

13 March, 2013

*To Whom It May Concern*

**Dear Sir/Madam,**

Please find enclosed the information regarding production of Sapropels.

Should the Turkish investors or businessmen be interested in realization of these projects as well as cooperation with the Ukrainian company in the Cherson region, they can apply for more information to the Embassy of Ukraine in the Republic of Turkey (tel: 312 440-52-89 (137), email: [s.konopka@mfa.gov.ua](mailto:s.konopka@mfa.gov.ua)).

We rely that participation of the Turkish companies in the Ukrainian projects will further strengthen constructive bilateral economic cooperation between our countries.

**Yours sincerely,**

**Attaché on economic issue of  
Embassy of Ukraine in the Republic of Turkey**

**Sergey Konopka**  
**Tel.: 312 440-52-89-137**  
[s.konopka@mfa.gov.ua](mailto:s.konopka@mfa.gov.ua)



**ХЕРСОНСЬКА ОБЛАСНА ДЕРЖАВНА АДМІНІСТРАЦІЯ**

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Код ЄДРПОУ 00022645

12. 02. 2013 № 502-1041/012-13/21/3

На № 01-01/22-13 від 22. 01. 2013

Director of LLC "Yavir Grad"  
V.Yavorskiy

Kherson Regional State Administration reviewed your letter № 01-01/22-13 from January 22, 2012 on attracting investment funds to the project of cleaning up the lower reaches of the Dnieper from the bottom deposits, which envisages conducting of dredging and remediation works of shallow lakes, canals, irrigation ditches.

The economic aspect of the project is extremely important in terms of limited funding. Realization of this project will lead to:

- Intensification of the natural process of recovery of fish stocks;
- Reduction the likelihood of fish killing in locations of clearing;
- Reduction the factor of aquatic biosphere oppression by silt degradation products;
- In general will improve the overall environmental condition of the river and increase the speed of the river.

Implementation of the project is appropriate with regard to saving budget resources and the importance of preserving the environment.

Kherson Regional State Administration supports this project in accordance with the current legislation of Ukraine.

Sincerely,

V.Pidvysotskiy  
Deputy Head of the  
Regional State Administration

## **Project Summary**

### **PRODUCTION of Sapropels**

**Customer project summary:**                **LLC "Yavir-grad "**

**Executive summary of the project:**    **LLC "Yavir-grad"**

**Date of summary:** **09.26.2012**

#### **The project idea**

In connection with building of the cascade of dams on the river Dnepr, there was the unsatisfactory ecological condition on it's lower levels. The confluence of Dnepr and its inflows have received huge stock ground silt – sapropels, and has continued until it became silted. This valuable product can be successfully used in agriculture as sapropel fertilizers and additives to animal forages, both in Ukraine, and abroad.

This valuable environmentally friendly organic-compound fertilizer, which contains humid substances, vitamins, and hormones bio stimulants by the action of approaching the hormone produced by the human body. There are also micro-organisms that produce antibiotics. It has no weed seeds, pests and pathogens.

On the lower levels of the river, there are more than 50 islands, bordering the ponds and streams. Water surface area of 185 square km. Total area - 330 square km. As a result of human intervention in the ecosystem, the industry received the highest accumulation of sapropel in Europe, the volume of which is estimated at Kherson Agricultural University preliminarily estimated at more than 300 million tons.

#### **a) Sapropel in agriculture**

Sapropel is applied to increase of fertility of soils since prehistoric times since as fertilizer possesses especially valuable properties:

- It contains maximum of nutrients for plants;
- Substances are in an ideal proportion;
- Improves soil structure, gives to it clumping, friability, increases air permeability;
- Plants develop faster and earlier blossom;
- Productivity of agricultural crops in 1,4-2,2 times raises.

Recently was open sensational property of sapropel - to interfere accumulation in agricultural production of radio nuclides that has huge value for the zones which have suffered from Chernobyl accident.

#### **6) Sapropel in animal industries**

Sapropel application in animal industries as fodder additives of animals and birds:

Raises natural resistibility to organism diseases;

It increases natural resistance of human to diseases.

Medical properties show up at feeding with the sapropel of cattle, animal recovers and overtake in growth of the healthy.

