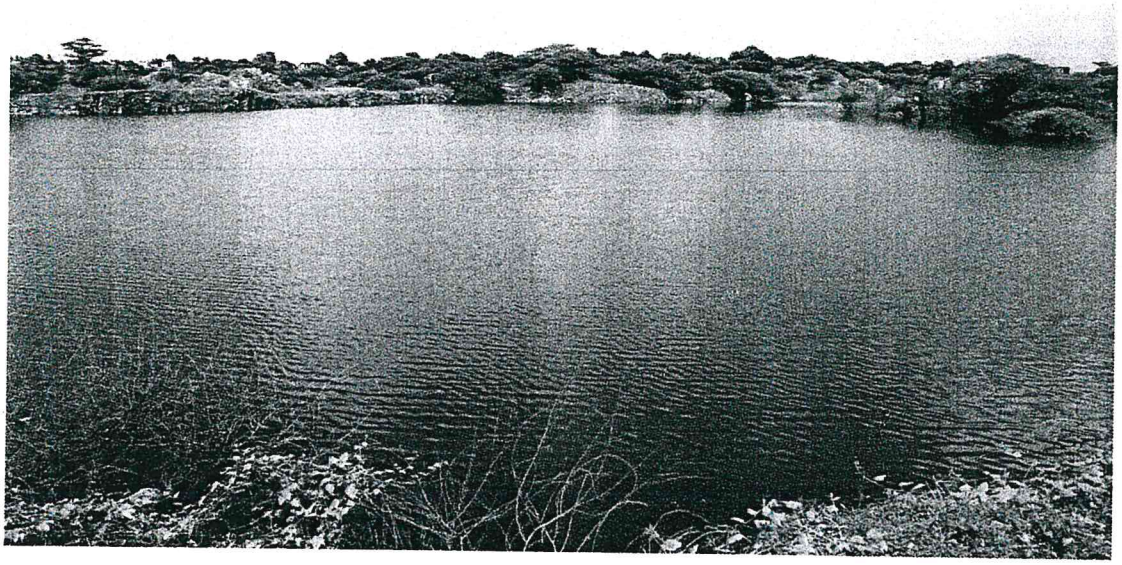
The Care Earth Trust visited the Sikkarayapuram village quarry, leased for quarrying rough stone and gravel to Kollacheri Harijan Labour Contract Co-operative Society Ltd. The quarry, which spans 15.46.9 ha, has a depth of 70m and 245000 m^3 of water available for drinking water and irrigation. The water can be used for drinking water and irrigation of nearby farmlands. The team also suggest to plant like *Terminalia arjuna, Acacia leucophloea, Syzygium cumini,* and *Azadirachta indica* trees along the periphery, where the soil is suitable for afforestation. The plants can be irrigated using micro irrigation from the water in the quarry. The quarry is to be fenced to a sufficient height with adequate gates.

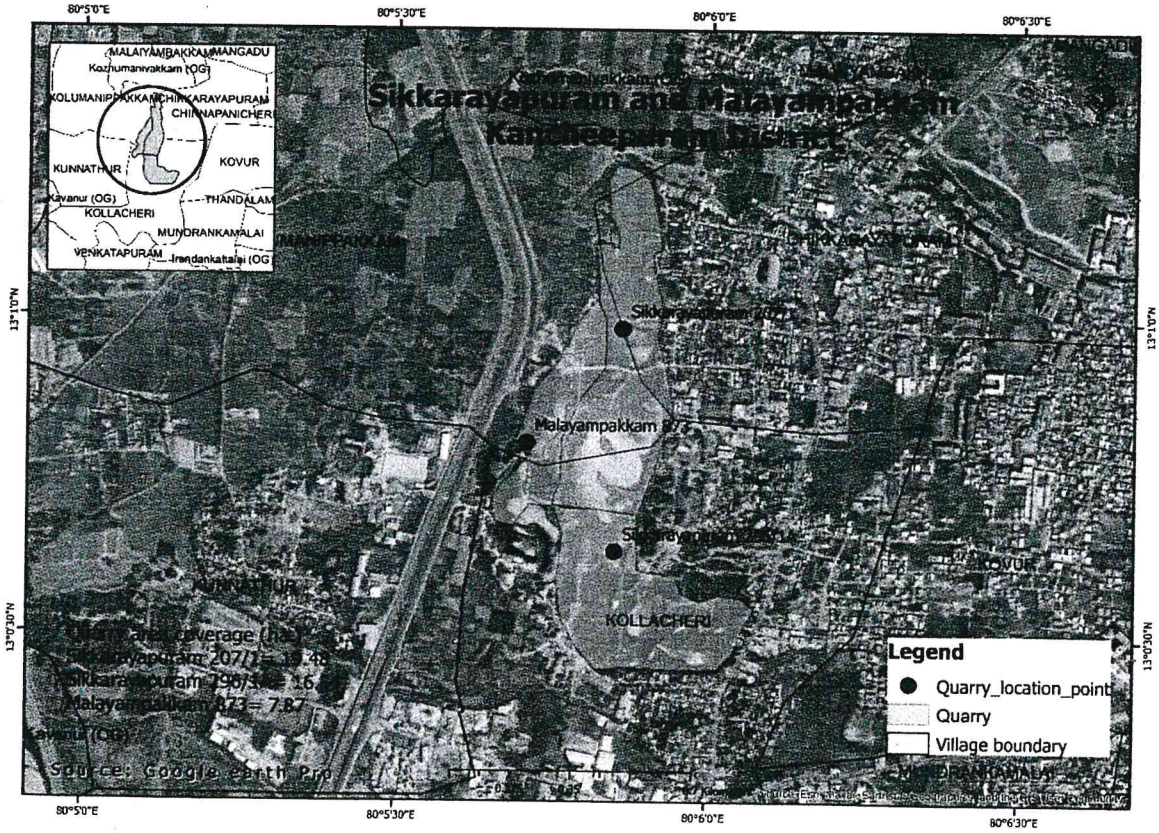
The quarries located in the vicinity of Sembarambakkam in Sikkarayapuram and Malaiyampakkam are at present one entity. The water stored in all three quarries is 14024000 m3/495 mcft. This is one fifth of the capacity of Sembarampakkam Lake which is a drinking water source for Chennai city. Already during drought years when Sembarampakkam has poor storage, water from the above quarries is pumped to water treatment plant at Sembarampakkam and supplied to the city. All arrangements are in place to utilise the water from the quarry for drinking. The total area of the three quarries is 38.46 hectares and with 9 small islands, which could not drastically affect the water holding capacity. The capacity provided in this report is based on the water level at the time of our inspection. During the recent rains a field irrigation channel from Sembarampakkam which runs very close to the quarry, collected the runoff which flowed in to the quarry pits. Thus, the pits are having water up to the brim. Now the capacity of the water stored may be around 600 m.cft. As there is a scope of the quarry pits to get filled up to ground level from the runoff almost every year, the use of these quarry pits for drinking water ensures assured water supply in Chennai city even during summer. 50 per cent of the area of the quarry pits can be utilised for solar power generation. Top priority must be given to be protect this are by chain link fencing of sufficient height or compound wall, so as to avoid dumping of garbage / debris. The quarry is situated near nearby locations such as Sikkarayapuram, Kozhumunivakkam, Mangadu, Kollacherry, Malayambakkam, and Mepur and NH. The following plant species widely found here,

Common trees: *Azadirachta indica is the most dominant species, Ficus hispida, Borassus flabellifer, Morinda tinctoria, Tectona grandis.*

Common Shrubs and Climbers: *Calotropis gigantea, Lantana camara, Toddalia asiatica, Antigonon leptopus, Sarcostemma acidum, Dodonaea viscosa, Cissus quadrangularis.*






80°5'0"E
80°5'30"E
80°6'0"E
80°6'30"E
13°1'0"N
13°0'30"N
MALAIYAMBAKKAM MANGADU
Kozhumanivakkam (OG)
KOLUMANIPAKKAM
CHINNAPANICHERI
KUNNATHUR
KOVUR
Kavanur (OG)
KOLLACHERI
THANDALAM
MUNDRANKAMALAI
VENKATAPURAM
Irandankattalai (OG)
Sikkarayapuram and Malayampakkam
Kancheepuram District
Sikkarayapuram 207
Malayampakkam 273
KOLLACHERI
KOVUR
Legend
Quarry_location_point
Quarry
Village boundary
Source: Google Earth Pro

Chapter 3 Options for potential reuse of abandoned quarries

Protection

A compound wall or a suitable fencing like barbed wire or strong chain link is essential for all the quarries proposed for redevelopment. Fencing of these quarry boundaries should be undertaken to provide protection to the human and cattle life and avoid any untoward incidents at the quarry site. This was also stressed by several speakers during the Stakeholders meeting. Extreme care should be taken during the measurement and construction activities at the mining site, as the pits are really deep. Members from stakeholders meeting suggested some bio-fencing too along with physical fences, which includes growing thorny wild plants along the boundary and layering a tall fence along. The height of the fence should not be less than ten feet high. Since much of the quarry locations are locally remote in rural areas, there is a high chance of pilfering of the materials by strangers. There are also chances for the cattle to mow down the fences, trying to browse the greenery behind. Hence, the fence should be strong enough to ward off both cattle as well as humans.

Hydrological Function

1. Groundwater Recharge

i. Sirudhamur 161(P) Q.No.2
ii. Sirudhamur 155(P)
iii. Sirudhamur 159(P)

These three quarries help in recharge of ground water and need to be protected. They allow stored water to seep through the quarry bottoms to replenish aquifers. A farmer from nearby Mathur village stated that the water in these quarries has helped to maintain the water levels in the village wells, enabling them to take two crops every year. Therefore, these three quarries may be protected with a fence and boundary planted with thorny live- hedge such as, *Ziziphus mauritiana* (Elandai) *Euphorbia tirucalli* (tirukalli) and *Acacia nilotica* (Babul).

2. Supplementing Lake Ayacut

Margael quarry can act as a reservoir to store rainwater for later usage during dry seasons. It can supplement the lake ayacut and help farmers to increase wet crop areas. A sluice may be provided by the PWD to connect this quarry to the adjoining lake in Walajabad taluk to allow rainwater to be collected here and utilized for agriculture during the dry season.

i. Magaral 431/1 (P), 2.3

3. Flood Management

Using quarries as catchment areas to temporarily hold stormwater runoff. Due to its proximity to Chembarambakkam Lake, the risk of flooding can be prevented by diverting the flood during monsoons.

i. Sikkarayapuram 207/1

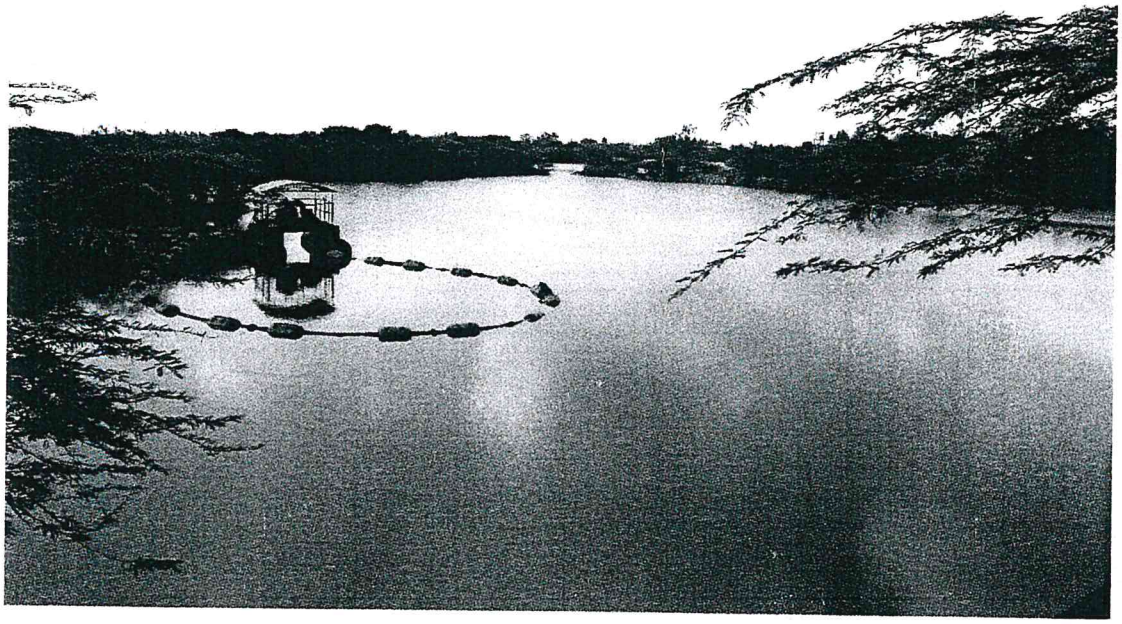
ii.	Malaiyambakkam	873,874,876,877,878,880 and 981
iii.	Sikkarayapuram	296/1A

4. Scientific and Educational Uses

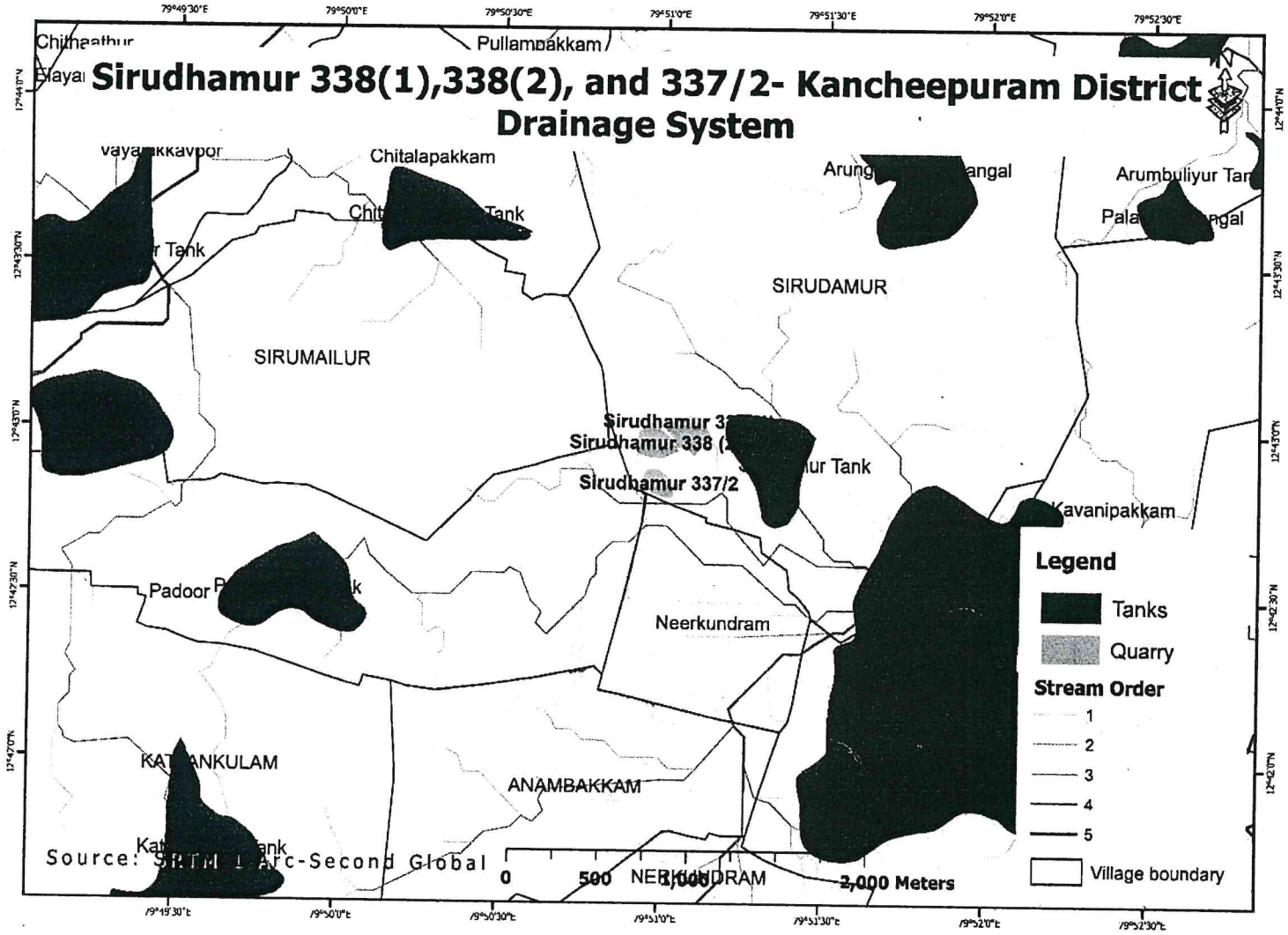
The following quarry water bodies could be used for ecological research, monitoring, or education on water resource management.

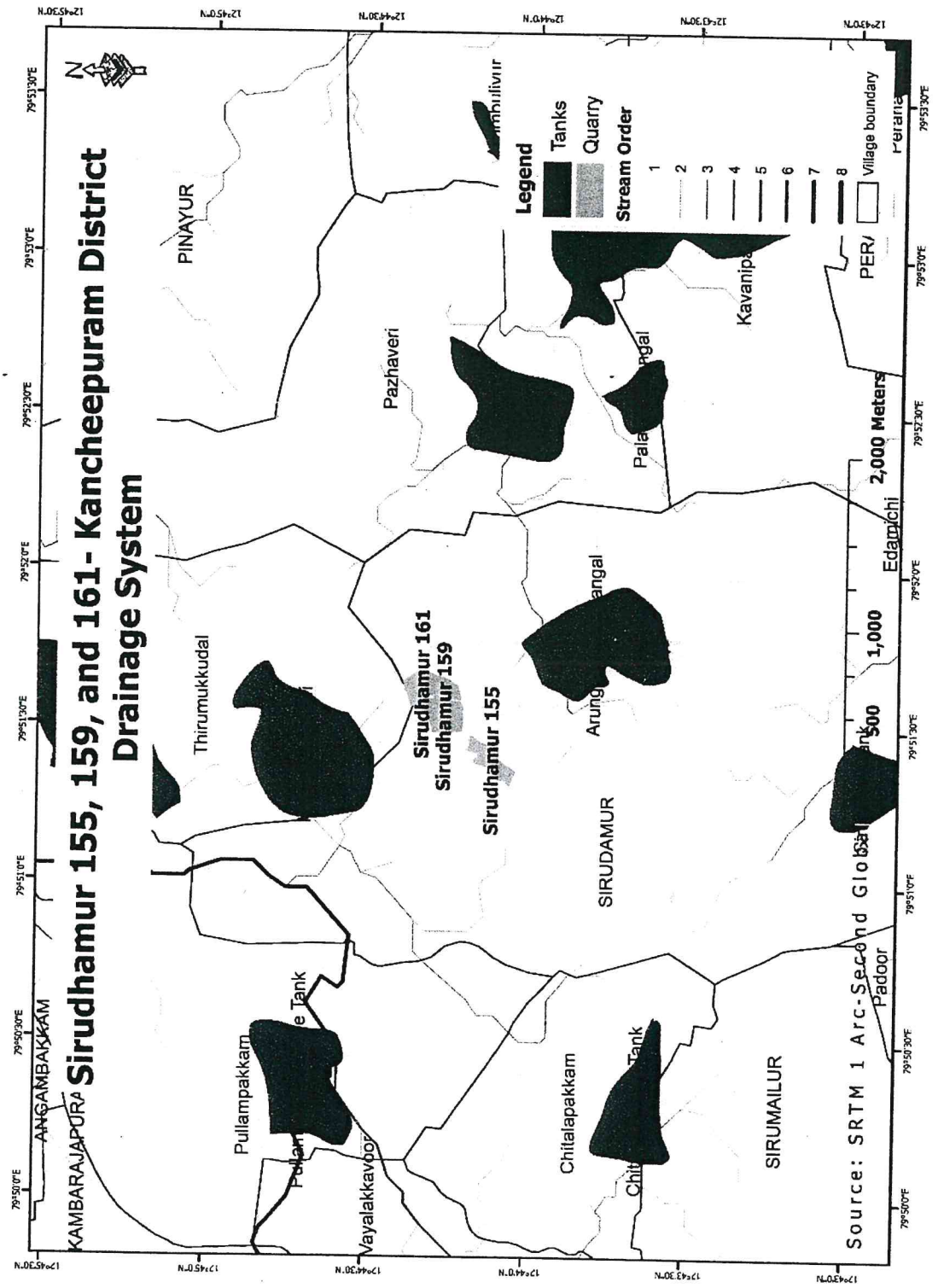
i. Kunnavakkam 122
ii. Kunnavakkam 122(P] Q.No.3
iii. Paleshwaram 164
iv. Sirudhamur 326(P)
v. Sirudhamur 155(P)

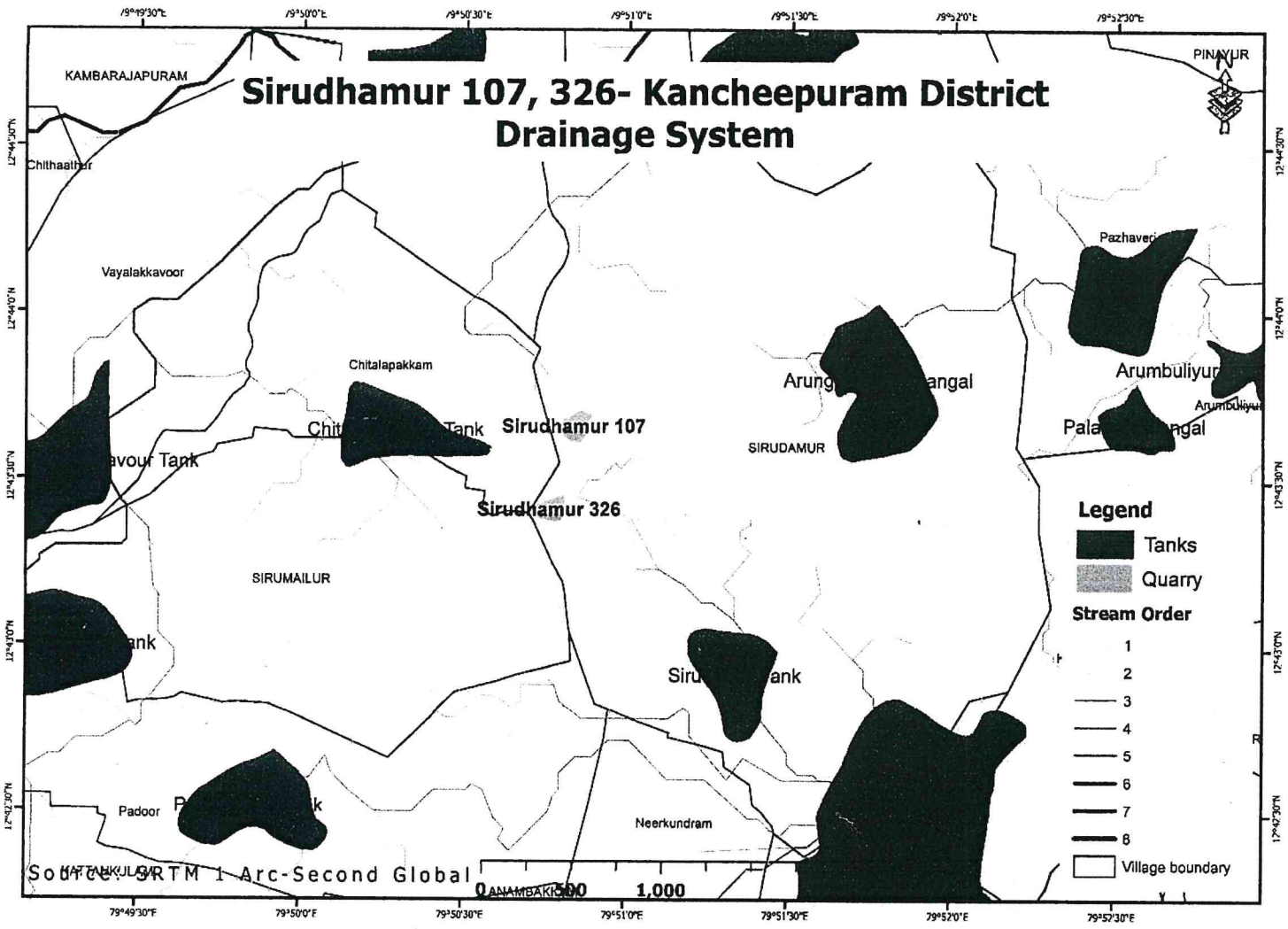
Ecological restoration of the abandoned quarries will involve restoration of the native species around the quarries to make them a nature park and sanctuary for birds besides using one or several of the economic options given above to improve the standard of living of the local people. In this way, the abandoned quarries can help in Eco restoration and livelihood enhancement.

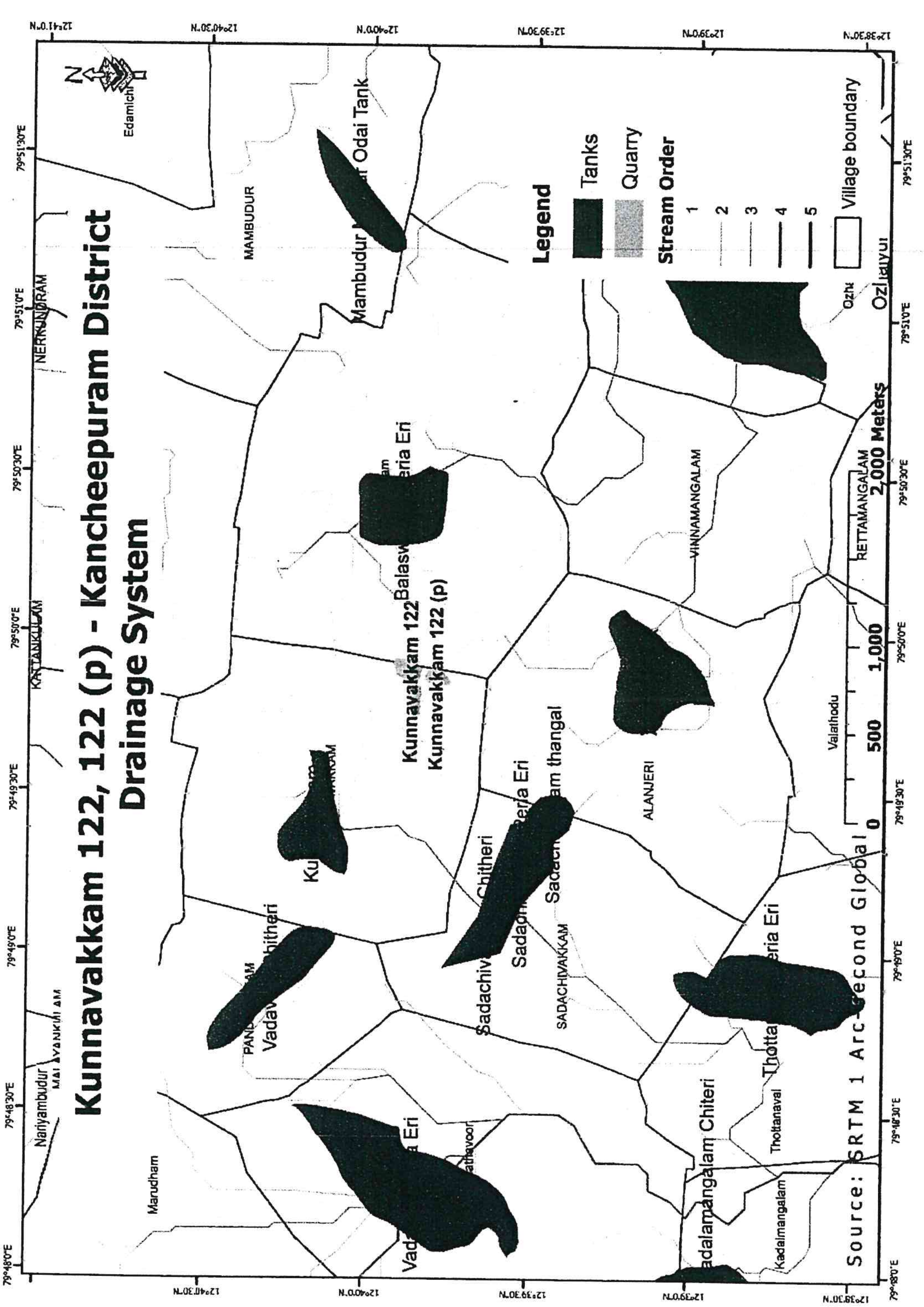


Hydrology Maps

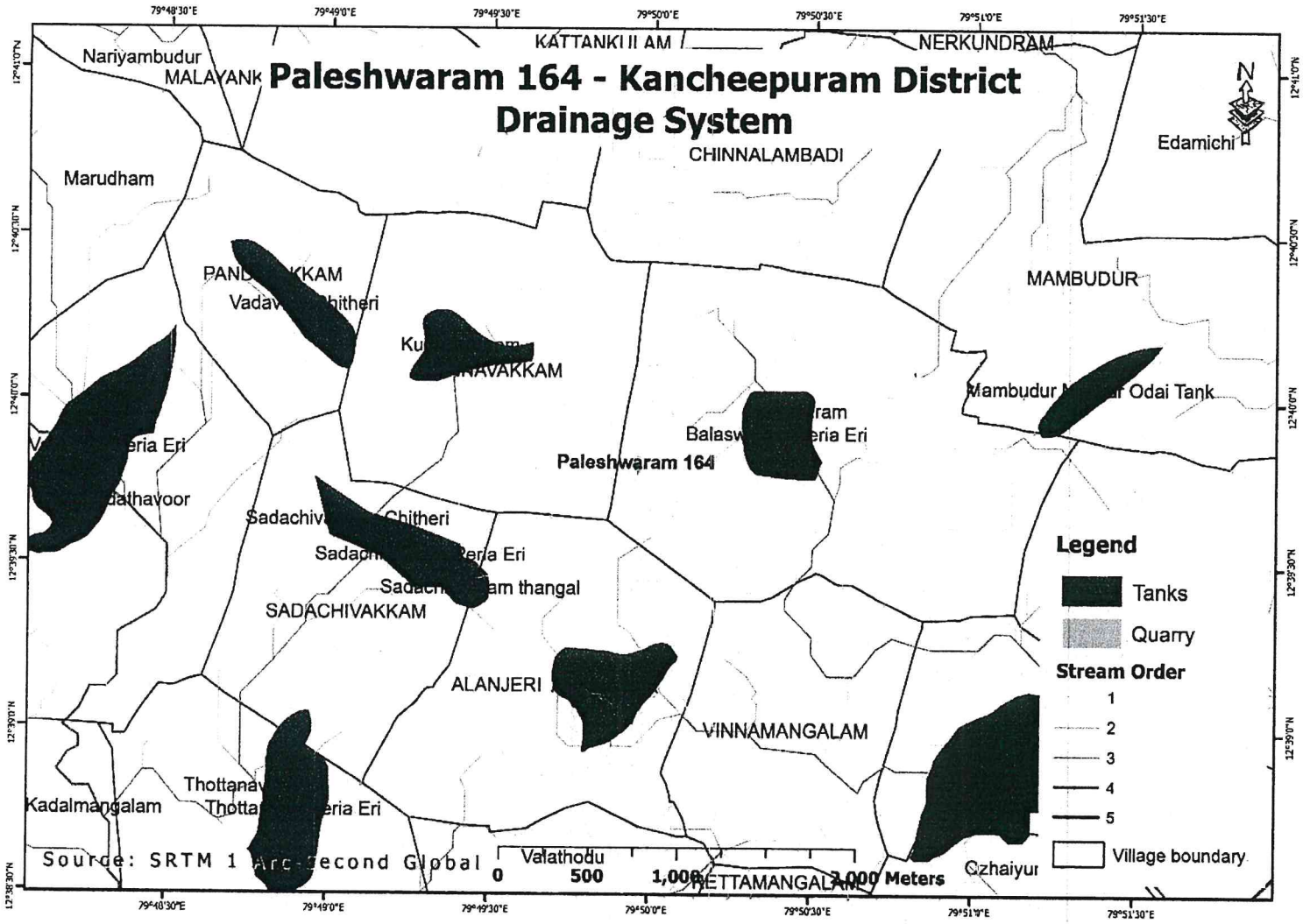


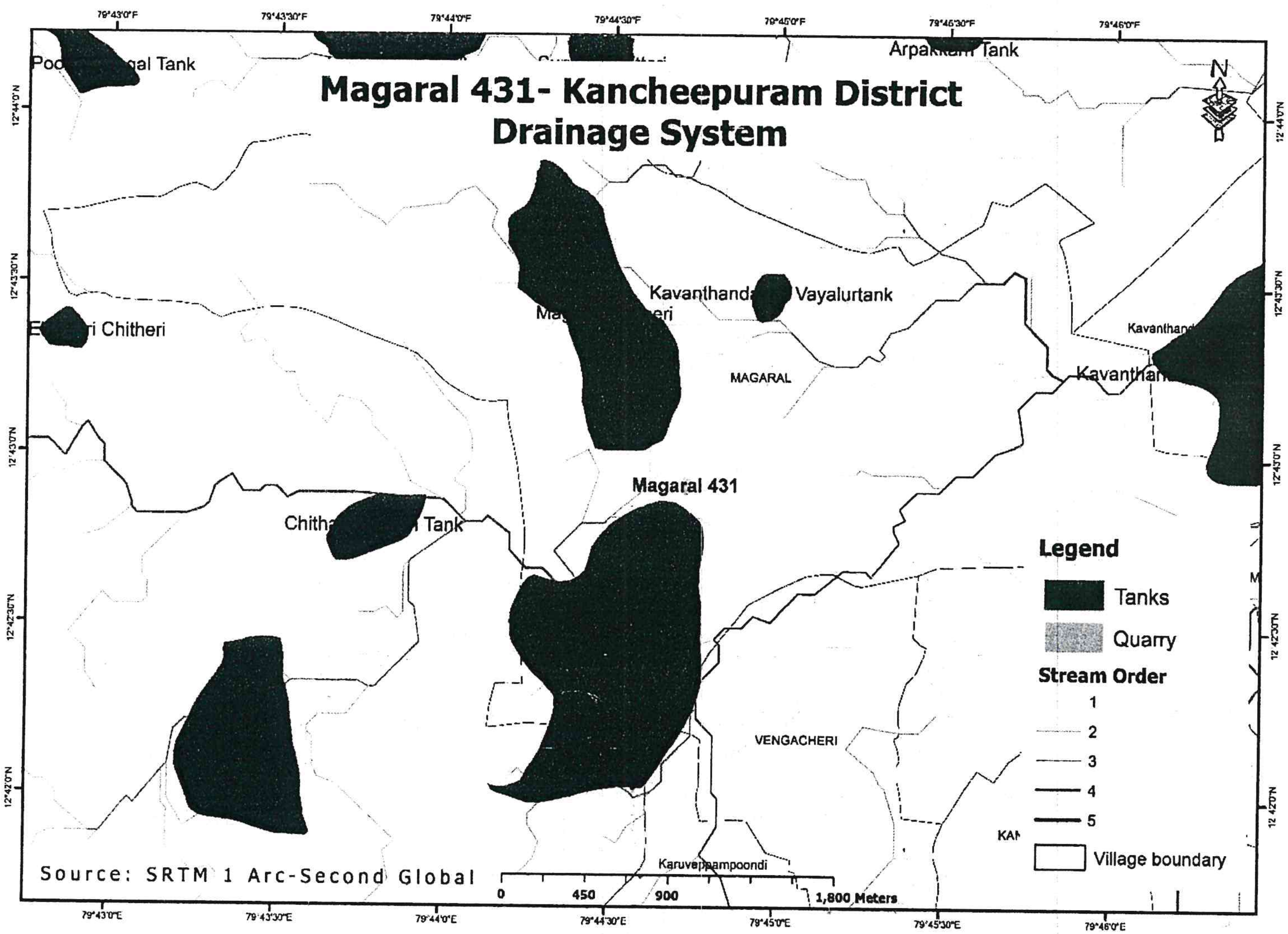

Sirudhamur 155, 159, and 161- Kancheepuram District
Drainage System
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
6
7
8
Village boundary
N
Sirudhamur 161
Sirudhamur 159
Sirudhamur 155
PINAYUR
Pazhaveri
Thirumukkudal
SIRUDAMUR
SIRUMAILUR
Chitalapakkam
Pullampakkam
Vayalakkavoor
ANGAMBAKKAM
KAMBARAJAPURA
Padoor
Edamichi
Kavanipa
PERA
2,000 Meters
1,000
500
Source: SRTM 1 Arc-Second Glob