Presence in sapropel of sexual hormones increases reproductive qualities of animals and accelerates puberty.

### **в) Sapropel in medicine and cosmetics**

Medical sapropel is used in medicine as medical dirt, medicine and extractions and is a highly effective method of treatment of variety of diseases at the expense of presence in it of biological stimulators and hormones, various microcells, vitamins and antibiotics.

Medical sapropel shows softness of action on an organism, especially on cardiovascular system.

At causing on a skin a sapropel is rendered by the multifunction operating on all organism:

- gives to all human organism health-improving and tonic actions;
- Enriches an organism with calcium, iron, magnesium, boron, iodine, potassium, vitamins, amino acids and other useful substances;
- Improves functions of immune systems;
- Improves lymph - and blood circulation, thereby making active an oxygen exchange;
- Stimulates functions of vegetative nervous system;
- Has antibacterial effect;
- Removes painful sensations and inflammatory reactions at arthritics, polyarthritics, illnesses of a backbone, diseases of peripheral nervous system (radiculitis, neuritis, consequences of wounds);
- Makes active excretory function of a skin, strengthening its ability to deduce on a surface collected in fabrics and cages toxic products of an exchange.

### **Guideline on medical application:**

- a) illnesses of support- motor system;*
- b) Illnesses of the central and peripheral nervous system;*
- c) Illnesses of genitals at women and men;*
- d) urological illnesses;*
- e) illnesses of respiratory organs;*

f) illnesses of digestive organs (gastritis, colitis, ulcers);

g) varix, hypertension, etc.;

h) ear, throat and nose diseases;

i) skin diseases (psora, eczema, diathesis, neurodermatitis, etc..)

### **In total more than 50 illnesses.**

A mud care is given by a good result in regard to dispersal of peritoneal commissures, pathological products of inflammation, strengthening of restoration processes. Cosmetic action of medical sapropel:

- gives to skin more freshness, resiliency, elasticity;
- rejuvenates a skin, improving cellular regeneration, thereby slowing down aging process; deeply clears a skin, deletes acne;
- has a bactericidal an effect, deletes 95 % of pathogenic bacteria, fungi and toxins (simultaneously is a skin treatment);
- promotes resolution of fatty adjournment;
- strengthens and stimulates growth of hair, eliminates dandruff.

On the Ukrainian market of sapropel, there are no other competitors available.

Sapropel - is organic-natural formation consisting of the organic and mineral raw materials of plant and animal origin. A set of these substances and their concentrations are largely due to the conditions of its deposits, the fauna and flora of the lake, the biochemical characteristics and the depth of the zone. Sapropel contains all the nutrients needed for plant growth and development. Sapropelic fertilizer helps build soil structure, leading to cleanse itself of pathogenic fungi and microorganisms.

### **Qualitative structure of sapropel of the river Dnepr**

<b>№</b>	<b>Indicators</b>	<b>Composition and formula</b>	<b>Quota</b>	<b>Factual content</b>
1	Fluorine (F)		<b>2000</b>	<b>0.45</b>
2	Plumbum (P <sub>b</sub> )		<b>30</b>	<b>6.13</b>
3	Cadmium (C <sub>d</sub> )		<b>2.0</b>	<b>0.54</b>
4	Copper (C <sub>n</sub> )		<b>500</b>	<b>6.3</b>
5	Zinc (Z <sub>n</sub> )		<b>1000</b>	<b>22.3</b>
6	Arsenic (A <sub>s</sub> )		<b>15</b>	<b>0.04</b>

7	<b>Chloroorganic pesticide</b>		<b>Excluded</b>	<b>Not found</b>
	<b>Nitrate</b>	<b>MG/KG</b> solid, %	in <b>1000</b>	<b>64.6</b>
	<b>Ammonia</b>	%		<b>1.1</b>
	<b>Nitrite</b>	<b>MG/KG</b> solid, %	in <b>10</b>	<b>Not found</b>
8	<b>Insoluble ash</b>	<b>In acid</b>	<b>20</b>	<b>4.5</b>
9	<b>Specific activity of cesium</b>	<b>134-137 BK\KG\L</b>	<b>20</b>	<b>2.1</b>
10	<b>Humidity</b>	%	<b>65</b>	<b>53.1</b>
11	<b>Damp protein, % (Π<sub>p</sub>)</b>	<b>No less</b>	<b>10</b>	<b>16.5</b>
12	<b>Azotus (N)</b>	<b>MG/KG</b> solid, %	in <b>500</b> <b>3.8</b>	<b>2065</b> <b>15.5</b>
13	<b>Acidity, lt, pH</b>	(lt)	<b>9</b>	<b>7.5</b>
14	<b>Phosphorus (P)</b>	<b>Not less</b>	<b>0.05</b>	<b>0.25</b>
15	<b>Calcium (C<sub>a</sub>)</b>	<b>MG/KG</b> solid, %	in <b>&lt; 3000</b>	<b>103617</b>
16	<b>Potassium (K)</b>	<b>MG/KG</b> solid, %	in <b>&lt;0.2</b> <b>5-7</b>	<b>0.86-0.96</b> <b>26.5</b>
17	<b>Manganese (M<sub>a</sub>)</b>	<b>MG/KG</b> solid, %	in <b>500-700</b>	<b>560</b>
18	<b>Iron (F<sub>e</sub>)</b>	-  - -  - -  -	<b>10000</b>	<b>8282</b>
19	<b>Copper (C<sub>n</sub>)</b>	-  - -  - -  -	<b>500</b>	<b>6.3</b>
20	<b>Iodine (I)</b>	-  - -  - -  -	<b>50</b>	<b>0.04</b>
21	<b>Boron (B)</b>	-  - -  - -  -	<b>2</b>	<b>0.08</b>
22	<b>Molybden (M<sub>o</sub>)</b>	-  - -  - -  -	<b>1.2</b>	<b>0.04</b>
23	<b>Cobalt (C<sub>o</sub>)</b>	-  - -  - -  -	<b>6.4-8.2</b>	<b>7.82</b>
24	<b>Bromine (B<sub>r</sub>)</b>	-  - -  - -  -	<b>1.2</b>	<b>0.06</b>
25	<b>Vanadium (V)</b>	-  - -  - -  -	<b>0.5</b>	<b>0.03</b>

26	Chrome ( <b>C<sub>r</sub></b> )	-  - -  - -  -	<b>1000</b>	<b>49</b>
27	Berrulium ( <b>B<sub>e</sub></b> )	-  - -  - -  -	<b>0.3</b>	<b>0.02</b>
28	Sodium ( <b>N<sub>a</sub></b> )	-  - -  - -  -	<b>&lt;2000</b>	<b>6625</b>
29	Silver ( <b>A<sub>g</sub></b> )	-  - -  - -  -	<b>50</b>	<b>35</b>
30	Tin ( <b>S<sub>n</sub></b> )	-  - -  - -  -	<b>10</b>	<b>0.25</b>

31	Plumbum ( <b>P<sub>b</sub></b> )	-  - -  - -  -	<b>10</b>	<b>0.34</b>
32	Nickel ( <b>N<sub>i</sub></b> )	-  - -  - -  -	<b>24</b>	<b>2.0</b>
33	Arsenic ( <b>A<sub>s</sub></b> )	-  - -  - -  -	<b>1</b>	<b>0.04</b>
34	Barium ( <b>B<sub>a</sub></b> )	-  - -  - -  -	<b>2</b>	<b>0.36</b>
35	Strontium ( <b>S<sub>r</sub></b> )	-  - -  - -  -	<b>1.08</b>	<b>0.085</b>
36	Talii ( <b>T<sub>i</sub></b> )	-  - -  - -  -	<b>0.5</b>	<b>0.06</b>
37	Cadmium ( <b>C<sub>d</sub></b> )	-  - -  - -  -	<b>3</b>	<b>0.08</b>
38	<b>Solid</b>	-  - -  - -  -	<b>15</b>	<b>95</b>
39	<b>Amino acids in % on</b>	<b>solid</b>		
	<b>-Lysine</b>		<b>0.150</b>	<b>0.316</b>
	<b>-Cystine</b>		<b>0.06</b>	<b>0.112</b>
	<b>-Methionine</b>		<b>0.07</b>	<b>0.148</b>
	<b>-Histidine</b>		<b>0.1</b>	<b>0.213</b>
	<b>-Arginine</b>		<b>0.15</b>	<b>0.269</b>
	<b>-Asparag</b>		<b>0.5</b>	<b>1.079</b>
	<b>-Asparaginic acid</b>		<b>0.25</b>	<b>0.491</b>
	<b>-Serine</b>		<b>0.25</b>	<b>0.455</b>
	<b>-Glutamin acid</b>		<b>0.5</b>	<b>0.876</b>
	<b>-Proline</b>		<b>0.2</b>	<b>0.353</b>
	<b>-Glycine</b>		<b>0.35</b>	<b>0.770</b>
	<b>-Alanine</b>		<b>0.25</b>	<b>0.458</b>