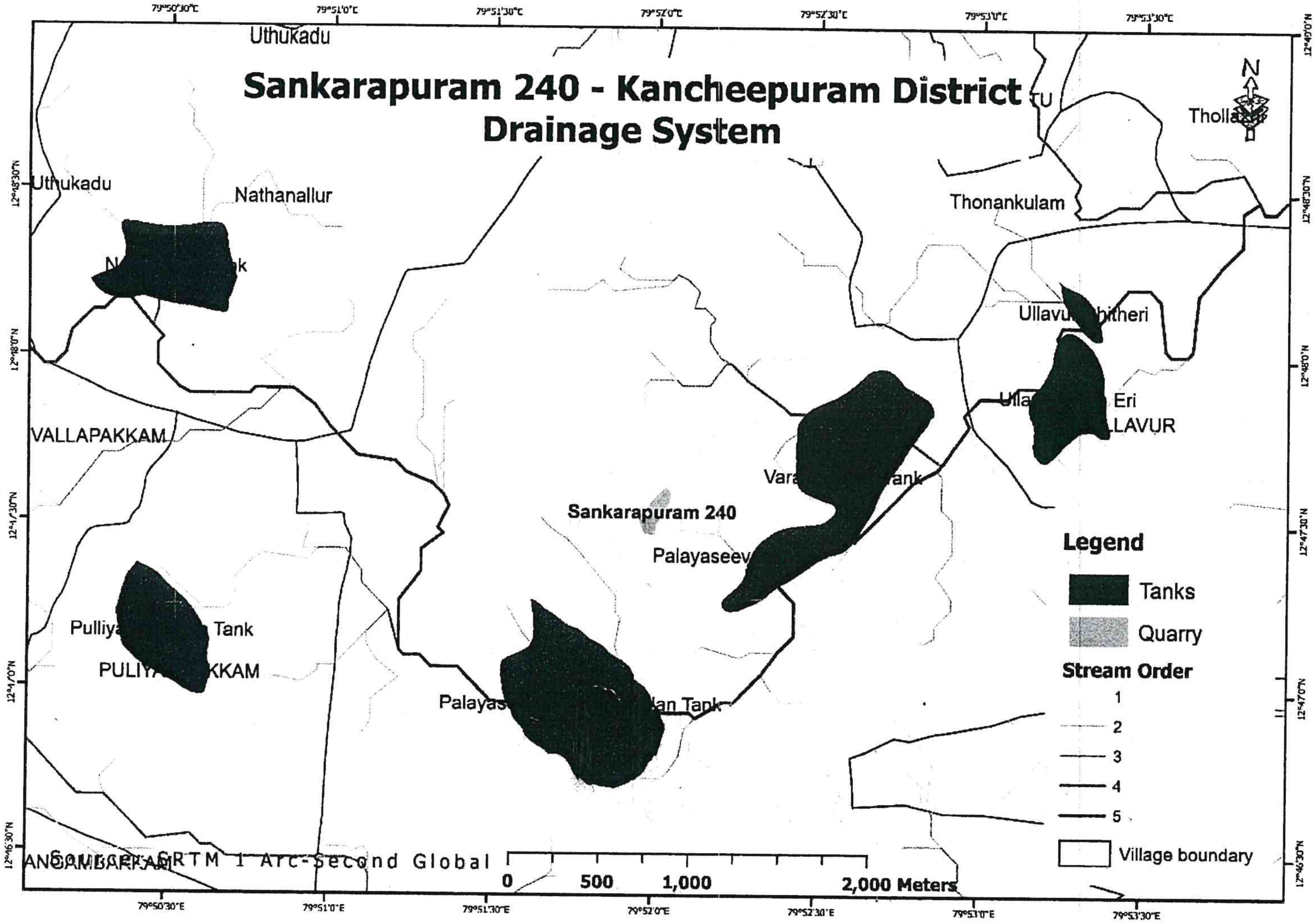

Sirudhamur 107, 326- Kancheepuram District
Drainage System
KAMBARAJAPURAM
PINAYUR
Vayalakkavoor
Chitalapakkam
Sirudhamur 107
Sirudhamur 326
SIRUDAMUR
SIRUMAILUR
Arumbuliyur
Padoor
Neerkundram
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
6
7
8
Village boundary
Source: SRTM 1 Arc-Second Global
0
1,000
79°49'30"E
79°50'0"E
79°50'30"E
79°51'0"E
79°51'30"E
79°52'0"E
79°52'30"E

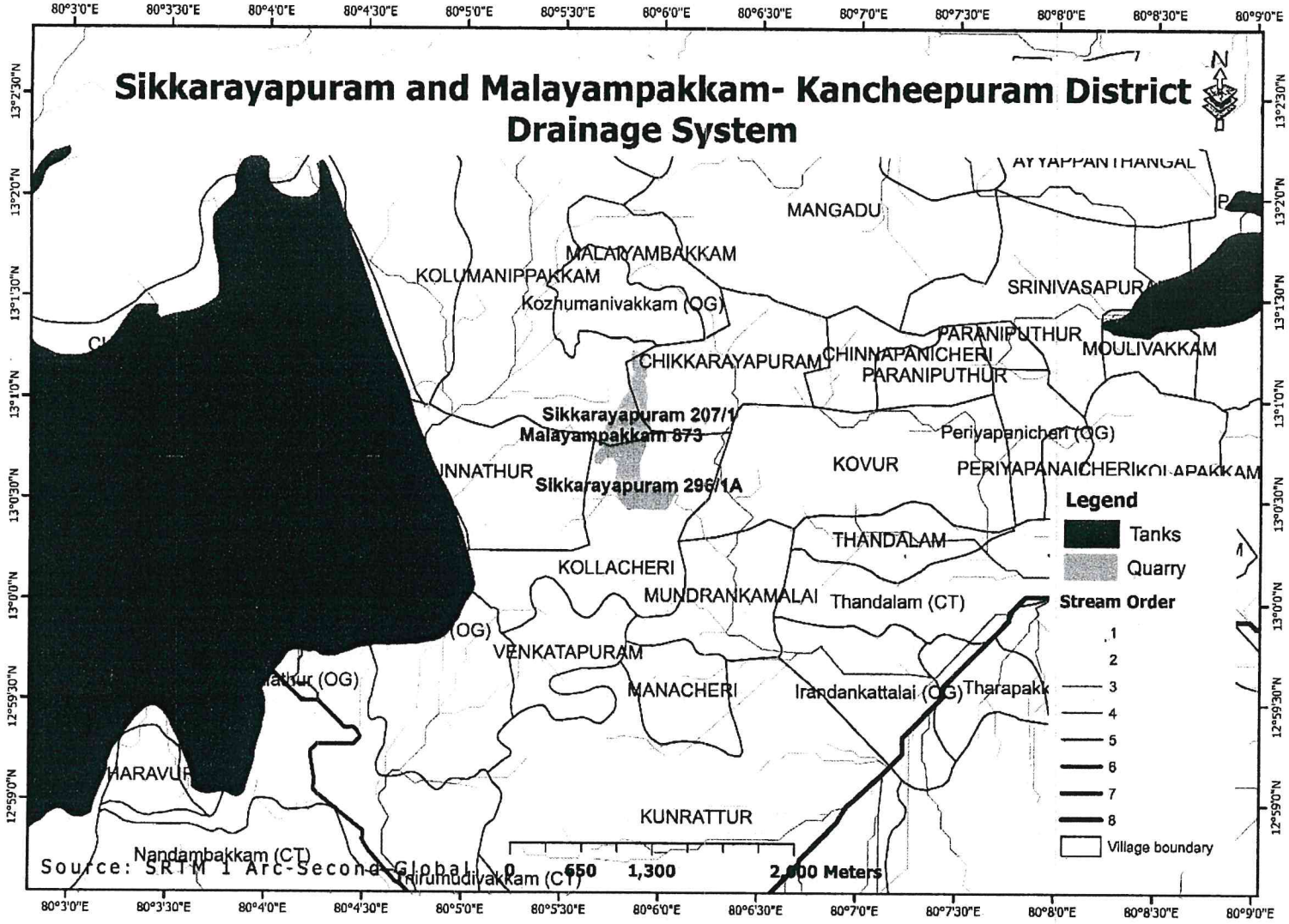


Kunnavakkam 122, 122 (p) - Kancheepuram District
Drainage System
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
Village boundary
0 500 1,000 2,000 Meters
Source: SRTM 1 Arc-Second Global
Kunnavakkam 122
Kunnavakkam 122 (p)
MAMBUDUR
VINNAMANGALAM
ALANJERI
SADACHIVAKKAM
RETTAMANGALAM
Marudham
Thottanaval
Kadalmangalam
Valathodu
Edamichi


Paleshwaram 164 - Kancheepuram District
Drainage System
KATTANKULAM
NERKUNDRAM
Nariyambudur
MALAYANK
Marudham
CHINNALAMBADI
Edamichi
MAMBUDUR
Paleshwaram 164
SADACHIVAKKAM
ALANJERI
VINNAMANGALAM
Kadalmangalam
Valathodu
Ozhaiyur
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
Village boundary
Source: SRTM 1 Arc-Second Global
0
500
1,000
2,000 Meters


Magaral 431- Kancheepuram District
Drainage System
Arpakkam Tank
Kavanthandaleri
Vayalurtank
Chitheri
MAGARAL
Magaral 431
Tank
VENGACHERI
Karuveppampoondi
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
Village boundary
Source: SRTM 1 Arc-Second Global
0
450
900
1,800 Meters
N


Sankarapuram 240 - Kancheepuram District
Drainage System
Uthukadu
Nathanallur
VALLAPAKKAM
Tank
Sankarapuram 240
Palayaseev
Thonankulam
Eri
LAVUR
N
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
Village boundary
0
500
1,000
2,000 Meters


Sikkarayapuram and Malayampakkam- Kancheepuram District
Drainage System
N
MANGADU
MALAIYAMBAKKAM
KOLUMANIPPAKKAM
Kozhumanivakkam (OG)
SRINIVASAPURAM
PARANIPUTHUR
MOULIVAKKAM
CHIKKARAYAPURAM
CHINNAPANICHERI
PARANIPUTHUR
Sikkarayapuram 207/1
Malayampakkam 873
Sikkarayapuram 296/1A
Periyapanicheri (OG)
KOVUR
THANDALAM
KOLLACHERI
MUNDRANKAMALAI
Thandalam (CT)
VENKATAPURAM
MANACHERI
Irandankattalai (OG)
KUNRATTUR
Nandambakkam (CT)
Thirumudivakkam (CT)
Legend
Tanks
Quarry
Stream Order
1
2
3
4
5
6
7
8
Village boundary
0
650
1,300
2,600 Meters
Source: SRTM 1 Arc-Second Global
80°3'0"E
80°3'30"E
80°4'0"E
80°4'30"E
80°5'0"E
80°5'30"E
80°6'0"E
80°6'30"E
80°7'0"E
80°7'30"E
80°8'0"E
80°8'30"E
80°9'0"E
13°2'30"N
13°2'0"N
13°1'30"N
13°1'0"N
13°0'30"N
13°0'0"N
12°59'30"N
12°59'0"N

Water as a Resource

Water available in the quarries is a potential, but a finite resource. Both consumptive and non-consumptive use of water is being suggested. The consumptive and non-consumptive uses of water available in depleted quarries involve different ways of utilizing water resources stored or recharged in these areas.

I) Consumptive Uses of Water in Depleted Quarries

1. Drinking water for Domestic Use

Water quality should be checked and if found suitable, may be used to supplement the existing water supply by the local body. It could be used for drinking water purpose, after proper treatment like reverse osmosis or chlorination as the case may be. Supply of treated water for drinking, cooking, and sanitation in nearby settlements will help augment water scarcity in the local community. The quarries in Siruthamur, Kunnavarkkam, and Paleshwaram villages in the Uttaramerur taluk are exceptionally clean and free from pollution, making them suitable for drinking water purposes. Additionally, the quarries in Sikkarayapuram and Malaiyambakkam villages are already involved in extracting, treating, and distributing water for drinking.

i. Kunnavakkam, 122
ii. Kunnavakkam, 122(P) Q.No.3
iii. Paleshwaram, 164
iv. Sirudhamur, 161(P) Q.No.2
v. Sirudhamur, 159(P)
vi. Sikkarayapuram, 207/1
vii. Malaiyambakkam, 873, 874, 876, 877, 878, 880 and 981
viii. Sikkarayapuram, 296/1A

2. Supplementary Irrigation

Water available in the quarries is a finite resource. If water is consumed for irrigation, it is not known how long it will take to replenish the same quantity of water. Stored water can be used for protective irrigation during summer by irrigating nearby fields or plantations. Use of drip and sprinkler irrigation systems will ensure efficient and economic usage of water. Magaral quarry, previously used for pumping water for agriculture, has now run dry. An outlet of the Erie lies nearby. Additionally, the quarries in Siruthamur are situated close to agricultural land, and fit for irrigation.

i. Magaral, 431/1 (P), 2.3
ii. Sirudhamur, 107 (P)
iii. Sirudhamur, 337/2
iv. Sirudhamur, 161(P) Q.No.2
v. Sirudhamur, 155(P)
vi. Sirudhamur, 159(P)

3. Park and Landscaping

Water available in these abandoned quarries may be used for supporting nearby urban greening projects or park developments. Since the quarry was developed in its early stages, small craters are scattered throughout the area. This site can be levelled and transformed by planting trees, creating a park, or developing it into an entertainment canter.

i. Sankarapuram 240/P

4. Floriculture: Lotus/waterlily pond

The quarry is shallow, making it ideal for cultivating aquatic plants like lilies and lotuses.

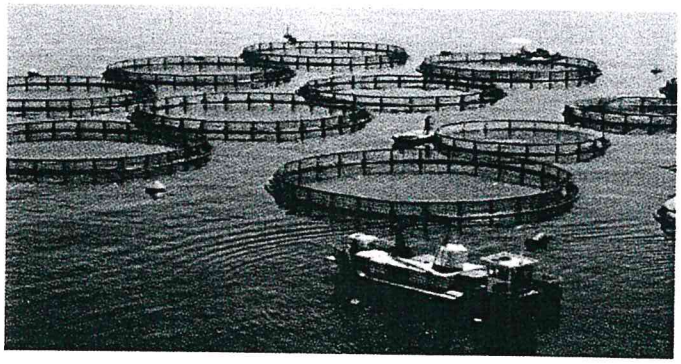
i. Sankarapuram 240/P

5. Aqua culture

Fish farming or pisciculture involves commercial breeding of fish, most often for food, in fish tanks or artificial enclosures such as fish ponds. It is a particular type of aquaculture, which is the controlled cultivation and harvesting of aquatic animals such as fish, crustaceans, molluscsn and so on, in natural or pseudo-natural environments. A facility that releases juvenile fish into the wild for recreational fishing or to supplement a species natural numbers is generally referred to as a fish hatchery. Worldwide, the most important fish species produced in fish farming are carp, catfish, salmon and tilapia.

i. Kunnavakkam 122
ii. Kunnavakkam 122(P] Q.No.3
iii. Magaral 431/1 (P), 2.3

Aqua culture can be done in all quarries having water. But the above three quarries are found to be more suitable for Pisciculture. Using quarry pits for fish farming, will contribute to better livelihoods. In the above quarries, the shallow depth and the presence of abundant bird life make them suitable for cultivating native fish species, as they can benefit from the natural food sources available.



6. Algal culture for single cell protein and Azolla biofertilizer production

Some of these quarries with shallow water can also be used for algal cultivation like Spirulina, Chlorella for single cell protein production. They can also be used for cultivating biofertilizers like nitrogen fixing Azolla which can be applied to paddy fields to improve productivity.

7. Industrial Processes

M sand and P sand processing in nearby industries using the water for washing purpose by nearby stone crushers. Due to the presence of stone crushers around the following quarries, their waste often mixes with the quarry water, posing a risk of contamination. Therefore, these quarries can be designated for use in stone crushing activities. For using the water in the defunct quarries for washing of fine particles from P sand and M sand a reasonable fee maybe collected by the local Panchayat.

i. Sirudhamur 338(P) Q.No.2
ii. Sirudhamur 107 (P)
iii. Sirudhamur 326(P)
iv. Sirudhamur 155(P)

II) Non-Consumptive Uses of Water in Depleted Quarries

As the available water in quarries is collected rainwater over the years. It is not certain how long they can supply water for irrigation or drinking water on a sustainable basis. They can only supplement the existing irrigation sources like tanks and bore wells. If water is pumped out the quarries, their potential to recharge the ground water regime nearby may be affected depending on the intensity of the rain fall in the locality. There are several international examples where the quarry site has been used to develop a unique football stadium in Portugal, a concert hall in Sweden and adventure tourism in United Kingdom. Similarly, there are examples within India as well. Therefore, some non-consumptive use of water available in abandoned quarries was explored.