	<b>-Valine</b>		<b>0.25</b>	<b>0.549</b>
	<b>-Isoleucine</b>		<b>0.15</b>	<b>0.325</b>
	<b>-Tyrosine</b>		<b>0.15</b>	<b>0.269</b>
	<b>-Leucine</b>		<b>0.25</b>	<b>0.512</b>
	<b>- Fenalalanin</b>		<b>0.2</b>	<b>0.404</b>
40	<b>Enteropathogenic</b>	<b>Colon Bacillus</b>	<b>Excluded</b>	<b>Not found</b>
		<b>Salmonella</b>	<b>Excluded</b>	<b>Not found</b>
		<b>Anaerob</b>	<b>Excluded</b>	<b>Not found</b>
41	<b>Entropathogenic</b>	<b>Kinds of olm</b>	<b>Excluded</b>	<b>Not found</b>

The needs of organic fertilizers in the World market and for the states located in the Black Sea, and for Ukraine itself are limitless, since it is organic fertilizers that make it possible to harvest at all as nothing grows on dry sand or clay.

Even in relatively good soil it is necessary to make organic fertilizer every 3-5 years. Due to the high content of soluble calcium (CaCO) to 38% and nutrients, sapropel is recommended to make the fall or spring plowing the fertile land in the dose of N to 5 kg per sq.m. Only the Kherson region needs more than 13 millions annual tons of sapropel according to the calculations of science-based farming systems.

### **Description of the project topic**

Sapropel excavation held dredge and pipeline pressure is transported to a distance of 1500 meters for its further development. Mud with the water / sludge / loaded into the separator, a 500-ton, which is the separation of water. Drain the separated water makes it possible to significantly reduce the time it takes to the final drying of the sapropel. The pulp is discharged in an inclined settler and later moved to the secondary sludge card for processing and final drying. The mud coagulant is added at the rate of 10 liters per cubic meter of sludge mass for the rapid removal of water. To strengthen dehydration and bring to full readiness to conduct dozing. Packaging of finished and dry goods are performed in warehouses at sorting and packaging machines in plastic bags for up to 24 kg or big bags up to 1000 kg. One station will be able to prepare 5000 tons of finished product monthly. Presently, all the necessary negotiations with the company "Amalteya" Kherson, about supplying the required number of sacks and big bags for packaging of sapropel, are held in accordance with the requirements of the buyer.

Since sapropel is a natural environmentally friendly organic product, demand is growing worldwide. Today, the main consumers are the Middle East and North Africa. The countries of Western Europe are also showing increased interest in the acquisition of mineral degradation due to agricultural land.

Environmental degradation is the main problem associated with the extraction of sapropel. It's deposits beneath the sea level and the development can easily disrupt the ecology aqua sphere and cause irreparable damage to nature.