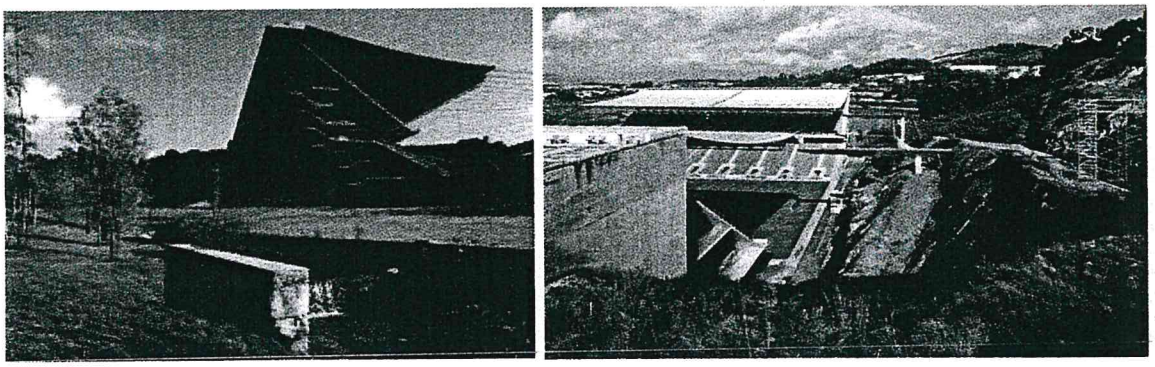
1.Recreational Activities

Zollverein Coal Mine Industrial Complex in Essen, Germany

Zollverein Coal Mine Industrial Complex in Essen, Germany was employing 6900 workers before it closed in 1986.It is a monument to the evolution of coal mining and retains all installations of a historical mining site, from the pits, coking plants, railway lines and pit heaps to the miner's housing and welfare facilities. What makes this mine special however is the magnificent 1930s functional Bauhaus design of the buildings, with red bricks, large windows and red steel trusses, combining form and function and reflecting the era of globalization. The visitor centre offers various tours through the complex, which also houses the museum of the Ruhr area and the excellent Red Dot Design Museum, with two thousand exhibits.

Football stadium in an abandoned lime stone quarry in Portugal

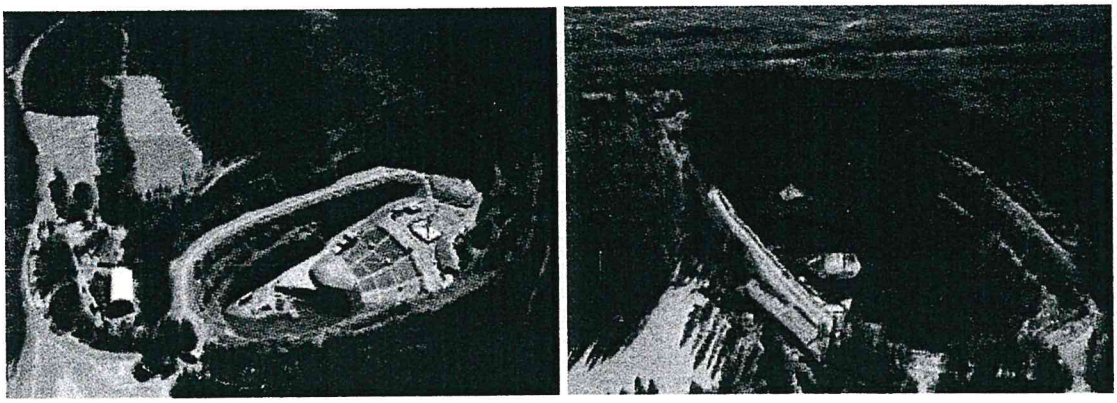
Braga is often referred to as the "Rome of Portugal" due to its ancient history and status as one of the oldest cities in the country. Bragas municipal stadium was built in what used to be a quarry in Portugal by a renowned architect Eduardo Souto de Moura to host mostly football matches. The stadium has capacity to accommodate two 15,000-seater stands opposite to each other with the football ground in the centre. Euro 83.1 million project began in 2002 with a large portion of the overall cost spent on digging into the limestone rock face. It was completed in 2003.Its uniqueness its beauty is how the steel runs along the top of the stadium alongside the granite of the quarry fuses together to look wonderfully cohesive. In the year 2005, the stadium was declared as a national patrimony significant beauty.



Braga Municipal stadium in a lime stone quarry site (2003)

Amphitheatre in old limestone quarry in Sweden

Dal halla Amphitheatre in central Sweden is a former limestone quarry where mining seized in 1990 and now it is converted into an open-air music venue and a rock Amphitheatre and it is worlds coolest open air concert venue with a capacity to accommodate 2600 to 4000 guests. It is 196feet deep. The concert goers are submerged in the erstwhile quarry of 196 feet below surrounded by lush green forest above to enjoy music in a unique natural setting. quarry.

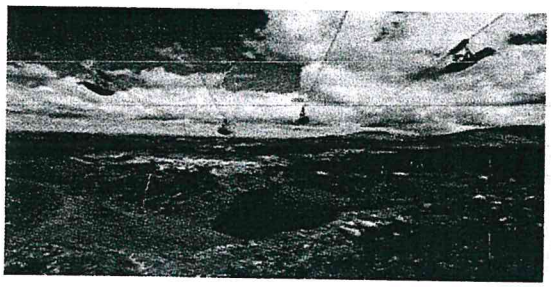


a) Eco tourism

Located in the heart of Snowdonia National Park Bethesda, Bangor, UK zip world Penrhyn quarry is a home to accelerating adventures and delicious locally sourced food One gets some of the most incredible views of North Wales It is UK is first mountain cart track challenging course laid out in the stunning surrounding. Similarly, RAMCO has developed a limestone quarry in Virudhunagar district in to a beautiful tree park with fountains and made it a tourist attraction. Another limestone quarry in Krishnagiri has also been redeveloped as a park. In respect of abandoned quarries in Kancheepuram several non consumtive use of water and quarry site was explored.

i. Kunnavakkam 122
ii. Kunnavakkam 122(P] Q.No.3
iii. Paleshwaram 164

The above quarries are located on the outskirts of the Village, surrounded by hills, forests, and grasslands. The clear water in these quarries makes the area suitable for recreation. The spotted Indian horned owl was spotted here.



b) Water theme Park

The following quarries cover a large area and feature numerous island-like structures in the middle of the water. These quarries are located close to urban settlements.

i.	Sikkarayapuram	207/1
ii.	Malaiyambakkam	873,874,876,877,878,880 and 981
iii.	Sikkarayapuram	296/1A

c) Swimming pool

i. Kunnavakkam 122

This quarry contains exceptionally clear water in a tank-like structure with varying depths, making it suitable for use as a swimming pool.

d) Floating Solar panels:

Floating solar panels, also known as floating solar farms or floating photovoltaics, are solar panels installed on top of bodies of water, such as lakes, water reservoirs, ponds, and even the ocean.

There are several additional benefits Ground-mounted solar farms tend to get overheated and need to be cooled to have good solar energy efficiency. But solar panels floating on the surface of the water are kept cool, which helps to increase solar panel efficiency. They also help reduce water evaporation rates, of the lakes and ponds. Coimbatore corporation has installed floating solar panels in Ukkadam big tank through which it aims to generate electricity. The Ukkadam Big Bang in Coimbatore is one of the large tanks The floating solar power panels are arranged in such a way that they do not block intrusion of sunlight into the tank for the ecological processes. The plant that is being installed will cost ₹1.45 crore and generate 154 KW of electricity daily.

i. Sikkarayapuram 207/1
ii. Malaiyambakkam 873, 874, 876, 877, 878, 880 and 981
iii. Sikkarayapuram 296/1A

There is scope for installing such solar panels for generating electricity in the larger quarry sites indicated above with large surface area. The panels will have to be arranged to allow the sunlight to pass through the water so that aerobic conditions are maintained for the hydrophytes, fishes and other organisms to thrive. The power generated may be used by the local body to power the streetlights and water supply. Any surplus power can be sent to the main grid of TANGEDCO.The following quarries are suggested for laying solar panels as they cover a large surface area and have year-round water availability. As the Kancheepuram district is blessed with ample sunlight, installing floating solar panels is an important re- use option for the selected quarries. This may be considered for implementation under the green fund by the Department of Mines in association with the local bodies.

e) Organic composting hey

Effective management of Municipal Solid Waste begins with segregation at source, which involves separating waste into organic and inorganic categories at the point of generation. Organic wastes (e.g., leftover food, vegetables, fruits, wood, paper) degrade naturally and can be disposed of in land disposal areas. These areas facilitate the breakdown of waste under natural influences such as sunlight, rain, and biological activity, eventually mixing with the topsoil. These sites can later be reused for activities like cultivation, gardening, or tree planting. Inorganic wastes (e.g., plastic, glass), which do not degrade easily, should not be mixed and dumped here It should be a Sanitary Landfill involving a carefully prepared leak-proof base to prevent seepage and leaching of organic waste into ground water table. Once filled with organic waste and composted the manure can be sold to generate revenue for the local body. Conversely, once the quarry area is filled up it can be used for developing social forestry plantation or urban tree park for the benefit of local residents. This approach ensures responsible waste management and improves aesthetics of the locality and better environment. The following quarry sites are suitable for developing as compost pit.

i. Sirudhamur 338(P) Q.No.2
ii. Sankarapuram 240/P

f) Nature Parks and Bird Sanctuary

i. Kunnavakkam 122
ii. Kunnavakkam 122(P] Q.No.3
iii. Paleshwaram 164

The above three quarries as an aquatic ecosystem can support wetland flora and fauna. These quarries are surrounded by dense forests, mountains, and grasslands, provide conducive habitat that support a large number waterbirds and land birds. They can be developed as bird sanctuaries and nature parks. There are several international and national examples, where abandoned limestone quarry is converted in to Nature Parks.

Annexure

Natural Vegetation around the quarries

Ecological restoration point view as the following 134 local plant species can be occurred in naturally. When reuse the quarries, preserving native flora is importance. These plant species well adapted in the local climate and provide food and shelter for the wildlife. Which can be promote planting the growth and survival rate was enhance.

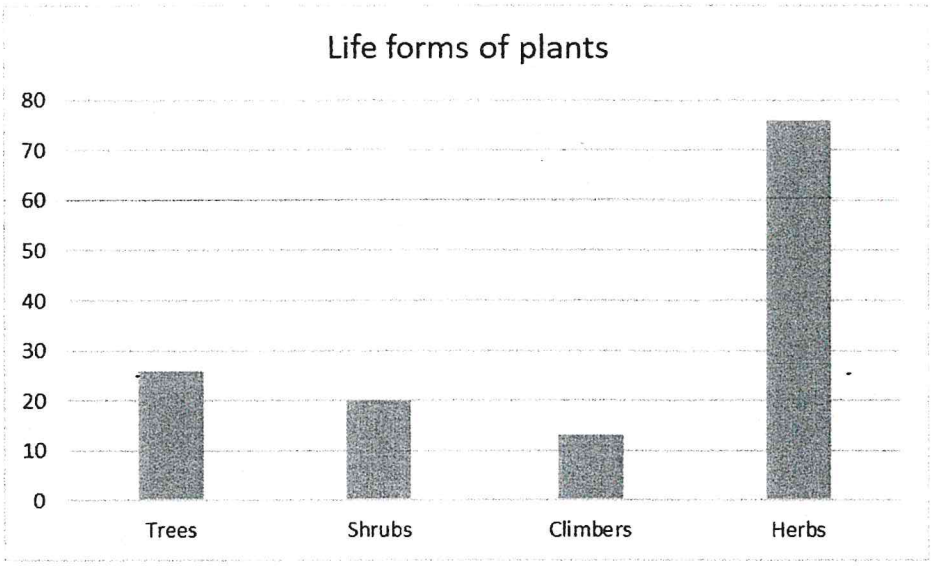
S.No	Family	Species Name	Tamil Name	Habit
1	Acanthaceae	***Barleria prionitis*** L.	Manja Chemmulli	Shrub
2	Acanthaceae	***Blepharis maderaspatensis*** (L.) Heyne ex Roth	Nethira moolli	Herb
3	Acanthaceae	***Dipteracanthus prostratus*** (Poir.) Nees	Pottakanchi	Herb
4	Acanthaceae	***Justicia prostrata*** (Roxb. ex Clarke) Gamble		Herb
5	Acanthaceae	***Justicia tranquebariensis*** L.f.	Thavasi murungai	Herb
6	Acanthaceae	***Peristrophe paniculata*** (Forssk.) Brummitt		Herb
7	Alangiaceae	***Alangium salvifolium*** (L.f.) Wang.	Azhinjil	Tree
8	Amaranthaceae	***Achyranthes aspera*** L.	Nayurivi	Herb
9	Amaranthaceae	***Aerva lanata*** (L.) Juss. ex Schultes	Sirupeelai	Herb
10	Amaranthaceae	***Alternanthera ficoidea*** (L.) P.Beauv.		Herb
11	Amaranthaceae	***Alternanthera philoxeroides*** (C. Martiu) Griseb.		Herb
12	Amaranthaceae	***Alternanthera pungens*** Kunth		Herb
13	Amaranthaceae	***Gomphrena serrata*** L.		Herb
14	Amaranthaceae	***Pupalia lappacea*** (L.) Juss.	Adai-otti	Herb
15	Apocynaceae	***Wrightia tinctoria*** (Roxb.) R.Br.	Vetpaalai	Tree
16	Asclepiadaceae	***Calotropis gigantea*** (L.) R.Br.	Erukku	Shrub
17	Asclepiadaceae	***Pergularia daemia*** (Forrsk.) Chiov.	Uthamani	Climber
18	Asclepiadaceae	***Sarcostemma secamone*** (L.) Bennet	Oosippalai	Herb
19	Asclepiadaceae	***Tylophora indica*** (Burm.f.) Merr.	Naippalai	Climber
20	Asparagaceae	***Asparagus racemosus*** Willd.	Thaneer vitaan kizhangu	Climber
21	Asteraceae	***Blumea obliqua*** (L.) Druce		Herb
22	Asteraceae	***Chromolaena odorata*** (L.) King & Robinson		Shrub

S.No	Family	Species Name	Tamil Name	Habit
23	Asteraceae	***Tridax procumbens*** L.	Vettukkaaya-thazhai	Herb
24	Asteraceae	***Vernonia cinerea*** (L.) Less.	Mookutthipoondu	Herb
25	Asteraceae	***Wedelia chinensis*** (Osbeck) Merr.	Manjal Karisalankanni	Herb
26	Asteraceae	***Xanthium indicum*** Koen.	Marul oomatham	Herb
27	Boraginaceae	***Coldenia procumbens*** L.	Seruppadai	Herb
28	Boraginaceae	***Heliotropium bracteatum*** R. Br.	Siru thael kodukku	Herb
29	Caesalpiniaceae	***Senna auriculata*** (L.) Roxb.	Avaram	Shrub
30	Caesalpiniaceae	***Senna occidentalis*** (L.) Link	Thagarai	Tree
31	Caesalpiniaceae	***Tamarindus indica*** L.	Puliya maram	Tree
32	Capparidaceae	***Capparis zeylanica*** L.	Athondai	Climber
33	Capparidaceae	***Cleome viscosa*** L.	Nai kadugu	Herb
34	Convolvulaceae	***Evolvulus alsinoides*** (L.) L.	Vishnukarandi	Herb
35	Convolvulaceae	***Merremia emarginata*** (Burm.f.) Hall.f.	Yelikkaadhu Keerai	Herb
36	Convolvulaceae	***Merremia tridentata*** (L.) Hall.f.	Avvaiyaar koondhal	Herb
37	Convolvulaceae	***Rivea hypocrateriformis*** (Desr.) Choisy	Boodhikeerai	Climber
38	Cucurbitaceae	***Coccinia grandis*** (L.) Voigt	Kovai	Climber
39	Cucurbitaceae	***Mukia maderaspatana*** (L.) M. Roem.	Musumusukkai	Climber
40	Cyperaceae	***Cyperus rotundus*** L.	Koraikizhanghu	Herb
41	Ebenaceae	***Diospyros chloroxylon*** Roxb.	Vakkanai	Shrub
42	Euphorbiaceae	***Acalypha indica*** L.	Kuppaimeni	Herb
43	Euphorbiaceae	***Croton bonplandianum*** Baill.	Rail poondu	Herb
44	Euphorbiaceae	***Euphorbia antiquorum*** L.	Sadura-kalli	Tree
45	Euphorbiaceae	***Euphorbia hirta*** L.	Ammanpacharisi	Herb
46	Euphorbiaceae	***Flueggea leucopyrus*** Willd.	Pulanji	Shrub
47	Euphorbiaceae	***Jatropha gossypifolia*** L.	Kaatu-amanakku	Shrub
48	Euphorbiaceae	***Phyllanthus maderaspatensis*** L.		Herb
49	Euphorbiaceae	***Phyllanthus reticulatus*** Poir.	Inki pazham	Shrub
50	Euphorbiaceae	***Ricinus communis*** L.	Amanakku	Tree
51	Euphorbiaceae	***Tragia involucrata*** L.	Chenthatti	Shrub
52	Fabaceae	***Abrus precatorius*** L.	Kundumani	Shrub
53	Fabaceae	***Alysicarpus monilifer*** (L.) DC.		Herb
54	Fabaceae	***Crotalaria hebecarpa*** (DC.) Rudd		Herb
55	Fabaceae	***Indigofera linnaei*** Ali		Herb
56	Fabaceae	***Pongamia pinnata*** (L.) Pierre	Punga maram	Tree
57	Fabaceae	***Tephrosia purpurea*** (L.) Pers.	Kozhinji	Herb
58	Fabaceae	***Zornia diphylla*** (L.)	Arundhalai otti	Herb
59	Lamiaceae	***Hyptis suaveolens*** (L.) Poit.		Shrub
60	Lamiaceae	***Leucas aspera*** (Willd.) Link	Thumbai	Herb
61	Lamiaceae	***Ocimum tenuiflorum*** L.	Thulasi	Herb
62	Malvaceae	***Abutilon indicum*** (L.) Sweet	Thuthi	Shrub

S.No	Family	Species Name	Tamil Name	Habit
63	Malvaceae	***Hibiscus micranthus*** L.f.	Sitraamutti	Shrub
64	Malvaceae	***Malvastrum coromandelianum*** (L.) Garcke		Herb
65	Malvaceae	***Pavonia odorata*** Willd.	Peramutti	Herb
66	Malvaceae	***Sida acuta*** Burm.f.	Arival mooku poondu	Herb
67	Malvaceae	***Sida cordata*** (Burm. f.) Borssum	Pazhampaasi	Herb
68	Malvaceae	***Thespesia populnea*** (L.) Soland ex Correa	Poovarasu	Tree
69	Malvaceae	***Urena lobata*** L.	Ottu thuthi	Herb
70	Meliaceae	***Azadirachta indica*** A. Juss.	Vaembu	Tree
71	Menispermaceae	***Cocculus hirsutus*** (L.) Diels	Kattukodi	Climber
72	Menispermaceae	***Pachygone ovata*** (Poir.) Miers ex Hook. f. & Thoms.	Siru Kattukodi	Climber
73	Menispermaceae	***Tinospora cordifolia*** (Willd.) Miers ex Hook. f. & Thoms.	Seendhil	Climber
74	Mimosaceae	***Acacia nilotica*** (L.) Willd. ex Del.	Karuvelam	Tree
75	Mimosaceae	***Acacia leucophloea*** (Roxb.) Willd.	Velvelam	Tree
76	Mimosaceae	***Albizia lebbeck*** (L.) Willd.	Vaagai	Tree
77	Mimosaceae	***Dichrostachys cinerea*** (L.) Wight & Arn.	Vidathalam thazhai	Tree
78	Mimosaceae	***Mimosa pudica*** L.	Thotaal surungi	Herb
79	Mimosaceae	***Pithecellobium dulce*** (Roxb.) Benth.	Kodukkaai puli	Tree
80	Mimosaceae	***Prosopis juliflora*** (Sw.) Dc.	Seemai mullu	Tree
81	Molluginaceae	***Mollugo nudicaulis*** Lam.		Herb
82	Molluginaceae	***Mollugo pentaphylla*** L.	Parpaadagam	Herb
83	Moraceae	***Ficus benghalensis*** L.	Aal	Tree
84	Moraceae	***Ficus racemosa*** L.	Atthi	Tree
85	Moraceae	***Ficus religiosa*** L.	Arasu	Tree
86	Myrtaceae	***Eucalyptus tereticornis*** Sm.	Thaila maram	Tree
87	Myrtaceae	***Syzygium cumini*** (L.) Skeels	Navaal	Tree
88	Nyctaginaceae	***Boerhavia diffusa*** L.	Mookarattai	Herb
89	Passifloraceae	***Passiflora foetida*** L.	Siruppoonaikkaali	Climber
90	Pedaliaceae	***Pedalium murex*** L.	Perunerunji	Herb
91	Periplocaceae	***Hemidesmus indicus*** (L.) R.Br.	Nannaari	Climber
92	Poaceae	***Apluda mutica*** L.	Manda pul	Herb
93	Poaceae	***Aristida adscensionis*** L.	Oosi pullu	Herb
94	Poaceae	***Aristida setacea*** Retz.		Herb
95	Poaceae	***Brachiaria ramosa*** (L.) Stapf	Sanam pul	Herb
96	Poaceae	***Cenchrus ciliaris*** L.	Kolukkattai pullu	Herb
97	Poaceae	***Chloris barbata*** Sw.	Kodai Pullu	Herb
98	Poaceae	***Cynodon dactylon*** (L.) Pers.	Arugam pullu	Herb
99	Poaceae	***Dactyloctenium aegyptium*** (L.) Willd.		Herb
100	Poaceae	***Dichanthium annulatum*** (Forssk.) Stapf		Herb
101	Poaceae	***Digitaria ciliaris*** (Retz.) Koeler		Herb
102	Poaceae	***Eragrostis viscosa*** (Retz.) Trin.		Herb

S.No	Family	Species Name	Tamil Name	Habit
103	Poaceae	***Heteropogon contortus*** (L.) P Beauv		Herb
104	Poaceae	***Panicum repens*** L.	Moonja pullu	Herb
105	Poaceae	***Perotis indica*** (L.) Kuntze	Narival	Herb
106	Poaceae	***Saccharum spontaneum*** L.	Naanal	Herb
107	Poaceae	***Tragus roxburghii*** Panigrahi		Herb
108	Poaceae	***Vetiveria zizanioides*** (L.) Nash	Vettiver	Herb
109	Pontederiaceae	***Pontederia crassipes*** Mart.	Vengaya thamarai	Herb
110	Rhamnaceae	***Ziziphus mauritiana*** Lam.	Illandhai	Tree
111	Rhamnaceae	***Ziziphus oenoplia*** (L.) Mill.	Soorai pazham	Shrub
112	Rubiaceae	***Benkara malabarica*** (Lam.) Tirvengadum	Mul pavattai	Shrub
113	Rubiaceae	***Canthium coromandelicum*** (Burm. F.) Alston	Kaaraichedi	Shrub
114	Rubiaceae	***Hedyotis herbacea*** L.		Herb
115	Rubiaceae	***Morinda pubescens*** J.E. Smith	Manjanatti	Tree
116	Rubiaceae	***Spermacoce hispida*** L.	Nathaichoori	Herb
117	Rubiaceae	***Tarenna asiatica*** (L.) Kuntze ex K. Schum.	Therini	Shrub
118	Sapindaceae	***Cardiospermum canescens*** Wall.	Kaattu mudakkaruthaan	Climber
119	Sapindaceae	***Sapindus emarginatus*** Vahl	Manippungu	Tree
120	Scrophulariaceae	***Scoparia dulcis*** L.	Sarakkotthini	Herb
121	Solanaceae	***Datura innoxia*** Mill.	Oomatthai	Herb
122	Solanaceae	***Physalis angulata*** L.	Sodakkuthakkali	Herb
123	Sterculiaceae	***Waltheria indica*** L.	Chembudu	Herb
124	Tiliaceae	***Corchorus aestuans*** L.	Pinaaku poondu	Herb
125	Tiliaceae	***Muntingia calabura*** L.	Thenpazham	Tree
126	Typhaceae	***Typha angustifolia*** L.	Sambu	Herb
127	Ulmaceae	***Holoptelea integrifolia*** (Roxb.) Planch.	Aya	Tree
128	Verbenaceae	***Lantana camara*** L.	Unnichedi	Shrub
129	Verbenaceae	***Phyla nodiflora*** (L.) Greene	Poduthalai	Herb
130	Verbenaceae	***Stachytarpheta jamaicensis*** (L.) Vahl	Seemai nayuruvi	Herb
131	Verbenaceae	***Tectona grandis*** L.f.	Thekku	Tree
132	Violaceae	***Hybanthus enneaspermus*** (L.) F. v. Muell.	Orilai thamarai	Herb
133	Vitaceae	***Cissus quadrangularis*** L.	Pirandai	Shrub
134	Zygophyllaceae	***Tribulus lanuginosis*** L.	Sirunerinji	Herb

Figure 2. Life forms of plants



General details of the quarries:

S. No	Name of the Lessee	Taluk	Village	Survey No.	Extent (Ha.)	Area in Map (Ha)	Lease period	Geo Coordinates	Revenue Classification	Date of visit	Whether single or multiple	Depth	Walk ground to water surface (Depth)	High point to water surface (Depth)
1	S. Kothandaraman	Uthiramerur	Sirudhamur	338(P) Q.No. 1	5.00.0	3.65	09.08.2005 To 08.08.2010	12.716808 79.850056	Kallangkuthu	07.08.2024	M	20 m	19 m	19 m
2	C. Ranganathan	Uthiramerur	Sirudhamur	338(P) Q.No. 2	5.00.0	3.00	04.10.2005 To 03.10.2010	12.716385 79.850136	Kallangkuthu	07.08.2024	S	20 m	1 m	4 m
3	K. Subramaniam	Uthiramerur	Sirudhamur	337/2	1.93.0	2.00	22.09.2007 To 21.09.2012	12.713979 79.849900	Patta	07.08.2024	S	35 m	20 m	20 m
4	B. S. Mohan	Uthiramerur	Sirudhamur	107 (P)	5.00.0	0.10	05.02.2007 To 04.02.2017	12.726969 79.847370	Kallangkuthu	07.08.2024	S	40 m	8 m	8 m
5	S. Jayachandiran	Uthiramerur	Sirudhamur	326(P)	2.00.0	2.00	16.02.2007 To 15.02.2012	12.723740 79.846794	Kallangkuthu	07.08.2024	S	50 m	2 m	2 m
6	P. Thiruvengadam	Uthiramerur	Sirudhamur	161(P) Q.No. 2	5.00.0	0.4	24.02.2006 To 23.02.2011	12.738830 79.860286	Kallangkuthu	07.08.2024	M	30 m	15 m	20 m
7	D. Devaraj	Uthiramerur	Sirudhamur	155(P)	5.00.0	1.71	27.02.2004 To 26.02.2014	12.734880 79.856940	Kundru	07.08.2024	M	50 m	20 m	30 m
8	C. G. Goverdhanan	Uthiramerur	Sirudhamur	159(P)	5.00.0	2.11	19.07.2006 To 18.07.2016	12.73672 79.85838	Kallangkuthu	07.08.2024	M	30 m	15 m	20 m
9	Mr. Rajagopal	Uthiramerur	Kunnavakkam	122	5.00.0	3.41	19.06.1997 To 18.06.2002	12.662885 79.831467	Malai Meichal	09.08.2024	M	20 m	7 m	15 m
10	D. Siva	Uthiramerur	Kunnavakkam	122(P] Q.No. 3	5.00.0	4.12	22.08.2005 To 21.08.2015	12.663957 79.831200	Malai Meichal	09.08.2024	M	3 m	1 m	15 m
11	D. Srinivasan	Uthiramerur	Paleshwaram	164	5.00.0	4.10	02.02.1996 To 31.03.2000	12.663005 79.832771	Malai Meichal	09.08.2024	S	20 m	3 m	15 m
12	B. Deenan	Walajabad	Magaral	431/1 (P), 2.3	1.06.0	2.32	19.12.2006 To 18.12.2011	12.715418 79.745056	Paathai	09.08.2024	S	7 m	6.5 m	6.5 m

S. No	Name of the Lessee	Taluk	Village	Survey No.	Extent (Ha.)	Area in Map (Ha)	Lease period	Geo Coordinates	Revenue Classification	Date of visit	Whether single or multiple	Depth	Walk ground to water surface (Depth)	High point to water surface (Depth)
13	V. Ranganathan	Walajabad	Sankarapuram	240/P	2.00.0	19.48	19.12.2001 To 18.12.2006	12.792610 79.866852	Paathai	13.08.2024	M	1 m	0.5 m	0.5 m
14	S.K. Dharmalingam	Kundrathur	Sikkarayapuram	207/1	16.44.1	7.87	03.05.1996 To 02.05.2006	13.015306 80.096817	Meikkaal	13.08.2024	M	70 m	2 m	2 m
15	S.K. Dharmalingam	Kundrathur	Malaiyambakkam	873,874,876, 877,878,880 & 981	6.55.0	16.54	03.05.1996 To 02.05.2006	13.012924 80.094844	Meikkaal	13.08.2024	M	50 m	2 m	2 m
16	The President, Kollacheri Harijan Labour Contract CO- Operative Society Ltd	Kundrathur	Sikkarayapuram	296/1 A	15.46.9	0.35	25.09.1996 To 25.10.2006	13.015306 80.096817	Meikkaal	13.08.2024	M	70 m	2 m	2 m

* M – multiple quarries, S – Single quarry, all are government quarries and rough stone quarry

Land Use, Water Usage, and Environmental Features of Quarries

S. No.	Taluk	Village	Survey Number	Capacity (m^3)	Predominant land use	Current usage	Nearby wetlands	Nearby R. F
1	Uthiramerur	Sirudhamur	338(P) Q.No.1	466000	Scrub forest	Still mining	Cheyyar River East side 3.30 km distance Palar River North side 6.7 km distance Arumbuliyur Lake North East side 3.77 km	Kattankulam R.F South Side 5 km distance Nerkundram R.F South side 4.25 km distance Edamachi R.F South East Side 2.37 km distance Melmanpakkam R.F North East Side 4.44 km distance
2	Uthiramerur	Sirudhamur	338(P) Q.No.2	150000	Scrub forest	Quarry currently used to fill the crushers waste		
3	Uthiramerur	Sirudhamur	337/2	120000	Scrub forest	Patta quarry		
5	Uthiramerur	Sirudhamur	107 (P)	40000	Scrub forest	Water used for crushers and irrigation	Cheyyar River East side 3.34 km distance Palar River North side 5 km distance	Nerkundram R.F South side 5 km distance Edamachi R.F South East Side 4.7 km distance Melmanpakkam R.F North East Side 4.16 km distance
6	Uthiramerur	Sirudhamur	326(P)	1510000	Scrub forest	Water used for crushers		
4	Uthiramerur	Sirudhamur	161(P) Q.No.2	700000	Scrub forest and Wetland	Water used for irrigation		

S. No.	Taluk	Village	Survey Number	Capacity (m^3)	Predominant land use	Current usage	Nearby wetlands	Nearby R. F
7	Uthiramerur	Sirudhamur	155(P)	855000	Scrub forest	Water used for irrigation	Cheyyar River East side 2.52 km distance Palar River North side 4.1 km distance	Edamachi R.F South East Side 1.87 km distance Melmanpakkam R.F North East Side 2.14 km distance
8	Uthiramerur	Sirudhamur	159(P)	633000	Scrub forest and Wetland	Water used for irrigation		
9	Uthiramerur	Kunnavakkam	122	682000	Scrub forest	Water currently not in use	Cheyyar River North West side 7.9 km distance	Nerkundram R.F North East Side 0.5 km Distance Nariambakkam R.F North West Side 3 km Distance kattankullam R.F North West Side 1 km Distance Edamachi R.F North East Side 3.1 km distance Kaithandalam R.F South East Side 3.82 km distance
10	Uthiramerur	Kunnavakkam	122(P) Q.No.3	123600	Scrub forest	Water currently not in use		
11	Uthiramerur	Paleshwaram	164	820000	Scrub forest	Water currently not in use		
12	Walajabad	Magaral	431/1 (P), 2.3	162400	Wetland and Agicultural lands	Water used for irrigation	Cheyyar River East side 7 km distance	Nariambakkam R.F East Side 5 km distance
13	Walajabad	Sankarapuram	240/P	194800	Scrub and Agicultural lands	The quarry work has been stopped at the initial stage	Palar River South Side 2.5 km distance	Nathanallur R.F West Side 1.8 km Distance
14	Kundrathur	Sikkarayapuram	207/1	5509000	Urban and Agricultural land	Water is taken for drinking purposes	Adyar River South East Side 5 km distance Sembarambakkam West side 1.93 km distance Porur Lake North East Side 4.98 km distance Poonamallee Lake North west side 4.46 km distance	Nearby no R. F
15	Kundrathur	Malaiyambakkam	873,874,876,877, 878,880 & 981	8270000	Urban and Agricultural land	Water is taken for drinking purposes		
16	Kundrathur	Sikkarayapuram	296/1A	245000	Urban and Agricultural land	Water is taken for drinking purposes		

Stakeholder meeting

Venue: District Collectorate, Kancheepuram. Date and Time: 22 October 2024, 10.30 am.

Dr. S. Vediyappan, Deputy Director of Geology and Mining, Kancheepuram and Chengalpattu, chaired the meeting. The list of participants is enclosed.

Introduction:

Welcoming the participants Dr. Vediyappan, Deputy Director of Geology and Mining, Kancheepuram and Chengalpattu, explained about the purpose of the meeting. He introduced to the participants the CET project on redevelopment options for the abandoned quarries. He wanted the participants to give their valuable suggestions on reuse of the abandoned quarries in their jurisdiction. He also showed a video on restoration and redevelopment of a depleted limestone quarry by RAMCO cement in technical association with Auroville Botanical Garden. An abandoned quarry has been converted into a farmhouse in Krishnagiri district.

Dr. S. Balaji IFS (Retd), Former PCCF and Scientific Advisor, Care Earth Trust, Chennai explained about the project and field work done by the Care Earth Trust team. He outlined various uses to which the abandoned quarries could be used. Some of them are providing drinking water through RO as in Pammal and some for irrigation and many for washing M sand. He also explained about the potential of installing floating solar panels for electricity generation as done recently in Ukkadam Big tank in Coimbatore. He sought the views of participants to use the abandoned quarries in their areas based on their intimate knowledge about the area and requirements of the people.

Mr. S. Thirunavukkarasu, Retd, PWD Engineer also explained about the field conditions of some of the quarries and sought the suggestions from the invitees.