### **Features and attractiveness of the project.**

- The manufacturing process of sapropel as commercial product will be in the lower level of the river Dnieper, which goes into the Black Sea. In this regard, there is a real possibility, without the cost of handling the finished product to the coast. In future products can be loaded from the shoreline to the ship and transported in batches of 5,000 tones to any port in the world.
- Due to the fact that the work on preparation of sapropel will be an environmentally event - the state license for its development and extraction is not necessary, which greatly reduces the cost of raw materials. To obtain resolution, operation documents, you must provide a copy of the memorandum of understanding or contract with the investor, confirming the availability of funds for the project.
- The project is focused on the extraction of 85% of sapropel as an export product. We have signed a preliminary memorandum of understanding with Slovak company «SIPT» sapropel for the supply of 500 000 tons of sapropel with the packaging of 24 kg on the ports in Nigeria and Morocco.
- The width of the Dnieper River in some places is up to 8-15 km. Business plan provides details to carry out all the work on the extraction, drying and bringing sapropel to its form in the islands, which are specially selected for this purpose right on the river. This will significantly reduce the cost of transporting the product produced on the shoreline to spare all the required technology works, uploaded to the melting facility from where overload of finished goods on board are conducted.
- The business plan for the first time provides for the use of centrifuges, which are in the phase of harvesting removed excess moisture from the raw materials. This will make it possible to speed up the preparation of the wet product to its form and the requirements of the Euro standards, packaging and labeling.
- Application processing chain sheds light on a design team and not the brick manufacturing warehouses, requiring large construction investments. Wind-power generators will reduce the cost of carrying out all types of work without violating the environmental state of the area. Once the station has finished its work, all will be dismantled and the area will be returned to the original natural appearance.
- All equipment for the extraction, drying and packaging of goods are manufactured in Ukraine.
- The region has a sufficient number of workers and specialists, who will be involved in all the production cycle.
- Scientific support for the project will be carried out by scientists and Agricultural Ecology Department Pedagogical University of Kherson.
- There is full support from the regional authorities.

### **The market situation and marketing. Competitors.**

Estimated the January workshop for the production of organic fertilizers and sapropel in Kuala Lumpur, Malaysia, the statement needs only European countries in these products for more than 7 million tons annually. Russian Center for sapropel, the only post-producer of this product in 2007, he received 12 applications for delivery within Russia granular sapropel volume of 220 thousand tons, and beyond - 42 thousand tons. Of analysis is not established market organic fertilizers and needs not see consumer perception sapropel producers themselves, who are able to meet the needs of their stability or reliability as a business partner.

### **Implementation method of the project investment.**

Ton set up a highly efficient production line and processing of raw materials into finished products, the following major non-recurring costs to run 10 stations are identified. Each station is estimated to cost \$ 5,620,385 U.S..

The expenditure are :

The construction work and the list of equipment needed to set up production line is about \$3,667,425.

Volumes of operating costs - \$1,269,960

The annual salary is \$683,000

Full-time staff of 61 people.

One station produces bulk sapropel - 59 600 tons / year.

The results of the preliminary negotiations with potential buyers from North Africa and the United Arab Emirates to supply them finished product are as follows.

#### **Cost of one ton of a finished product will be \$ 50**

Production and transportation -\$ 5

Drying - \$24

Fuel -\$6

Storage costs -\$2

Salary + 38% charge - \$9

Electricity -\$1

Packaging / 24 kg bags / - \$ 1

Depreciation of office equipment, etc. - \$2

Loaded onto a barge and ship (zatamozhivanie), transportation to deliver 1 ton of products to the buyer in the ports of Morocco, Casablanca barges carrying capacity of 5 000 t - \$ 40 U.S.;

Cost of one ton of sapropel delivery to the customer - \$90

The estimated selling price of 1 ton of product at least - \$120

For comparison, the cost of a ton of finished sapropel in Latvia, for example, is 400 € /ton.

The project envisages the gradual use of investment funds to purchase the necessary equipment list and forming station finished production of sapropel.

The first year of three stations 5,620,385 in the amount of U.S. \$16,861,155,

Second year 3 station 5620385 in the amount of \$16,861,155

The third year of four stations on 5620385 in the amount of \$22,481,540

Total funding is - \$56,203,850

Credit period - 2 years from the date of receipt of the first tranche of 3 stations.

- Expected capital - investment
  - Life investment acquisition - three years
  - Grace period - two years for each tranche received
  - Method-maturity investments - transfer money to the account of the investor.
- Installation of the required equipment list to start the first 3 plants for the production of finished products of sapropel, expected to worth \$16,861,155.  
Time of acquisition of equipment - 4 months after entering the first tranche.

### **EXPIRATION PERIOD OF THE INVESTMENT**

Terms of return on investment will begin in the second year after the installation of the first 3 pump stations and span over 11 years after obtaining investment funds according to established design frequency.