Discussion:

1. Thiru. Dhanasekar,President, Quarry owners Association: The water in the quarry can be used for drinking. Introducing fish can help maintain water quality. A fence or wall should be constructed around each quarry immediately.

2. Tree saplings can be planted around Sankarapuram quarry as it was initially halted due to public protests. Quarry pits can be converted to a tank to provide drinking water for grazing animals.

3. Thiru. Udhayakumar, Secretary, Quarry owners Association emphasised that a fence or wall should be built around each quarry.

4. Thiru. Sekar Vice President, Quarry owners Association: Wire fencing is not ideal, as it may eventually degrade. Introducing fish is ineffective and poses risks due to illegal fishing. Water can be used for agriculture if the government provides electricity. A park could be set up, and 90% of private quarries are already fenced. Government may return the deposit paid for the private quarry to provide fencing.

5. Thiru. Manikandan,VAO, Malayampakkam and Sikkarayapuram): Quarry water is used for drinking, especially during drought. Regular water extraction will minimise the impact flooding during the rainy season. The water should be shared with nearby villages. A fence or wall is necessary around each quarry.

6. Ms. Vishnu Priya, Assistant Project Officer, Kancheepuram District: They will support by providing tree saplings, plants, and water in the quarries can be used for micro irrigation of plantations. Dr. Vediyappan requested a DRDA to provide model estimate for a km of a high-quality barbed wire fence with RCC posts.

7. Thiru. Loganathan VAO, Sankara Puram: Saplings can be planted around Sankara Puram quarry as it was stopped due to local protest. The shallow quarry pits can supply drinking water for both animals and people.

8. Thiru. Karthick, VAO, Kunnavakkam: Quarry water can be diverted into irrigation canals by removing encroachments and repairing them.

9. Ex-President, Sirudamur: The permanent water in quarries has improved recharging village wells. A permanent fence should be installed, along with a drinking water pond for grazing animals.

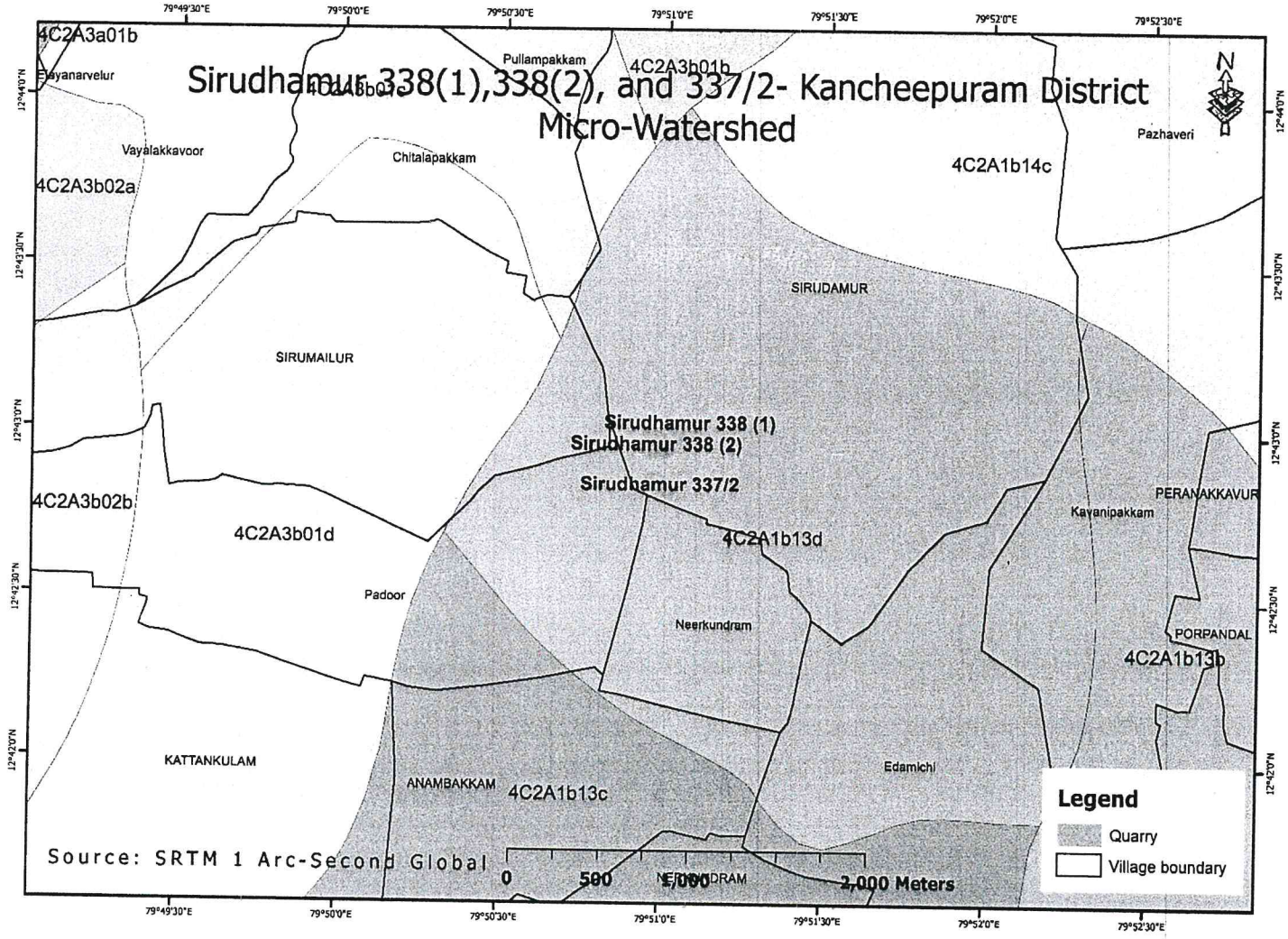
10. A depleted quarry in Rajapalayam has been converted after diligent restoration in to an Eco Park a video on the eco restoration was presented by the DD.

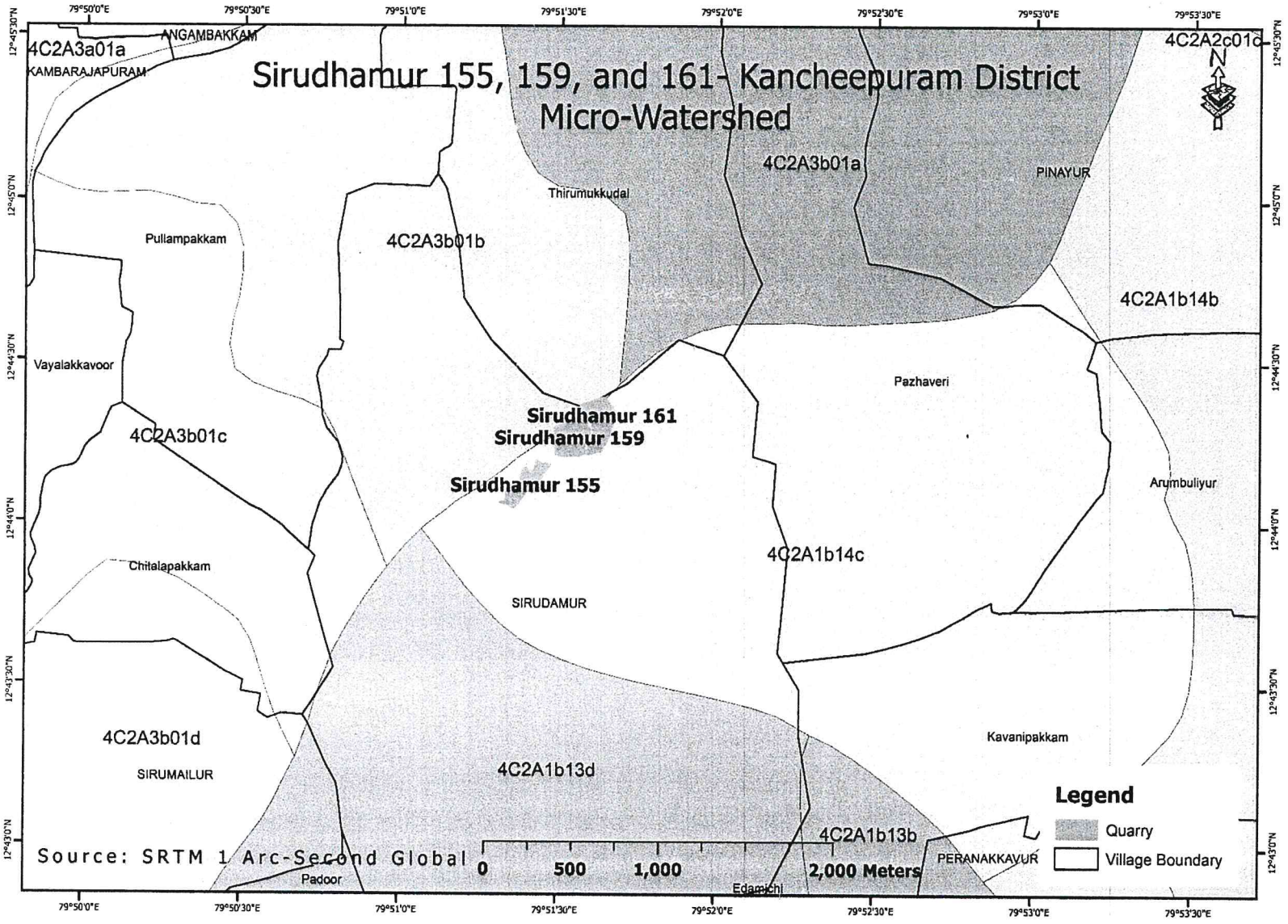
Salient suggestions in brief:

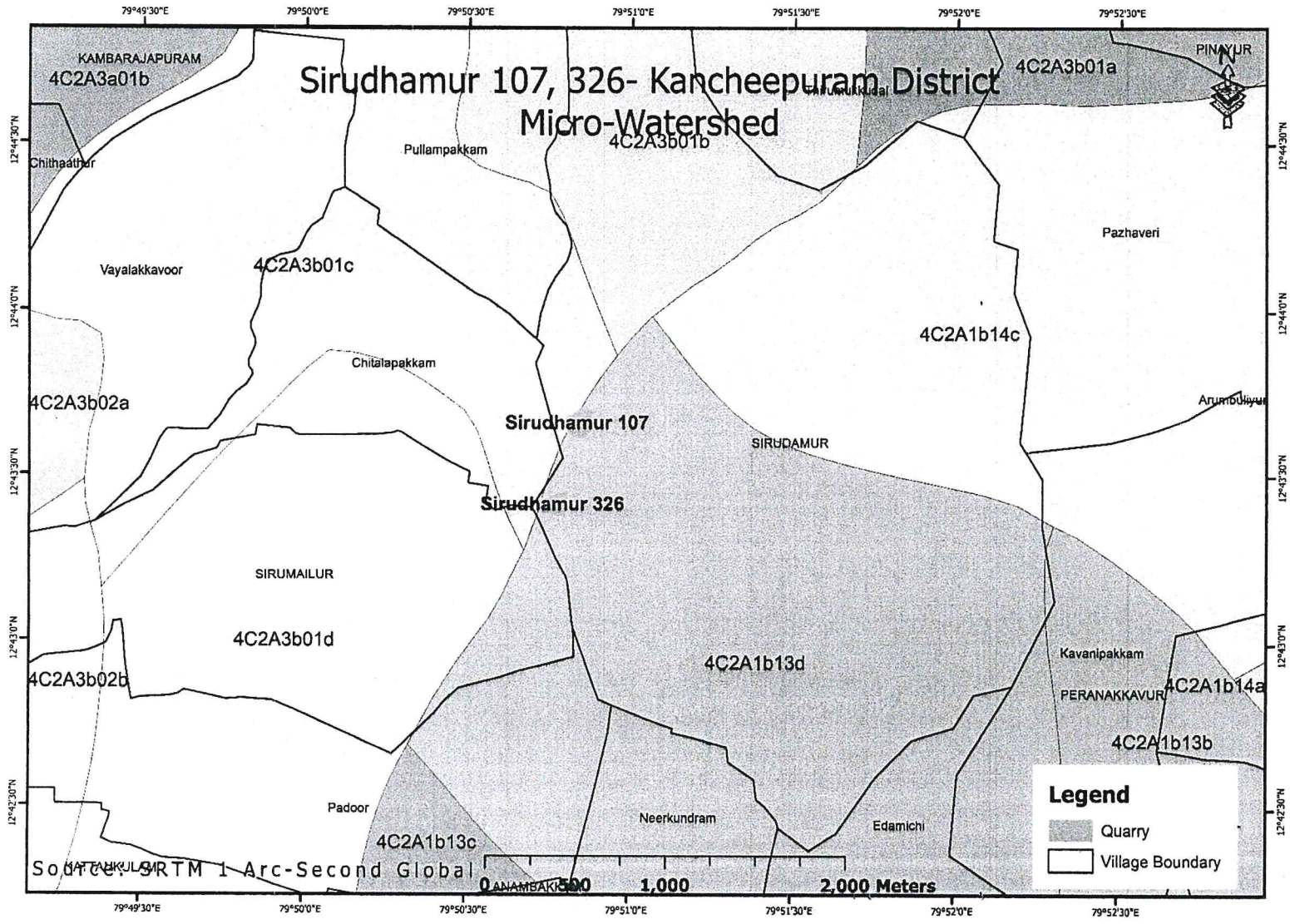
i. Providing Safety Measures in the abandoned quarries was stressed by all the participants as the top priority. Providing Wire Fencing or a wall will save the life of the citizens and cattle.
ii. Utilization of Water from Quarry for RO treatment and supply drinking water to the villages located close to Chennai as in Pammal.
iii. Undertaking social forestry tree Plantation around the Quarries with some soil as in Sankrapuram
iv. Providing Irrigation for trees planted and farmlands from the water stored in the abandoned quarries. This will help in flood Management as well.
v. Fish Introduction
vi. Government Assistance and Support was sought by the private quarries for redevelopment.
vii. Boating with attendant safeguards may be tried in some quarries.
viii. Some of the quarries could be managed for bio composting of organic waste from the panchayats. They must ensure that the leachates from SWM do not pollute the ground water.
ix. Electricity generation through solar panels may be tried in abandoned quarries with a large surface area.

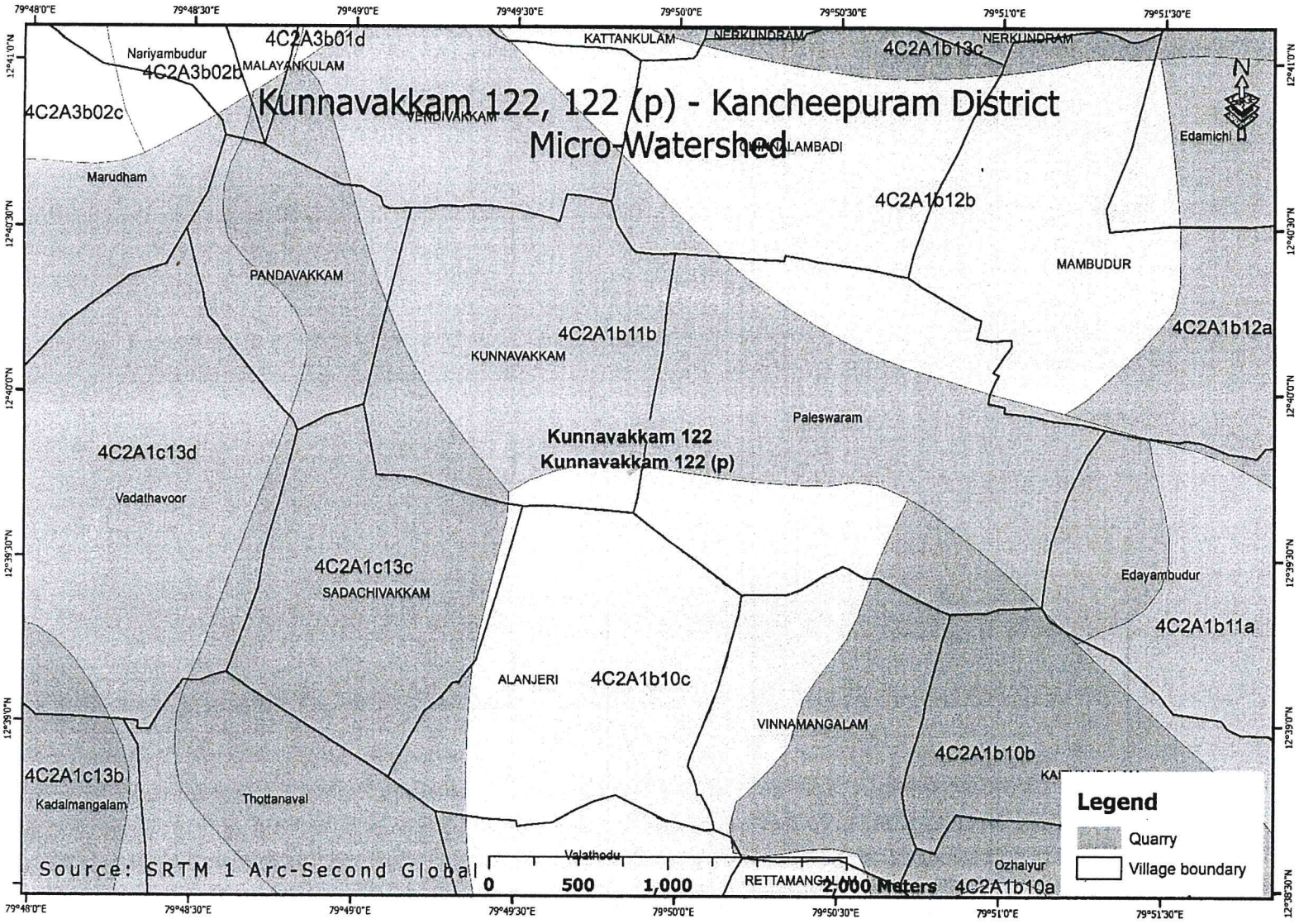
The meeting concluded with the vote of thanks to the chair.

Watershed maps




Sirudhamur 155, 159, and 161- Kancheepuram District
Micro-Watershed
4C2A3a01a
ANGAMBAKKAM
KAMBARAJAPURAM
4C2A2c01c
4C2A3b01a
PINAYUR
Thirumukkudal
Pullampakkam
4C2A3b01b
4C2A1b14b
Vayalakkavoor
Pazhaveri
Sirudhamur 161
Sirudhamur 159
4C2A3b01c
Sirudhamur 155
Arumbuliyur
4C2A1b14c
Chitalapakkam
SIRUDAMUR
4C2A3b01d
Kavanipakkam
SIRUMAILUR
4C2A1b13d
4C2A1b13b
PERANAKKAVUR
Padoor
Edamichi
Legend
Quarry
Village Boundary
Source: SRTM 1 Arc-Second Global
0
500
1,000
2,000 Meters
79°50'0"E
79°50'30"E
79°51'0"E
79°51'30"E
79°52'0"E
79°52'30"E
79°53'0"E
79°53'30"E
12°45'30"N
12°45'0"N
12°44'30"N
12°44'0"N
12°43'30"N
12°43'0"N


Sirudhamur 107, 326- Kancheepuram District
Micro-Watershed
KAMBARAJAPURAM
4C2A3a01b
4C2A3b01a
PINAYUR
Pullampakkam
4C2A3b01b
Chithaathur
Pazhaveri
Vayalakkavoor
4C2A3b01c
4C2A1b14c
Chitalapakkam
4C2A3b02a
Sirudhamur 107
SIRUDAMUR
Sirudhamur 326
SIRUMAILUR
4C2A3b01d
4C2A1b13d
Kavanipakkam
4C2A3b02b
PERANAKKAVUR
4C2A1b14a
4C2A1b13b
Padoor
Neerkundram
Edamichi
4C2A1b13c
Source: SRTM 1 Arc-Second Global
0 500 1,000 2,000 Meters
Legend
Quarry
Village Boundary
79°49'30"E
79°50'0"E
79°50'30"E
79°51'0"E
79°51'30"E
79°52'0"E
79°52'30"E
12°44'30"N
12°44'0"N
12°43'30"N
12°43'0"N
12°42'30"N


Kunnavakkam 122, 122 (p) - Kancheepuram District
Micro-Watershed
Nariyambudur
4C2A3b01d
4C2A3b02b
MALAYANKULAM
KATTANKULAM
NERKUNDRAM
4C2A1b13c
4C2A3b02c
VENDIVAKKAM
Edamichi
Marudham
4C2A1b12b
MAMBUDUR
PANDAVAKKAM
4C2A1b11b
KUNNAVAKKAM
4C2A1b12a
Paleswaram
Kunnavakkam 122
Kunnavakkam 122 (p)
4C2A1c13d
Vadathavoor
4C2A1c13c
SADACHIVAKKAM
Edayambudur
4C2A1b11a
ALANJERI
4C2A1b10c
VINNAMANGALAM
4C2A1b10b
4C2A1c13b
Kadalmangalam
Thottanaval
Valathodu
RETTAMANGALAM
Ozhalyur
4C2A1b10a
Source: SRTM 1 Arc-Second Global
0
500
1,000
2,000 Meters
Legend
Quarry
Village boundary
79°48'0"E
79°48'30"E
79°49'0"E
79°49'30"E
79°50'0"E
79°50'30"E
79°51'0"E
79°51'30"E
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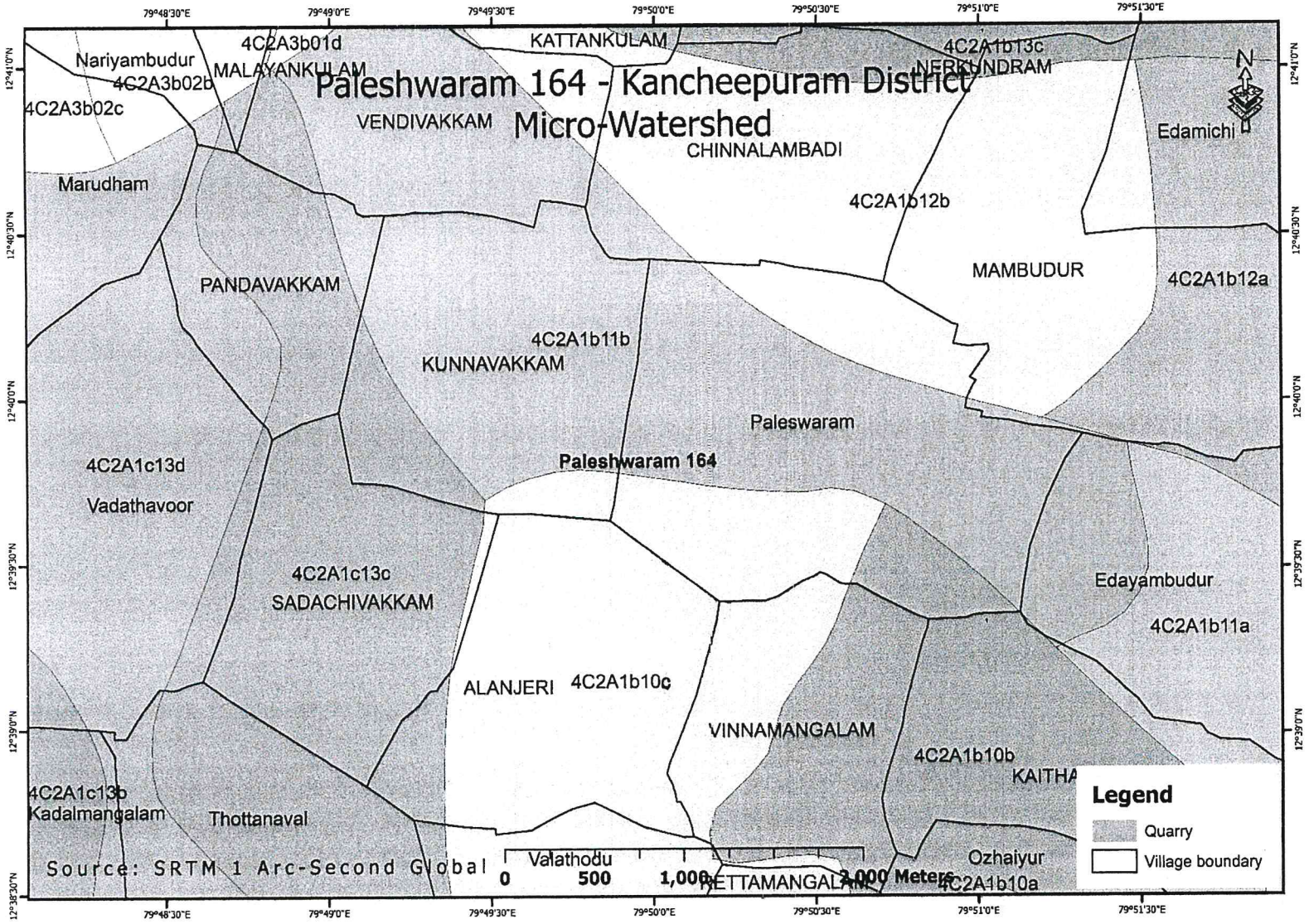
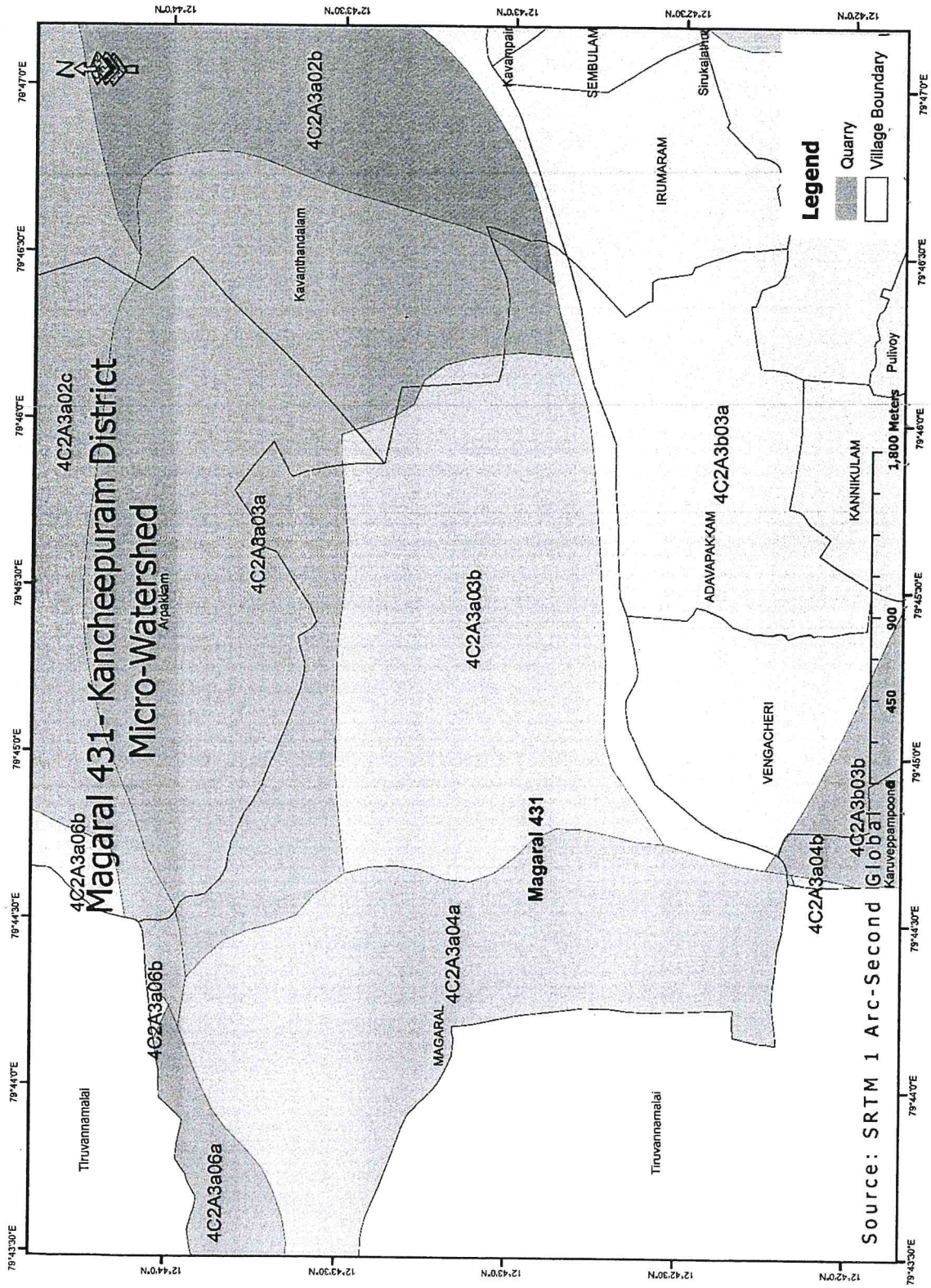
12°40'30"N
12°40'0"N
12°39'30"N
12°39'0"N
12°38'30"N


Paleshwaram 164 - Kancheepuram District
Micro-Watershed
Nariyambudur
4C2A3b02b
4C2A3b02c
4C2A3b01d
MALAYANKULAM
KATTANKULAM
4C2A1b13c
NERKUNDRAM
VENDIVAKKAM
CHINNALAMBADI
Edamichi
Marudham
4C2A1b12b
MAMBUDUR
4C2A1b12a
PANDAVAKKAM
4C2A1b11b
KUNNAVAKKAM
Paleswaram
Paleshwaram 164
4C2A1c13d
Vadathavoor
4C2A1c13c
SADACHIVAKKAM
Edayambudur
4C2A1b11a
ALANJERI
4C2A1b10c
VINNAMANGALAM
4C2A1b10b
KAITHA
4C2A1c13b
Kadalmangalam
Thottanaval
Valathodu
RETTAMANGALAM
Ozhaiyur
4C2A1b10a
Source: SRTM 1 Arc-Second Global
0
500
1,000
2,000 Meters
Legend
Quarry
Village boundary
79°48'30"E
79°49'0"E
79°49'30"E
79°50'0"E
79°50'30"E
79°51'0"E
79°51'30"E
12°41'0"N
12°40'30"N
12°40'0"N
12°39'30"N
12°39'0"N
12°38'30"N


Magaral 431- Kancheepuram District
Micro-Watershed
Magaral 431
Legend
Quarry
Village Boundary
1,800 Meters
900
450
0
Source: SRTM 1 Arc-Second Global
4C2A3a02b
4C2A3a02c
4C2A3a03a
4C2A3a03b
4C2A3b03a
4C2A3b03b
4C2A3a04a
4C2A3a04b
4C2A3a06a
4C2A3a06b
Kavanthandalam
Arpakkam
SEMBULAM
IRUMARAM
ADAVAPAKKAM
KANNIKULAM
VENGACHERI
MAGARAL
Tiruvannamalai
Pulivoy
Karuveppampoondi
79°43'30"E
79°44'0"E
79°44'30"E
79°45'0"E
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79°46'0"E
79°46'30"E
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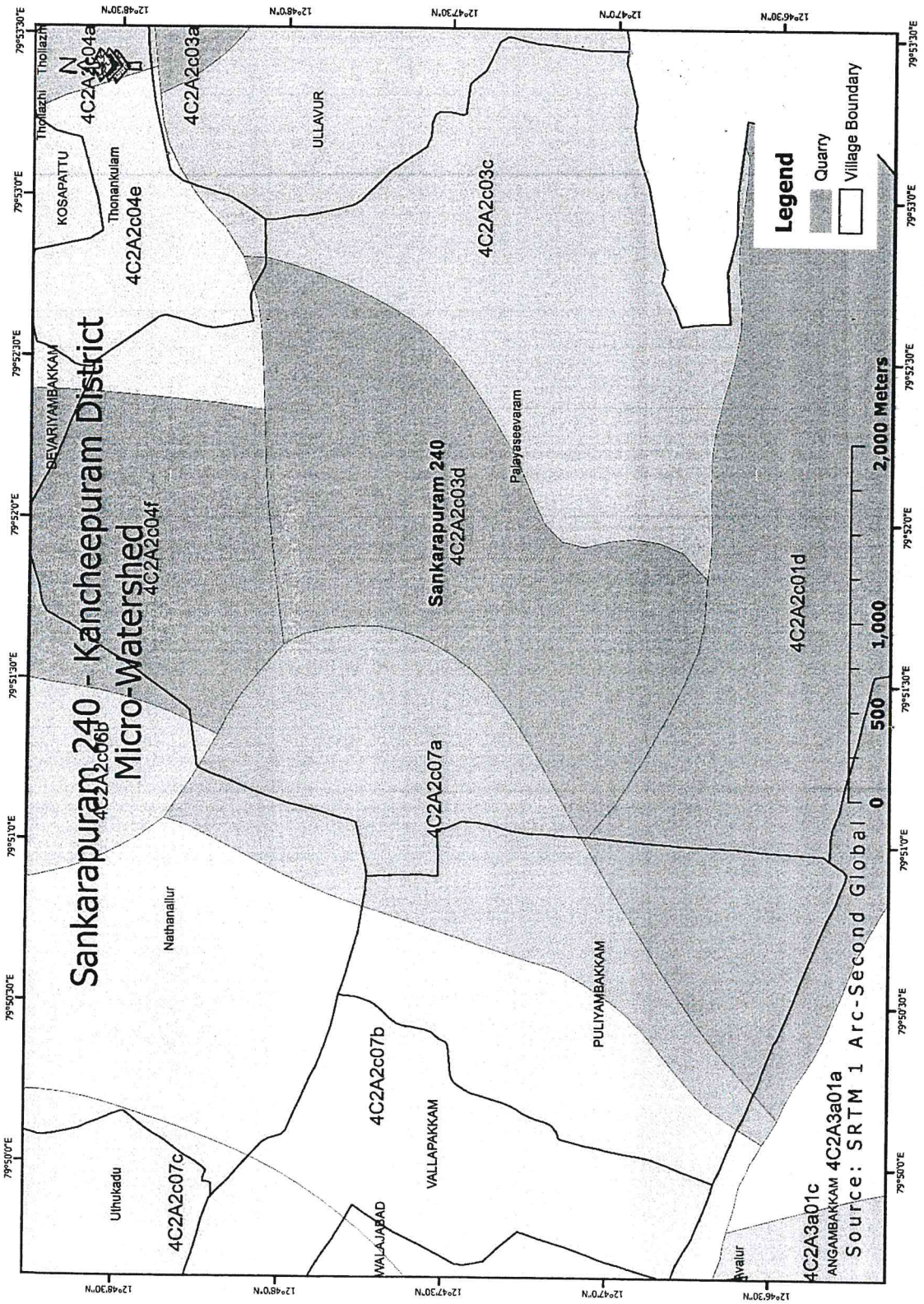
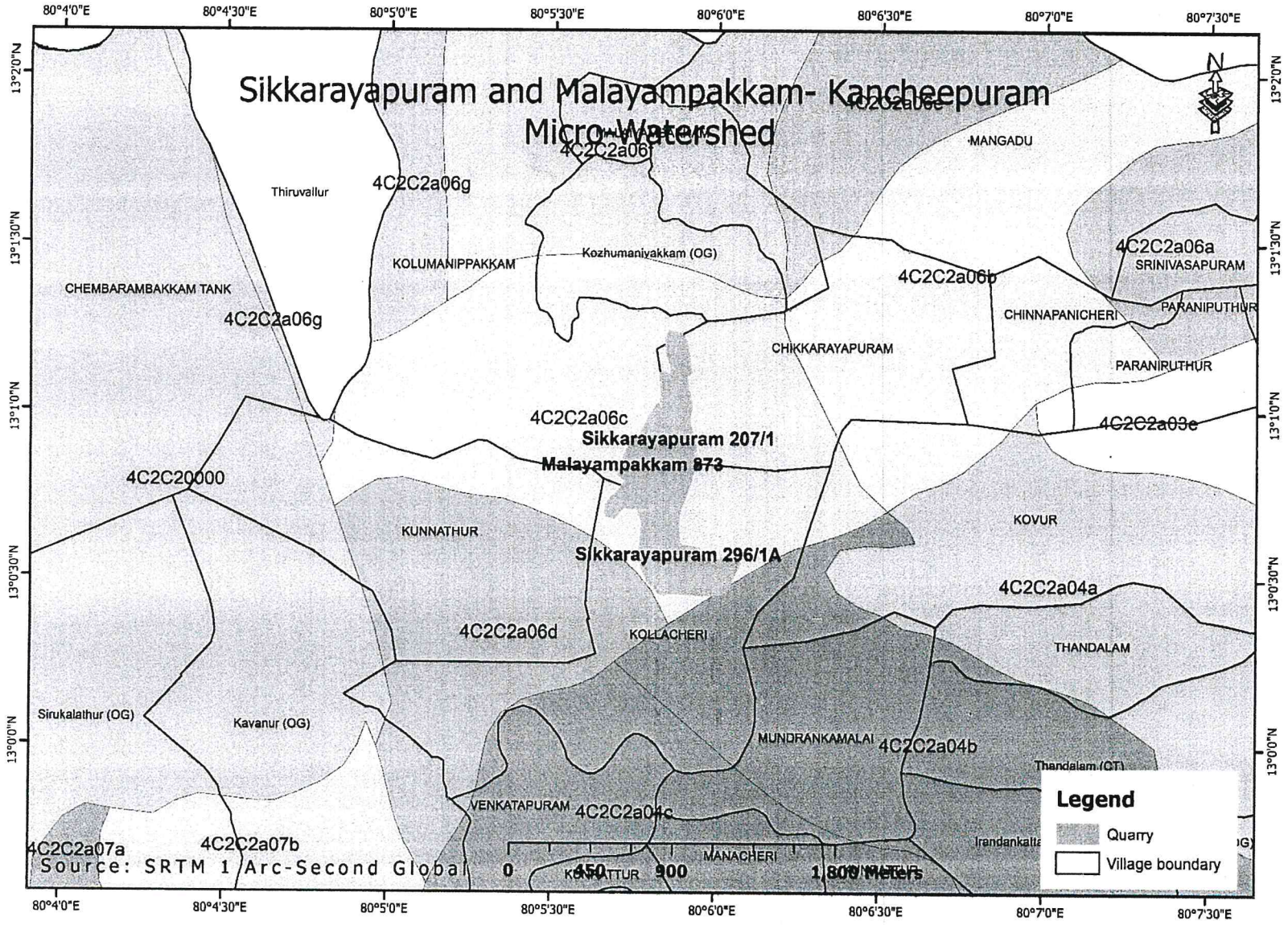
12°43'0"N
12°42'30"N
12°42'0"N