### **Effectiveness of the project**

Cash expected to be flown for the production of 50,000 tons of goods per year, with one station finished product and selling it at a price of \$120

Gross income expected: - \$6,000,000  
Costs for operating costs per year - \$1,269,960  
Wage costs in the year - \$683 000  
Free balance - \$4,047,040  
Costs to cover taxes  
Income tax 21% / year - \$849 880  
Other expenses - \$250 500

Net income in the year will be - \$2,946,660

No account is taken of payment% investment in the body, as they are not yet determined.

### **Return on investment.**

Given the purchase of 10 stations and 2-year deferred payment period of return on investment is 11 years.

Contribution of the enterprise will supply packaging - / bags of 24 kg or big bags / a \$2 million.

### **Direct investment execution.**

### **Limited Liability Company "Yavir-grad"**

The company plans to become a reliable supplier of large amounts of highly efficient organic fertilizer, to ensure a comprehensive approach to the problem of obtaining clean crop, soil rehabilitation, reconstruction and improvement of soil fertility. We have introduced extraction and processing

technologies of natural sapropel organic fertilizers and soil formers meet highest international requirements of the production process and the quality of the finished product.

**Recipient draft of the project**

The full name of the company, LLC "Yavir - grad"  
 The legal form of the company, Limited Liability Company  
 The lifetime of the company, since 2012  
 On what rights registered  
 Company share

**Legal address:**

Index 73036,  
 Kherson, st. Pridneprovskiy descent, 8  
 Other registration data EDRPO 31760193  
 Key people - Director Vladimir Yavorsky

It should be noted that equipment and machines provide a sufficient safety margin, profitability and will be engaged in the processing of semi-finished productions in the winter months, beginning in December, a series of processing will be done in two-shift operations in a continuous loop throughout the year.

In general, the expected effect of the capital-intensive activities will be stable and efficient revenue growth. In addition, the whole project will quickly pay for itself.

**SWOT analysis**

<b>Capabilities</b>	<b>Risk</b>
<ol style="list-style-type: none"> <li>1. The growing demand for finished goods.</li> <li>2. Support for the project from the Regional State Administration.</li> <li>3. The possibility of rapid growth in production and sales.</li> <li>4. Availability of attractive new geographic markets.</li> <li>5. Application of new technology in production.</li> <li>6. Possibility of expanding the availability of mining and processing of products.</li> <li>7. Entry into the World Trade Organization as the reduction of trade barriers to entry into foreign markets.</li> </ol>	<ol style="list-style-type: none"> <li>1. Low availability of finance in Ukraine there is no real possibility of obtaining investment.</li> <li>2. The appearance on the market of competitors.</li> <li>3. Changing customs regulations.</li> <li>4. Lack of advertising on the market of the product.</li> </ol>
<b>Advantages</b>	<b>Limitations</b>
<ol style="list-style-type: none"> <li>1. The lack of competition in the market</li> <li>2. High quality products</li> <li>3. A team of qualified professionals</li> <li>4. Experience organizational work</li> <li>5. The widespread use of products</li> <li>6. The high profitability of products</li> <li>7. Low production costs.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of financial assets (working capital and to implement strategic initiatives)</li> <li>2. Standard methods of promotion in different markets</li> <li>3. Notconducted market research to explore new sales channels.</li> </ol>

## CONCLUSIONS:

The above project is high-yielding production of sapropel with little risk and has good prospects in view of the conditions:

- The project is fully supported by the executive branch on the ground.
  - Price policy is very moderate and competitive
  - There are large deposits of product yield and proximity to the Black Sea, enabling considerable savings for cargo transshipment works and transported by barge to the large amounts of consumer
  - Fully equipped project equipment
  - There is a steady market for a long time.
  - The project provides a high return on invested capital, which guarantees investors the timely repayment of the loan and the interest on the loan;
  - Implementation of the project has already started, received virtually all of the necessary approvals, which are required for the preparation of pre-investment stage.
- Construction of the facility can be started within 4 months after the receipt of the necessary investment.
- The financial part of the project worked with the possible problems and in the project shows good profitability even in tougher economic conditions than currently exist.
  - There is no competition in the region. The company acts as the only major manufacturer not only in the region but also in Ukraine as a whole.
  - Due to the fact that the project has an environmental focus, it does not need to purchase a license, as well as additional licensing.