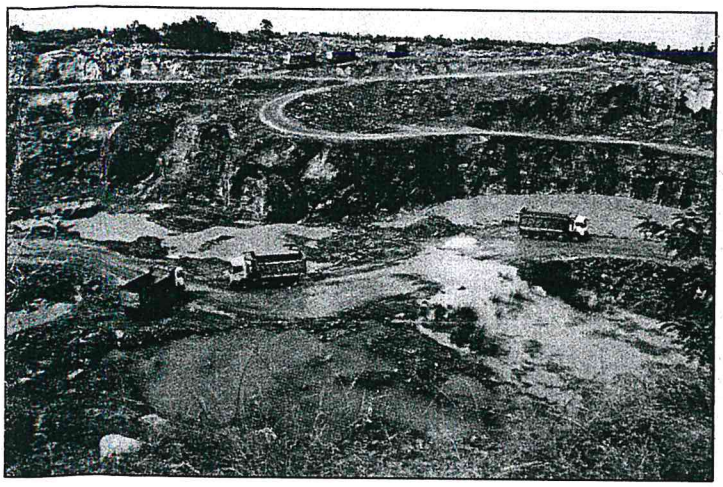
6


Sankarapuram 240 - Kancheepuram District
Micro-Watershed
N
Legend
Quarry
Village Boundary
0 500 1,000 2,000 Meters
Source: SRTM 1 Arc-Second Global
Sankarapuram 240
4C2A2c03d
4C2A2c03c
4C2A2c03a
4C2A2c04a
4C2A2c04e
4C2A2c04f
4C2A2c06b
4C2A2c07a
4C2A2c07b
4C2A2c07c
4C2A2c01d
4C2A3a01a
4C2A3a01c
ULLAVUR
KOSAPATTU
Thollazhi
Thonankulam
SEVARIYAMBAKKAM
Nathanallur
Palayaseevaram
PULIYAMBAKKAM
VALLAPAKKAM
WALAJABAD
Ulhukadu
ANGAMBAKKAM
Avalur

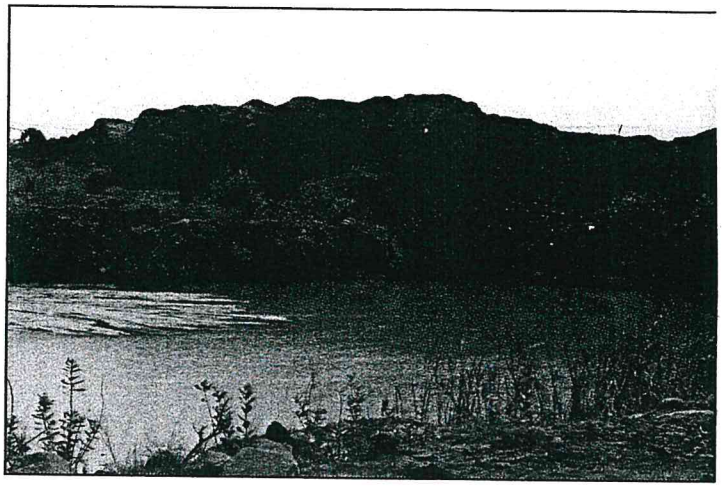

Sikkarayapuram and Malayampakkam- Kancheepuram Micro-Watershed
80°4'0"E
80°4'30"E
80°5'0"E
80°5'30"E
80°6'0"E
80°6'30"E
80°7'0"E
80°7'30"E
13°2'0"N
13°1'30"N
13°1'0"N
13°0'30"N
13°0'0"N
N
4C2C2a06f
4C2C2a06g
Thiruvallur
MANGADU
KOLUMANIPPAKKAM
Kozhumaniyakkam (OG)
4C2C2a06a
SRINIVASAPURAM
4C2C2a06b
CHEMBARAMBAKKAM TANK
4C2C2a06g
CHINNAPANICHERI
PARANIPUTHUR
CHIKKARAYAPURAM
PARANIRUTHUR
4C2C2a06c
4C2C2a03c
Sikkarayapuram 207/1
Malayampakkam 873
4C2C20000
KUNNATHUR
KOVUR
Sikkarayapuram 296/1A
4C2C2a04a
4C2C2a06d
KOLLACHERI
THANDALAM
Sirukalathur (OG)
Kavanur (OG)
MUNDRANKAMALAI
4C2C2a04b
Thandalam (CT)
VENKATAPURAM
4C2C2a04c
4C2C2a07a
4C2C2a07b
MANACHERI
Legend
Quarry
Village boundary
Source: SRTM 1 Arc-Second Global
0
450
900
1,800 Meters

Abandoned Quarries Kancheepuram

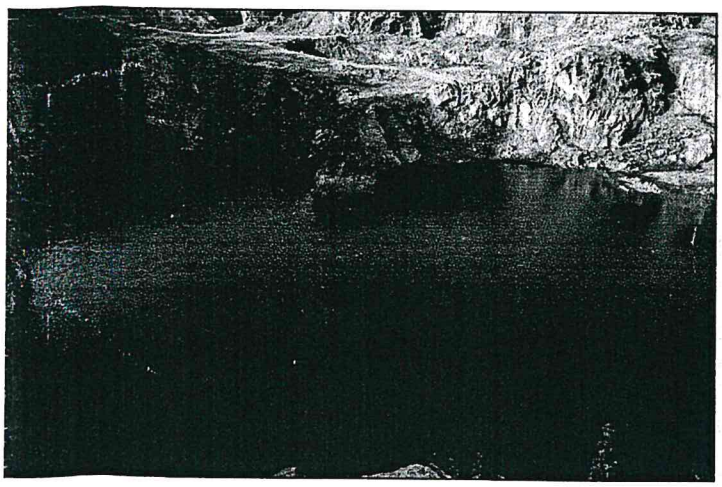
Sirudhamur 338



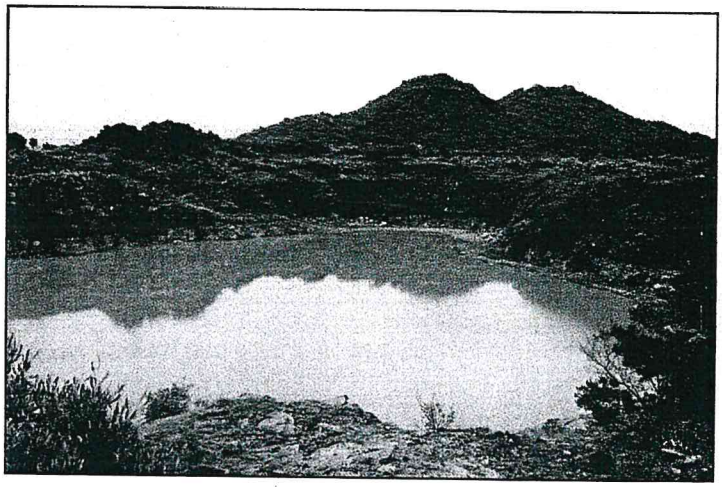
Sirudhamur 338 Q2



Sirudhamur 337/2



Sirudhamur 107



Sirudhamur 326

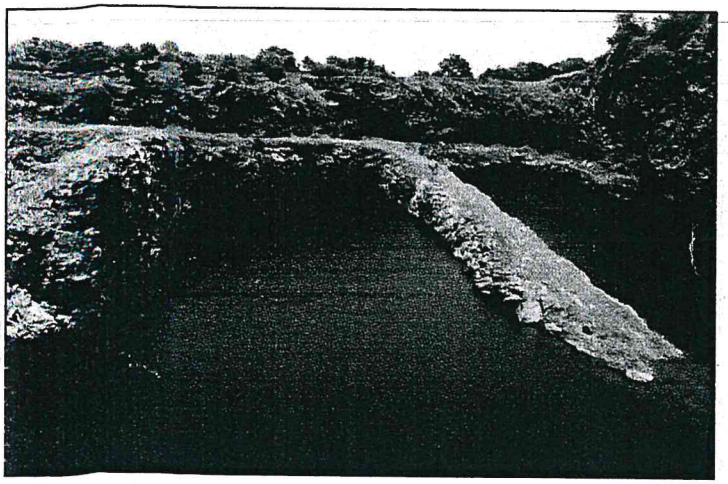
Sirudhamur 161

Abandoned Quarries Kancheepuram

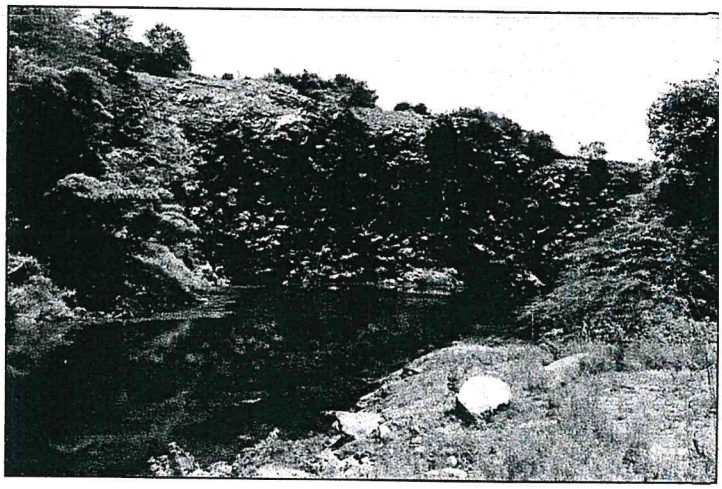
Sirudhamur 155

Sirudhamur 159

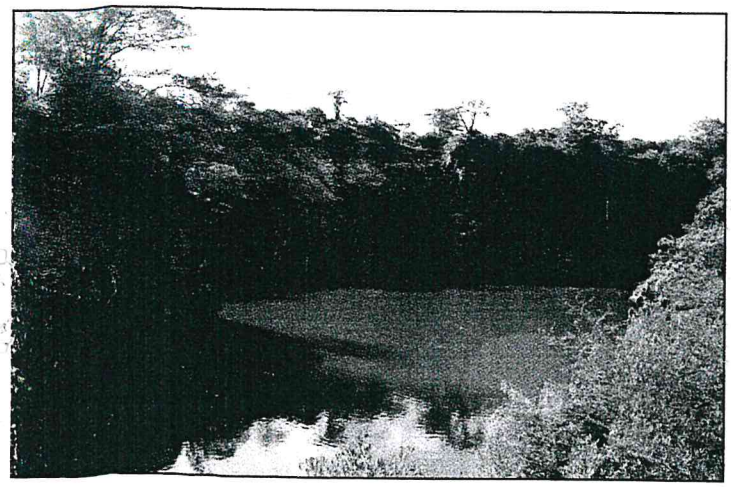
Kunnavakkam 122 Q.No.3



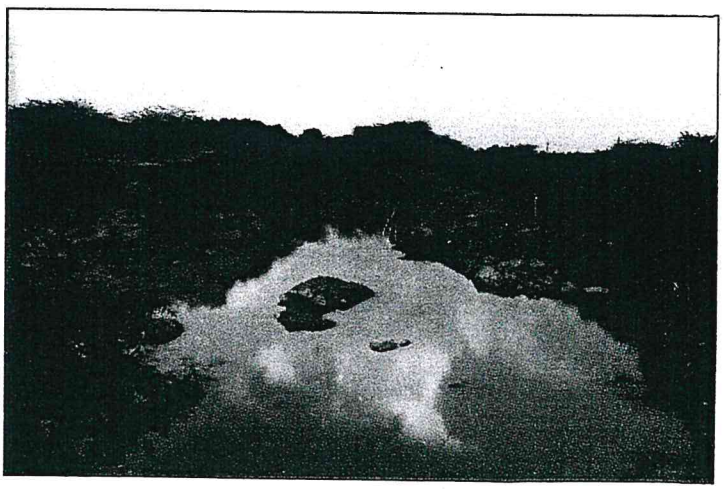
Kunnavakkam 122



Paleshwaram 164

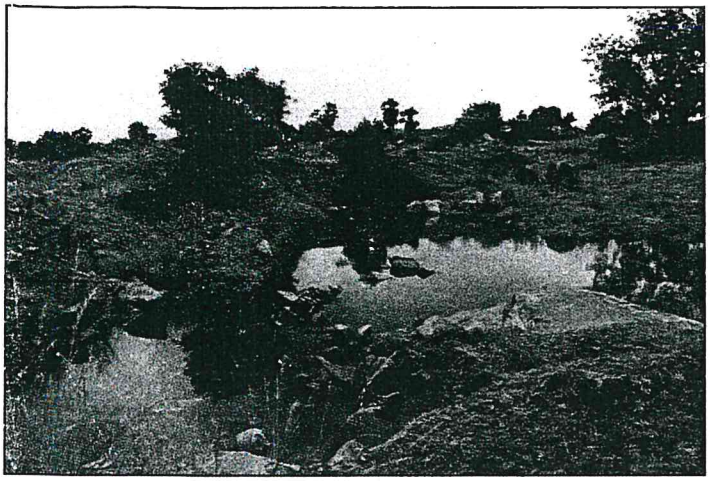


Magaral 431/1



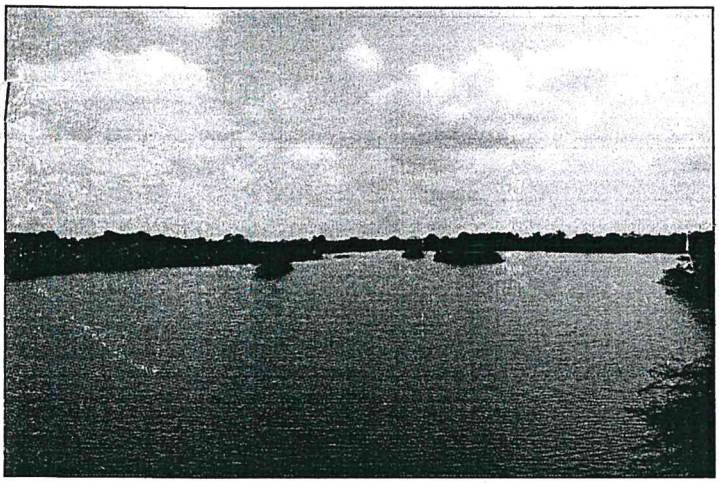
Abandoned Quarries Kancheepuram

Sankarapuram 240



Sikkarayapuram 207/1

Malaiyambakkam 873 to 981



Sikkarayapuram 296/1A